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The Influences of Consumer-to-Consumer Interaction on Dissatisfactory Consumers' Repetitive Purchases in Network Communities

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Abstract: Consumer-to-consumer interaction is an important activity in network communities. Consumer-to-consumer interaction involves information interaction and social interaction, which greatly influences consumers' experience and behaviors. The model of stimulus-organism-response (S-O-R) is usually applied to explain how environmental stimulus affects consumer behavior through the internal state. Thus, this research takes dissatisfactory consumers as the object, sets information interaction and social interaction as a stimulus, consumer knowledge and trust as an organism, and repetitive purchases as a response. It constructs a theoretical model that consumer-to-consumer interaction influences repetitive purchases through consumer knowledge and trust. In this study, the model and hypotheses were tested by analyzing 328 valid questionnaires. The results show that information interaction had a significant positive effect on consumer knowledge, while social interaction had no significant effect on consumer knowledge. Information interaction and social interaction each had significant positive effects on consumer trust. Consumer knowledge and trust each had significant positive effects on repetitive purchases. Consumer knowledge and trust played a partial mediating role between information interaction and repetitive purchase, respectively. Consumer knowledge had no mediating role between social interaction and repetitive purchases, while consumer trust played a complete mediating role between social interaction and repetitive purchases. The results revealed that the deep mechanism of consumer-to-consumer interaction's influence on dissatisfactory consumers' repetitive purchases in network communities further enriched consumers' purchase behaviors, at least theoretically. This research also provided insights for network community marketing.

Keywords: network community; consumer-to-consumer interaction; dissatisfaction; consumer knowledge; consumer trust; repetitive purchase



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1. Introduction

With the rapid development of the social environment and network technology, the network community characterized by information networking and interactive participation is booming. Many persons with common interests, similar experiences, and consistent emotions gather in the network community to generate and share a large amount of content. The network community is an efficient tool for information exchange and social communication [1]. Persons often discuss common topics, communicate emotions, and form a network of interpersonal relationship in network communities, and they maintain a high degree of interpersonal communication [2]. User interaction is important activity in network communities, and information sharing and emotional communication are major content areas of user interaction [3]. Users participate in interaction to meet their needs for information and emotion. Many of the users who use network communities are consumers

with potential or real consumption needs. These consumers usually use the community to search for product information, share purchase experience, communicate emotions, and establish a good interpersonal relationship between consumers [4]. Consumers' trust and dependence on the community are increasing. They often use the community to solicit purchase suggestions and emotional support from other consumers before purchasing.

Consumer-to-consumer interaction has an important effect on purchase decisions [5]. However, consumer-to-consumer interaction does not stop here. To have a more comprehensive understanding of the purchased products or to confirm the existing purchase decisions again, it is a common behavior for consumers to continue to participate in interaction to further obtain relevant information and re-confirm purchase experience after purchasing in network communities [6].

Some dissatisfactory consumers usually participate in the interaction after purchasing in network communities, and they expect to get help from others to solve their difficulties [7]. Dissatisfactory consumers desire to communicate with others to eliminate negative emotions, they often release some information about certain content to others and look forward to obtaining an instant response to achieve the purpose of acquiring knowledge and solving problems [8]. The information and care from others have a persuasive effect. It can increase dissatisfactory consumers' understanding of the product and the tolerance of product defects [9]. Consumer-to-consumer interaction affects dissatisfactory consumers' post-purchase evaluation, even changing their original attitudes and stimulating repetitive purchases [10]. On the one hand, information exchange can enable consumers to obtain more comprehensive product information, have a deeper understanding of the product, correct the original inaccurate or wrong understanding, and increase the acceptance of products [11]. On the other hand, emotional communication can bring pleasure to consumers, improve the tolerance of product defects, and reestablish trust in products [12].

Consumer-to-consumer interaction can increase consumer knowledge, improve consumer trust, and stimulate dissatisfactory consumers' repetitive purchases [12]. There is a close relationship between consumer-to-consumer interaction and consumers' purchase behaviors [13]. Previous research has given little attention to consumer-to-consumer interaction's influence on dissatisfactory consumers' repetitive purchase, and the function of consumer knowledge and trust were not discussed [6,11,14]. Consumer knowledge is an important basis for consumers to choose and evaluate products. That is, consumers will look for justifiable reasons to support their behaviors in purchase decision-making [1]. Consumer trust is a psychological variable based on cognition and emotion. This kind of trust is mostly based on strong cognition and emotion. It is an important antecedent affecting consumers' repetitive purchases [15]. Therefore, it can be inferred that consumer-to-consumer interaction will affect dissatisfactory consumers' repetitive purchases through consumer knowledge and trust [16]. Based on these, the present study adopted the S-O-R model as a theoretical framework, set consumer-to-consumer interaction as a stimulus, consumer knowledge and trust as an organism, and repetitive purchases as a response. We constructed a research model that had consumer-to-consumer interaction influence dissatisfactory consumers' repetitive purchases through consumer knowledge and trust. The research revealed that consumers' interaction's had a deep influence on dissatisfaction with consumers' repetitive purchases in network communities. It further enriched consumers' purchase behaviors theoretically, and also provided some insights for network community marketing.

The rest of this paper is organized as follows. Section 2 provides a literature review to establish a theoretical framework for the research model for investigating the relationship between consumer-to-consumer interaction and dissatisfactory consumers' repetitive purchases. Section 3 puts forward 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. Stimulus-Organism-Response Model

The stimulus-organism-response (S-O-R) model was proposed by Mehrabian & Russell [17]. It was initially applied in the study of environmental psychology, where “S” represents the external environment, “O” represents the internal state, and “R” represents the behavioral response. The model suggests that the external environment affects an individual’s internal state and then affects their behavioral response. Individual behaviors are produced by a certain stimulus, which mainly comes from their external environment. When an individual encounters a stimulus, the internal state changes accordingly, generates motivation, makes behavioral decisions, and eventually leads to the generation of behaviors.

Scholars have applied the S-O-R model to consumer behavior to explain how environmental stimulus affects consumer behavior through the internal state. Islam [18] used the S-O-R model to investigate how banking websites can activate customer engagement to consequently enhance customer trust and retention. Results revealed that website interactivity, website aesthetics, customization, ease of use, and telepresence positively affect customer engagement. Online purchase behavior has always been the study object in behavior science. Scholars have widely applied the S-O-R model to the online environment to study the virtual environment’s influences on consumers’ psychological states and behaviors [19–22]. The S-O-R model has become a concise framework for consumer behavior research in the e-commerce environment. Based on the S-O-R model, Park et al. [23] studied website characteristics influence on consumers’ online shopping behaviors in the online shopping mall. Referring to the S-O-R model, Narteh [24] discussed social business technology’s influences on consumers’ participation behaviors through consumers’ experience. In the network communities, the external stimulus, such as information exchange, social interaction, and so on, increases consumer knowledge and trust. These experiences reduce uncertainties in purchase decision-making and stimulate consumer purchases. Considering the S-O-R model’s applicability and simplicity, it can provide a simple and clear way to explore that consumer-to-consumer interaction arouses dissatisfactory consumers’ cognition and emotion, thus impacting their repetitive purchases. The present study adopted the S-O-R model as the research framework of consumer-to-consumer interaction’s influences on dissatisfaction with consumers’ repetitive purchases in the network communities.

2.2. Consumer-to-Consumer Interaction

Interaction refers to the exchange and communication between two or more individuals. It is a fundamental activity in the network community, and it is also an important variable affecting the results of network community activities [25]. At present, there are different divisions of the dimensions of interaction. According to research purposes, scholars have divided the interaction into different dimensions. Shen et al. [25] divided the interaction into product interaction and social interaction in a virtual community. Nicholls [3] divided customer interaction into information exchange and social interaction. Ekpo et al. [26] classified the interactions into product interaction, social interaction, and cognitive interaction. Choi & Kim [27] divided the consumer-to-consumer interaction in the online brand community into help-seeking, social interaction, feedback, and advocacy. Bruhn et al. [2] claimed that user interaction could be divided into content interaction and social interaction in virtual communities. It further pointed out that user interaction could have a differentiated influence on brand loyalty through purchase experience. In network communities, consumer-to-consumer interaction refers to the information exchange and emotional communication carried out by consumers [28]. Consumer-to-consumer interaction content is mainly related to product information or purchase experience, and can also include some social topics and emotional communication beyond the products and experience [29]. In other words, consumer-to-consumer interaction is achieved through information exchange and interpersonal communication. Therefore, based on the existing relevant research, and combined with the specific interaction content, this study

divided consumer-to-consumer interaction in network communities into two dimensions: information interaction and social interaction [30]. Information interaction refers to the information exchange among consumers with product information, purchase experience, or other related consumption information. Information exchange realizes the sharing of information among consumers and increases consumers' understanding of products [10]. Social interaction is a positive communication behavior among consumers with emotion to enhance mutual understanding and establish a good relationship [29]. In network communities, consumer-to-consumer interaction can affect consumers' experiences, attitudes, preferences, and behaviors. Bruhn et al. [2] found that customer interaction in the virtual community positively affects consumers' knowledge and loyalty. Yoo et al. [31] believed that positive customer to consumer interaction could enhance customer's role perception and positively affect the trust in products. Li et al. [32] found that customer to customer interaction in the online environment can effectively improve customers' trust in products and achieve a repetitive purchase.

2.3. Repetitive Purchase

Repetitive purchases refers to consumers purchasing the products which they have purchased in the past [33]. The repetitive purchases may be motivated either by the product's performance or by a consumer's habit [34]. On the one hand, consumers purchase these products repetitively because they have been satisfied with them and prefer them. On the other hand, consumers also purchase these products repetitively because it's a habit and often purchase them [35]. Due to the repetitive nature of the task, consumers can draw on previous experience, repetitive purchases can be enacted with minimal effort and conscious control. Although the repetitive purchases is not made based on a conscious decision explicitly made before the purchase, it is still a deliberate purchase [34]. The purchase itself does not occur spontaneously, and it is volitional or intentional.

The antecedents of repetitive purchases have been explored, and scholars have mainly discussed product attributes and consumer values. The studies based on product attributes highlight product efficacy influences, while the studies based on consumer values believe that consumers' benefits and emotions affect repetitive purchases [36,37]. These studies focus on the relationship between products and consumers, and rarely pay attention to the influences of consumers' relationship on repetitive purchase. Consumers' repetitive purchases are affected by product efficacy and consumer values and also influenced by information exchange and social interaction between consumers. Consumer-to-consumer interaction has a crucial effect on repetitive purchases in the network community [29]. There are some limitations in discussing the influence factors of repetitive purchases only from products and consumers' perspectives. Ignoring the role of consumer-to-consumer interaction cannot reflect the influence of interactivity between consumers on repetitive purchases.

A repetitive purchase is determined by consumer attitudes or motivations to a product, strengthening further purchase tendencies vis-à-vis a product. Aghazadeh et al. [38] pointed out that consumers' product knowledge and trust in products affects their repetitive purchases. Consumer knowledge and trust in the product can help develop consumers' purchase attitudes and promote product purchase. The accumulation of consumer knowledge can reduce the risk of product selection and increase the possibility of repetitive purchases [39]. De Vries et al. [40] believed when consumers had rich knowledge, their confidence in repetitive purchase decisions would be enhanced, and they were more likely to conduct a repetitive purchase. Trust can reduce the perceived risk of the purchase to enhance consumers' purchase intentions. Consumers' trust in products will continue to develop with the increase of contact time and experience. Grzeskowiak [41] thought that when online consumers believed in products, they would be more willing to purchase in the future. A trust could promote consumers' repetitive purchase. In network communities, consumers actively exchange product information and communicate emotion. The contin-

uous consumer-to-consumer interaction will increase dissatisfactory consumer knowledge and trust of products, change their attitudes, and then stimulate repetitive purchases [42].

3. Research Model and Hypothesis

3.1. Research Model

Based on the above analysis, we herein present a research model of consumer-to-consumer interaction's influences on dissatisfactory consumers' repetitive purchases in network communities. The basic constructs are information interaction, social interaction, consumer knowledge, consumer trust, and repetitive purchases. The relationship between variables is shown in Figure 1.

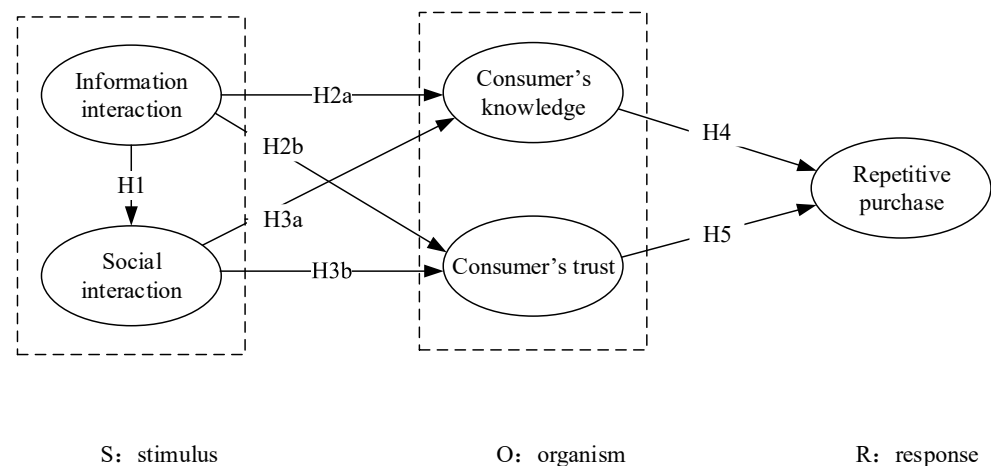


Figure 1. Research model with hypotheses.

3.2. Hypotheses Development

3.2.1. Information Interaction and Social Interaction

The network community provides consumers with a platform for sharing information and communicating emotions. Consumers can exchange product information, share purchase experiences, communicate emotions with others [39]. Many consumers are willing to share information in the network community, and the accumulative product information provides an important reference for consumers' purchase decision-making [43]. Product recommendation, purchase warning, experience exchange, and brand knowledge sharing can deepen the consumers' understanding of the products. Nicholls & Gad Mohsen [44] pointed out that information interaction was a kind of product information exchange among consumers and social interaction. In the frequent information interaction, consumers obtain the product information, increase the consumer knowledge, and are familiar with each other. Information interaction can gradually deepen mutual understanding and trust, promote close relationships between consumers, and form a profound friendship. Information interaction eventually develops into acceptance and recognition between consumers, and consumers obtain a sense of belonging and respect for each other [45]. In this situation, information interaction will constantly develop the feeling between consumers, mutual trust is deepened, and social interaction can be more frequent. Thus, the hypothesis is shown as follows:

Hypothesis 1 (H1). *Information interaction has a positive effect on social interaction.*

3.2.2. Information Interaction, Consumer Knowledge, and Consumer Trust

Due to the heterogeneity among different consumers in the network community, each consumer may have some product information that other consumers have not obtained, making the community become an "information source." Consumers often exchange product information, share purchase experiences, and discuss shopping topics to obtain the

consumption information they need in the network community [43]. The more frequent the information interaction, the more consumers can obtain a comprehensive understanding of relevant products and increase their knowledge [46]. Jung & Yoo [29] confirmed that information interaction significantly affected consumer knowledge growth. Consumers' information explains the product attributes, functions, or purchase experience in detail, which thus helps other consumers form a comprehensive understanding of the products. Johnson et al. [43] pointed out that consumer reviews have significant positive effects on consumer knowledge growth. Consumer reviews contain large amounts of product information and have diverse viewpoints, which help consumers deepen the understanding of products and increase their product knowledge [47]. In the network community, when consumers want to know more about the products, they actively collect relevant information. Information shared by other consumers positively improves their understanding of the products. The shared information increases their product knowledge. Information interaction can have a positive effect on the accumulation of consumer knowledge. Therefore, the hypothesis is put forward as follows:

Hypothesis 2 (H2a). *Information interaction has a positive effect on consumer knowledge.*

Information interaction not only increases the consumer knowledge but also improves consumer trust. Using the shared information, consumers can deeply understand the product features, accurately judge the product quality, and establish consumer trust. Tomazelli et al. [48] put forward that the product information from other consumers could help consumers establish the relationship between themselves and products, closing the psychological distance between consumers and products, to originate trust in the products. Kundu & Datta [49] studied consumers' purchase attitudes in online communities and found that information interaction had a significant positive effect on the formation of consumers' trust. Wu et al. [50] believed that the higher the quality of information shared by other consumers, the more persuasive and infectious it was, helping consumers make correct judgments on products, reduced perceived risks in transactions, and established higher consumer trust. Sacco & Ismail [51] claimed that information interaction could help consumers correctly evaluate the products, aroused users' pleasant sense in heart, produced a positive psychological reaction, and promoted consumers to form positive attitudes toward the product and established consumer trust. Petzer et al. [52] explored the influences of information interaction on consumers' experience in virtual tourism communities and found that high-quality information could accurately describe the products. Consumers tended to think that the information was valuable, and it was easy to produce positive attitudes and form consumer trust in products [53]. Information interaction is an important means to enhancing consumer trust. In the network community, the product information and purchase experience from other consumers undoubtedly decreases information asymmetry, reduces the consumers' perceived purchase risk, and increases consumer trust. Information interaction has crucial influences on the formation of consumer trust. From the above analysis, the hypothesis is proposed as follows:

Hypothesis 2 (H2b). *Information interaction has a positive effect on consumer trust.*

3.2.3. Social Interaction, Consumer Knowledge, and Consumer Trust

Frequent social interaction can enhance consumers' familiarity, strengthen consumers' emotional awareness, close the connection between consumers, and increase the relationship intensity [5]. Relationship intensity is an important factor that affects consumers' information discerning [19]. The information shared by other consumers with a strong relationship is more likely to attract consumers' attention. Consumers are easy to accept this information and enhance their knowledge. In the network community, the acquisition of product information is affected by the relationship between consumers. Consumers easily notice the product information shared by other consumers who have a close relationship with themselves. The relationship between consumers plays a great auxiliary

role in judging the usefulness of information content. Consumers usually think that the product information shared by other consumers who are closely related to themselves is more reliable [54]. They tend to accept the information from this source to improve the understanding of products and increase their product knowledge. Therefore, the social interaction between consumers has a significant effect on the accumulation of consumer knowledge. Thus, the hypothesis is proposed as follows:

Hypothesis 3 (H3a). *Social interaction has a positive effect on consumer knowledge.*

Social interaction creates the conditions for forming a close relationship between consumers. Tomazelli et al. [48] claimed that social interaction enhanced mutual understanding and improved the strength of relationships between consumers. The more frequent social interaction between consumers is, the more opportunities consumers have to communicate with other consumers [29]. It promotes mutual understanding and establish strong ties. The relationship between consumers has an important influence on establishing consumer trust [12]. Close relationship promotes information sharing and accepting between consumers. It helps consumers better understand the products and create trust [32]. In the network community, the social interaction between consumers is frequent, and the close relationship established by social interaction greatly affects consumer trust. Wei et al. [45] pointed out that the close relationship improved the accuracy of consumers' information acquisition. When the relationship between the recommender and the receiver is close, the recommender knows better about the receiver's needs and is willing to actively recommend or share accurate information [55]. The kind of information provided by familiar consumers is of a greater value. Consumers can easily accept the shared or recommended information and construct trust in products [56]. Therefore, social interaction improves consumers' acceptance of product information through relationships, establishing trust in products. Social interaction can promote consumer trust. Through analysis, the hypothesis is shown as follows:

Hypothesis 3 (H3b). *Social interaction has a positive effect on consumer trust.*

3.2.4. Consumer Knowledge and Repetitive Purchase

The consumer knowledge directly affects their purchase decisions and purchase behaviors. Xiang et al. [10] believed that consumers' knowledge was the most important consumer purchase drive in the service industry. There is a positive relationship between consumer knowledge and repetitive purchase. Other scholars further proposed that knowledge support was a reversal mechanism, which could help consumers evaluate their purchase decisions once again and even develop better evaluation results than before. Van Tonder et al. [54] pointed out that increasing product knowledge enables consumers to deal with purchase decisions rationally, seriously consider the purchase process and results, and develop higher purchase satisfaction to stimulate repetitive purchases. Chang et al. [1] thought that the acquired product knowledge could persuade consumers to tolerate a certain degree of product problems, reduce their purchase expectations, and make higher purchase evaluations to arouse repetitive purchases. Brack & Benkenstein [57] claimed that the acquisition of product knowledge was also a kind of help-seeking, which helped consumers deepen their understanding of the products. Jaakkola & Alexander [58] found that increasing product knowledge could adjust consumers' product expectations, trigger consumers' positive emotions, obtain a pleasant purchase experience, and then conduct dissatisfactory consumer repetitive purchases. Thus, the hypothesis is put forward as follows:

Hypothesis 4 (H4). *Consumer knowledge has a positive effect on repetitive purchase.*

3.2.5. Consumer Trust and Repetitive Purchase

There is a close relationship between consumer trust and purchase behaviors. Napoli et al. [59] verified that consumer trust was the key factor in determining online shopping intention. Consumer trust could reduce perceived risk to promote consumers' purchase intention. Hsu et al. [60] found that others' information recommended or shared experience could increase consumers' trust in products, and the accumulated trust would improve consumers' willingness to have repetitive purchases. Gautam [61] discussed how emotional support affected consumer behaviors in the online brand community and found that consumer trust had a significant positive effect on consumers' repetitive purchases. Giovannini et al. [62] further pointed out that consumer trust could reduce the uncertainty in purchasing decisions. High trust means that consumers believe in their own purchase decisions, which enhances consumers' repetitive purchases [22]. In network communities, consumer-to-consumer interaction is a kind of communication behavior with mutual help. Through information exchange and social communication, consumers can further understand the products, establish trust in products, and then stimulate dissatisfied consumers' repetitive purchases [52]. Therefore, the hypothesis is put forward as follows:

Hypothesis 5 (H5). *Consumer trust has a positive effect on repetitive purchases.*

4. Research Methods

4.1. Sample

After the initial scale was formed, two e-commerce professors and a marketing professor reviewed the measurement variables carefully and provided feedback on each item's clarity and length. Referring to professors' comments, the scale was revised to further improve the items' language expression. To ensure the measurement scale's reliability, 40 users from network communities were invited to participate in an offline test. According to the test results and respondents' suggestions, the scale was amended again. After repeatedly refining, a formal questionnaire was formed. The formal questionnaires were distributed on the Internet, and the objects were users with dissatisfied purchase experience in WeChat. In the survey, the links of the questionnaire were sent to these network communities that investigation team members and their friends have joined in WeChat, and users were invited to fill in the questionnaires. Meanwhile, these users were informed to continue sharing the links to other network communities they have joined, inviting more respondents to participate in the survey. The network communities and users were all selected at random to avoid the sample selection bias. The respondents were informed of the survey's purpose and explained the network community's concept through some examples before they started the questionnaires. To encourage the respondents to actively participate in the survey, a certain amount of gift coupons was sent after completing the questionnaire. Besides, to ensure the survey's quality and obtain valuable data, the respondents were required to confirm whether they have had dissatisfied purchase experience in the past six months before filling in the questionnaire. Those without relevant experience would automatically terminate the survey. In addition to the answers, the questionnaires also recorded the time spent by the respondents. To prevent the repetitive submission of questionnaires from affecting data authenticity, each user could only participate in the survey once by a technology application. The survey lasted for about four weeks. A total of 351 questionnaires were collected, 23 invalid questionnaires were excluded because of missing items, contradictory answers, and a short time. Finally, 328 valid questionnaires were obtained. The demographics of the survey respondents are shown in Table 1. Among the respondents, the proportion of males and females is 46.90% and 53.10%, respectively. The vast majority of the respondents are between 20 and 45 years old, accounting for 88.72%. The samples are characteristics of youth. The persons in this age stage are fond of online shopping, mature in mind, and can correctly judge the perceived value. Over 62% of respondents had obtained a bachelor's degree or above, with high education levels and knowledge levels. They accurately understood the items and correctly evaluated their

own experience, ensuring the survey's accuracy. Moreover, 74.39% of the respondents used the network community for more than 3 years and had rich experiences using the social network. About 77% of respondents had online purchase experience for 3 years or more. Most respondents were familiar with network applications, ensuring the survey quality. On the whole, the samples were representative.

Table 1. Demographics of the survey respondents.

Demographic Categories	Range	Frequency	Percentage (%)
Gender	male	154	46.90
	female	174	53.10
Age	under 20	28	8.54
	20–29	69	21.04
	30–35	125	38.11
	36–45	97	29.57
	more than 45	9	2.74
Education level	college/high school	81	24.70
	university	135	41.16
	postgraduate study	69	21.04
	other	43	13.11
Length of network community use	<1 year	22	6.71
	≥1, <3 years	62	18.90
	≥3, <5 years	141	42.99
	≥5 years	103	31.40
Length of online shopping	<1 year	26	7.93
	≥1, <3 years	49	14.94
	≥3, <5 years	157	47.87
	≥5 years	96	29.27

4.2. Measurement

To ensure the measurement tools' content validity, each construct's items referred to the mature measurement scales in the existing literature. According to the network community situation and Chinese culture characteristics, each item was modified to meet our work. For example, consumer-to-consumer interaction was divided into information interaction and social interaction [3]. Information interaction was measured using items adapted from several studies [63,64]. Social interaction was measured using items adapted from several studies [23,65]. Information interaction consists of four items, and social interaction is also composed of four items. Consumer knowledge was developed by modifying and amalgamating some items from these studies [8,66], composed of three items. Consumer trust was measured using some items adapted from several studies [67,68], composed of four items. Repetitive purchases was developed by modifying and amalgamating some items from these studies [69,70], consisting of three items. For all items, a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5) was employed. Table A1 in Appendix A shows the final measurement items.

5. Data Analysis and Results

A structural equation model (SEM) was used to analyze data in the present study. The covariance-based SEM was selected for several reasons. First, SEM highlights exploration and prediction. It is capable of handling multifaceted models and concurrently reduces the requirements with regard to data and the specification of relationship. Second, SEM is suitable for explaining complex relationships and is also better in terms of serving exploratory and predictive goals. Third, SEM is appropriate to test new models and theories as it can be used for both exploratory and confirmatory studies. Given that the present study was exploratory in nature, and was designed to test a proposed model, the covariance-based SEM was the appropriate approach for this study. Following the two-step approach recommended by Anderson & Gerbing [71], we first examined the measurement model to verify the scale's reliability and validity and then evaluated the structural model.

AMOS 24.0 was used to estimate both the measurement and structural models [72]. The normality of samples is an important assumption for covariance-based AMOS estimation, so we first examined the skewness and kurtosis of the data to estimate samples' normality in AMOS 24.0 [73]. The skewness values of items are between 0.203 to 2.334, which were within the threshold of 3.0. The kurtosis values of items ranged from 0.314 and 5.347, which were also within the threshold of 8 [74]. Therefore, the samples were accepted as fulfilling the assumption of normality.

5.1. Assessment of the Measurement Model

In the present study, SPSS 24.0 and AMOS 24.0 were used to test the reliability and validity of the scale. Cronbach's coefficient (Cronbach's α) and composite reliability (CR) were used to evaluate scales' reliability [75]. The results are shown in Table 2. In each construct, values for Cronbach's α ranged from 0.803 to 0.907, and values for composite reliability ranged from 0.812 to 0.891, which were all above the suggested threshold of 0.7. This indicated that the scale had good reliability [75]. Convergent validity was confirmed by examining both the indicator loadings and average variance extracted (AVE). Table 2 shows that the standard loadings ranged from 0.692 to 0.903, which was above the desired threshold of 0.6. The average variance extracted (AVE) ranges from 0.591 to 0.673, which was more than the suggested level of 0.5. It showed good convergent validity [75]. The test results of discriminant validity are shown in Table 3. The minimum in square roots of AVEs was 0.769, and the maximum in correlation coefficients was 0.562. AVE's square root exceeded the off-diagonal correlations between the constructs, demonstrating that the scale had good discriminant validity. Since each item for constructs referred to mature scales in previous research, modified according to the actual situation, and revised again after prediction, the scale's content validity could be ensured.

Table 2. Reliability and validity analysis.

Latent Variable	Item	Standard Loading	CR	Cronbach's α	AVE
Information interaction, II	II1	0.776	0.880	0.876	0.646
	II2	0.826			
	II3	0.811			
	II4	0.802			
Social interaction, SI	SI1	0.820	0.861	0.803	0.607
	SI2	0.747			
	SI3	0.758			
	SI4	0.789			
Consumer knowledge, CK	CK1	0.795	0.812	0.907	0.591
	CK2	0.692			
	CK3	0.814			
Consumer trust, CT	CT1	0.763	0.891	0.812	0.673
	CT2	0.903			
	CT3	0.822			
	CT4	0.786			
Repetitive purchase, RP	RP1	0.767	0.819	0.894	0.603
	RP2	0.698			
	RP3	0.857			

Table 3. Discriminant validity test.

Variable	II	SI	CK	CT	RP
II	0.804				
SI	0.478	0.779			
CK	0.465	0.433	0.769		
CT	0.523	0.484	0.562	0.820	
RP	0.356	0.368	0.455	0.536	0.777

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

Because the present study used questionnaires to collect data, each questionnaire was completed by an individual. Thus, it may have had a potential common method bias problem. To avoid the influences of the common method bias on the research results, this study used two methods to test the data to verify whether there was a common method bias in the measurement data. The first method was to observe the correlation coefficients between latent variables [76]. If the correlation coefficient between potential variables was more than 0.9, it indicated that there was a serious common method bias. In contrast, if the correlation coefficient between potential variables was less than 0.9, the common method bias was not obvious and it was acceptable. In Table 4, the correlation coefficient between latent variables ranged from 0.356 to 0.562, which was far less than 0.9. This indicates that the quality of the measurement data was good. The second method was Harman's single-factor test, which was carried out as an exploratory factor analysis on all potential variables [77]. If the first factor's variance interpretation rate before rotation was more than 50%, it indicated that the common method bias was serious. If less than 50%, it was acceptable. SPSS 24.0 was used to conduct exploratory factor analysis on all measurement items. The results show that five factors were extracted from the data. The first factor only explained about 38.46% of variance before rotation, which was less than 50%. There was no single factor extracted, and most of the variance was explained by one factor. The test results via two methods show that the data was not seriously influenced by the common method bias, so the next step of data analysis could be carried out.

Table 4. Measures of the model fit.

Fit index	χ^2/df	RMSEA	CFI	TLI	SRMR
Recommended range	<3	<0.080	>0.900	>0.900	<0.100
Model value	2.534	0.061	0.905	0.916	0.075

Note: χ^2 : chi square value; df: degree of freedom; RMSEA: root mean square residual; CFI: comparative fit index; TLI: Tucker-Lewis index; SRMR: standardized root mean square residual.

5.2. Assessment of the Structural Model

To verify the influence of information interaction on social interaction, the influences of consumer-to-consumer interaction on consumer knowledge and trust, and the influences of consumer knowledge and trust on repetitive purchases, the structural model was tested by AMOS 24.0. First, we estimated the model fit; the model fit indices' actual and recommended values are listed in Table 4. The model's fit indices were better than the recommended thresholds, demonstrating a good fit between the model and data. Next, path analysis was carried out. Second, we estimated the hypotheses. The results are shown in Figure 2. Information interaction had a significant positive effect on social interaction ($\beta = 0.341$, $p < 0.01$), and H1 was verified. Information interaction had a significant positive effect on consumer knowledge and trust ($\beta = 0.375$, $p < 0.001$; $\beta = 0.239$, $p < 0.05$), respectively, and H2a and H2b were verified. Social interaction had no significant effect on consumer knowledge ($\beta = 0.104$, $p > 0.05$), providing no support for H3a. Social interaction had a significant positive effect on consumers' trust ($\beta = 0.352$, $p < 0.001$), and H3b was verified. Consumer knowledge and trust had a significant positive effect on repetitive purchases ($\beta = 0.368$, $p < 0.001$; $\beta = 0.271$, $p < 0.01$), respectively, and H4 and H5 were verified.

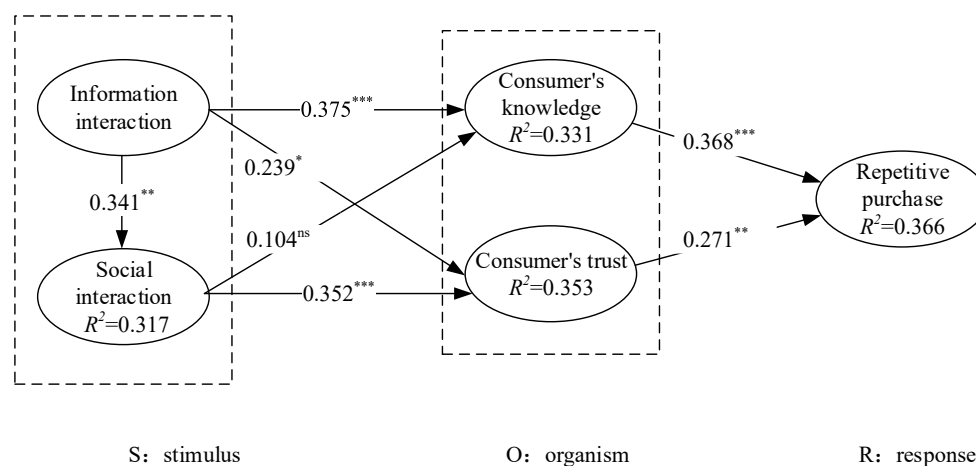


Figure 2. Results of the research model tests. Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ns: nonsignificant at the 0.05 level

Regarding the R^2 value for each endogenous variable, information interaction explained 31.7% and 33.1% of the variance in social interaction and consumer knowledge, respectively. Information interaction and social interaction explained 35.3% of the variance in consumer trust. Consumer knowledge and trust explained 36.6% of the variance in repetitive purchases.

5.3. Mediating Effect

Consumers' knowledge and consumer trust are the key factors between consumer-to-consumer interaction and repetitive purchases. To clarify the internal mechanism, this study further tested their mediating role in the model. This study used the hierarchical regression in SPSS 24.0 (IBM, Armonk, NY, USA) to test the mediating effect of consumer knowledge and trust [78]. The test results are shown in Table 5. Consumer knowledge and trust played a partial mediating role between information interaction and repetitive purchases. Information interaction not only directly affected dissatisfactory consumers' repetitive purchases but also indirectly affected dissatisfactory consumers' repetitive purchases through consumer knowledge and trust. Because social interaction had no significant effect on consumer knowledge, consumer knowledge did not play a mediating role between social interaction and repetitive purchases. In contrast, consumer trust played a complete mediating role between social interaction and repetitive purchase. Social interaction only indirectly affected dissatisfactory consumers' repetitive purchases through consumer trust.

Table 5. Results of the mediating effect test.

Variable	CK		CT		RP		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
II	0.382 **	0.274 *	0.307 ***		0.258 ***		0.237 ***
SI	0.116 ns	0.366 ***	0.249 **		0.213 *		0.198 ns
CK				0.377 ***	0.334 **		
CT						0.348 **	0.247 ***
R^2	0.271	0.342	0.339	0.311	0.353	0.308	0.264
Adjusted R^2	0.263	0.333	0.329	0.302	0.347	0.297	0.255
F	13.512 **	20.779 ***	17.102 ***	15.912 ***	23.804 ***	14.012 ***	12.603 ***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ns: nonsignificant at the 0.05 level.

6. Conclusions

6.1. Discussion of Findings

Through analysis, some interesting findings were concluded as follows:

1. Consumer knowledge and consumer trust has significant positive effects on dissatisfaction with consumers' repetitive purchase. We showed here that increasing consumer knowledge and trust could stimulate dissatisfaction with consumers to make repetitive purchases in consumer-to-consumer interaction [79]. Judging from the path coefficient, the influence of consumer knowledge on repetitive purchases was more than that of consumer trust. It means that dissatisfactory consumers' repetitive purchases was more easily affected by the accumulated consumer knowledge. This result may be caused by consumers' experience. Due to post-purchase experience, dissatisfactory consumers can become more cautious when making repetitive purchases, as decision-making is more dependent on accumulated knowledge. They try to collect more product information and evaluate the products carefully to reduce purchase uncertainties, showing dissatisfactory consumers' rationality in the repetitive purchases. The present result still provides new insights into the interpretation of consumers' repetitive purchases decision-making in a special environment and can enlighten sellers on how to retain the consumers to the greatest extent.
2. Information interaction has a significant positive effect on social interaction. This means that consumers' information exchange will improve mutual understanding and form a close relationship, and social interaction will become more frequent [28]. Information interaction has a significant positive effect on consumer knowledge, while social interaction has no significant effect on consumer knowledge. Information interaction and social interaction have significant positive effects on consumer trust, respectively. In detail, between information interaction, as well as consumer knowledge and trust, the influence of information interaction on consumer knowledge was more than that of consumer trust through the comparison of path coefficients, indicating that information interaction had more of a contribution to increase consumer knowledge. Between information interaction, social interaction and consumer knowledge, information interaction had a significant effect on consumers' knowledge. In contrast, the influence of social interaction on consumers' knowledge was not significant, which further indicated that the accumulation of consumer knowledge was more dependent on information exchange between consumers [80]. Consumer knowledge generated from the in-depth understanding of the products and information exchange improved dissatisfactory consumers' understanding of products. Between social interaction, consumer knowledge and trust, social interaction only significantly affected consumer trust, which indicated that the mutual communication between consumers could promote the formation of dissatisfactory consumer trust. Between social interaction, information interaction, and consumer' trust, the influence of social interaction on consumers' trust was greater than that of information interaction by comparing path coefficients. It further indicates that the establishment of consumer trust is mainly related to the mutual relationship between consumers [81]. Strong ties are easy to change dissatisfactory consumers' original attitudes and develop consumer trust again. Obviously, it can be inferred that dissatisfactory consumers have some preferences in relying on interaction to obtain consumer knowledge and establish consumer trust in network communities. The accumulation of consumer knowledge depends on information interaction to a greater extent, indicating dissatisfactory consumers' rational cognition. The establishment of consumer trust tends to rely on social interaction, indicating dissatisfaction with consumers' perceptual cognition.
3. Consumer knowledge plays a partial mediating role between information interaction and repetitive purchase, while there is no mediating effect between social interaction and repetitive purchase. This may be why the dissatisfaction of consumers in acquiring product knowledge is to find solutions to specific problems, emphasizing

practicability, and less involving emotional factors. However, social interaction affects emotional communication, which meets the psychological needs of consumers. The two functions are not consistent, so consumer knowledge does not produce a mediating role between social interaction and repetitive purchases [82]. Consumer trust plays a partial mediating role between information interaction and repetitive purchases while playing a complete mediating role between social interaction and repetitive purchase. It may be because consumer trust is an emotional compensation for product perception. Social interaction can increase emotional communication between consumers and make up for dissatisfactory consumers' negative purchase experience [42]. Hence, the mediating role of consumer trust is more obvious, which completely mediates the influence of social interaction on repetitive purchases.

6.2. Contributions and Implications

6.2.1. Theoretical Contributions

This study tested the influence of consumer-to-consumer interaction on dissatisfactory consumers' repetitive purchases in the network communities and reveals the internal mechanism. The theoretical contributions mainly focused on the following three aspects:

1. Some previous studies focused on the influences of product attributes and consumers' perceived value on consumers purchase. In contrast, the present study further expanded to consumer-to-consumer interaction's influences on consumers purchase. This study selected dissatisfactory consumers as the research object and verified that consumer-to-consumer interaction positively affected dissatisfactory consumers' repetitive purchase. This showed that some other factors without product attributes and perceived value affected dissatisfactory consumers' purchase decision-making. Consumer-to-consumer interaction could change dissatisfactory consumers' original attitudes and stimulate repetitive purchase. The research further enriched consumers' purchase behaviors theoretically.
2. Some key variables that affect consumers' purchases were identified, and some conclusions were drawn. It is generally believed that individual relationships are an important antecedent variable to determine individual behaviors in the traditional environment. While consumer relationships are often weak in network communities, whether consumers conduct repetitive purchases depends on actual needs, not their relationship. However, the present study finds that consumer purchases are still affected by the relationship between consumers in network communities. Social interaction affects consumer trust and dissatisfactory repetitive purchases. This result is different from previous research results [20,21], which may be because some network communities are the extension of a real relationship in this study, reflecting the characteristics of a strong connection between consumers.
3. Taking consumer knowledge and trust as intermediary variables, the present study constructed a model of how consumer-to-consumer interactions influence dissatisfactory consumers' repetitive purchases, thus verifying the mediating effect of the two variables. It clearly revealed the internal mechanism of consumer-to-consumer interactions and how they influence dissatisfaction with repetitive purchase, deepening the research on consumers' purchase decision-making in a virtual environment.

6.2.2. Managerial Implications

The theoretical analysis and empirical results also have practical implications:

1. For the positive effect of information interaction on consumers' knowledge and consumer trust, community managers should encourage consumers to share rich and authentic product information to improve consumer-to-consumer interaction. In detail, community managers should instruct sharers to effectively integrate the information form with content, choose the appropriate information expression according to targeted objects, and improve the acceptance of information. Besides, community managers may put some high-quality information shared by consumers at the top

and encourage consumers to share information through publicity. The community managers still need to change consumers' autonomous information sharing into semi-open information sharing to improve the shared information quality. According to the semi-open questions, consumers describe the product attributes or purchase experience point-by-point. Of course, community managers can also use big data technology to analyze consumers' preferences and provide customized information. It can accurately send the relevant information to consumers to ensure that the information content is consistent with consumer needs. This information may increase consumer knowledge and trust, deepen the understanding of products, and stimulate consumers' purchases.

2. Social interaction has a significant positive effect on consumer trust. Therefore, community managers need to create a supportive environment, improve the platform sociability. Setting some functions that fully reflect humanity cares can stimulate social interaction and promote consumers' trust. Besides, community managers can make a social recommendation based on consumers' social information, providing these consumers with a list of friends with common interests or similar preferences. The social recommendation can improve these consumers' familiarity, promotes social interaction between them. It will help consumers develop good interpersonal relationship, enhance consumers' trust, and then promote consumers' repetitive purchases intentions.

6.3. Limitations and Future Research Directions

As in the case of many empirical studies, the present study had some limitations. First, the present study only selected users in WeChat as the investigation object, then consumers' purchases were differently influenced in different kinds of network communities. For example, the online brand community, online shopping platforms, and so on. In these network communities, consumers' purchase is still easy to be influenced by the sellers, and the results may be different. Therefore, future studies should further explore consumer interaction's influence on dissatisfaction with consumers' purchase behaviors in a certain network community. Second, more questions were not provided in the questionnaire, and its structure might not have reflected the current state of the society fully, the results can be influenced. To evaluate the validity and correctness of distributed questioners accurately, future studies should enhance relevant evaluation scale, such as market specification, questioner state, and so on. Third, the present study does not distinguish the information content. It only explores the influence of information interaction on dissatisfactory consumers' repetitive purchases from positive information and does not consider negative information. The different information content may have different effects on consumers' purchase decision-making. In the future, the influences of different information should be studied separately. Fourth, the fuzzy linguistic methods in measuring information interaction and social interaction considering the advantage of fuzzy linguistic methods in expressing uncertainty of information interaction and social interaction, fuzzy linguistic methods will be introduced to measure information interaction and social interaction [83–85]. Fifth, the present study did not consider a specific type of products, consumers' responses to consumer-to-consumer interaction may vary from different products. Future studies should analyze consumer-to-consumer interaction's influence on dissatisfaction with consumers' repetitive purchases according to the specific products.

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Appendix A

Table A1. Instrument and measurement properties.

Construct	Item	Mean	Std Dev	Loading
Information interaction [63,64]				
II1	When I am not satisfied with the purchase, I will actively seek some product information from community members' communication.	3.68	1.13	0.776
II2	Product information from the network community is very helpful to evaluate my purchase decision-making again.	3.65	1.10	0.826
II3	When I am not satisfied with the purchase, I will release product information and purchase experience in the network community.	3.42	1.14	0.811
II4	When I am not satisfied with the purchase, I usually discuss the solutions with community members.	3.44	1.17	0.802
Social interaction [23,65]				
SI1	When I am not satisfied with the purchase, I will talk to other users in the network community.	3.71	1.12	0.820
SI2	I often discuss the dissatisfactory purchase with community members to obtain help.	4.02	1.18	0.747
SI3	I like to complain to some persons about my unpleased purchase experience in the network community.	3.49	1.06	0.758
SI4	I often communicate with some community members to eliminate dissatisfaction.	3.65	1.09	0.789
Consumer knowledge [8,66]				
CK1	I feel like I obtain more understanding of the products in community interaction.	3.55	1.15	0.795
CK2	I learned a lot about product knowledge from the network community.	3.61	1.12	0.692
CK3	I think that I can evaluate purchase behavior correctly with my knowledge and experience.	3.44	1.19	0.814
Consumer trust [67,68]				
CT1	I feel the quality of the products recommended by community members are reliable.	3.73	1.02	0.763
CT2	I believe in the information shared by other consumers in the network community.	3.58	1.07	0.903
CT3	I believe that most consumers are honest and trustworthy in the network community.	3.60	0.93	0.822
CT4	Consumers will think for my benefit in the network community.	3.76	0.95	0.786
Repetitive purchases [69,70]				
RP1	I will continue to buy this product if necessary.	3.75	1.14	0.767
RP2	I will probably continue to buy this product.	3.91	1.07	0.698
RP3	I'm going to continue to buy this product in the future.	3.81	1.15	0.857

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