

The influence of different types of satisfaction on loyalty on C2C online shopping platform: From the perspective of sellers and the platform

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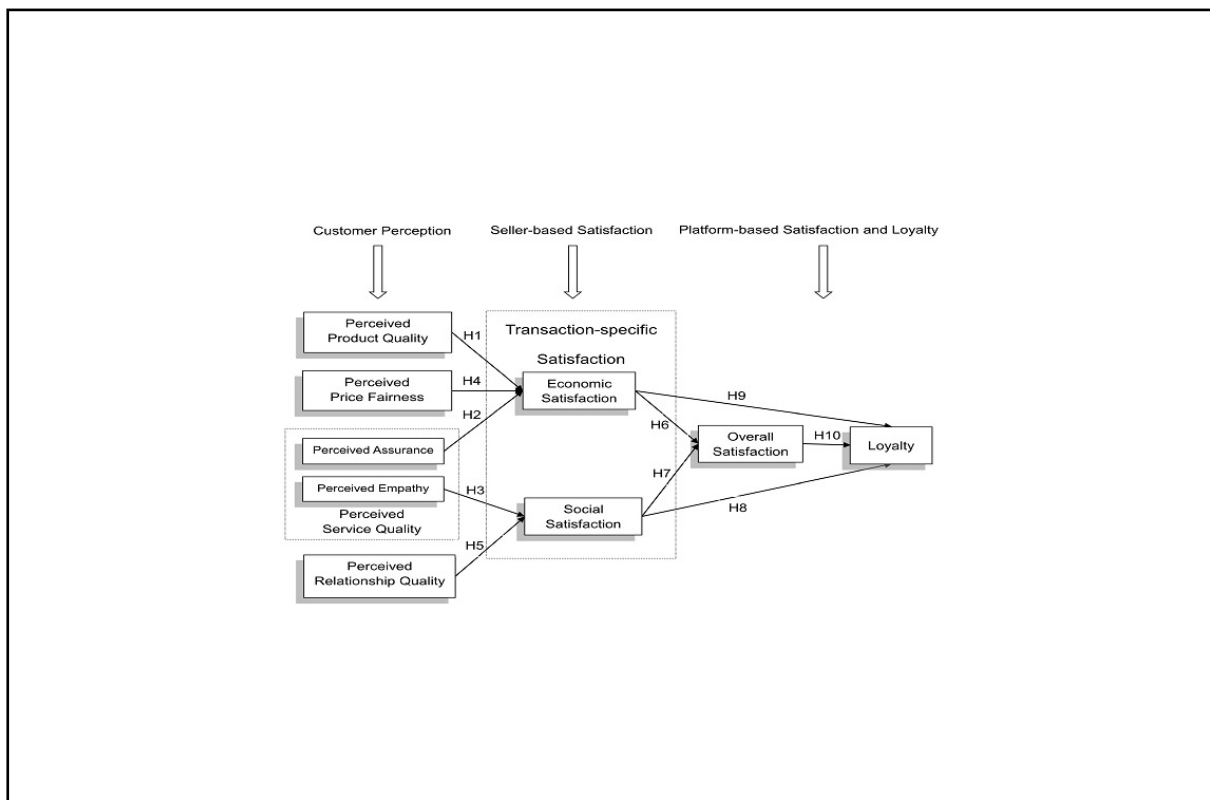
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Graphical abstract



The above figure summarizes the hypothesis test results of this study. Ten hypotheses are all supported.

Public summary

- Seller-based transaction satisfaction positively influences platform-based overall satisfaction and loyalty.
- We integrate the antecedents of satisfaction from a customer perception perspective into four dimensions based on product, service, price and relationship and find that the different dimensions have different associations with the economic and social satisfaction of sellers.
- For Chinese C2C buyers, in addition to economic aspects, social satisfaction and its antecedents are more important

factors that cannot be ignored for customer satisfaction.

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Supporting Information

Abstract: With the rise and development of major types of platforms, the competition for resources has become extremely fierce, and the market share of C2C platforms has been seriously threatened by the loss of resources. Therefore, building and maintaining buyers' satisfaction and loyalty to C2C platforms is critical to the survival and sustainability of C2C platforms in China. However, the current knowledge on how platform satisfaction and loyalty are constructed in the C2C e-commerce environment is incomplete. In this study, seller-based satisfaction and platform-based satisfaction are constructed separately. We further distinguish seller-based transaction satisfaction into economic and social satisfaction and explore their antecedents and consequences. To test our research hypotheses, we conduct a survey and collect data from a real online market (Taobao website). The results show that seller-based transaction satisfaction positively affects platform-based overall satisfaction and loyalty; perceived product quality, perceived assurance, and perceived price fairness all have a significant effect on economic satisfaction, whereas perceived relationship quality and perceived empathy significantly influence social satisfaction. These findings help us understand the literature related to customer satisfaction in the context of C2C in China and provide inspiration for online sellers and platforms.

Keywords: transaction-specific satisfaction; social and economic satisfaction; various antecedents of satisfaction; overall satisfaction; C2C online shopping platform

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1 Introduction

With the boom in e-commerce, C2C platform providers are facing stiff competition. Their websites are easily imitated, and conversion costs are insignificant for their members^[1]. According to two recent reports (iResearch.cn,^① 2016, ^② 2020), China's online shopping market from the beginning of C2C leading the market to B2C accounted for 51.9% of the annual rate for the first time more than C2C in 2015, and then to the period from 2018 to 2020 when B2C steadily exceeded the C2C market by more than 10%, C2C platform providers are under serious threat. Therefore, building and maintaining buyers' satisfaction and loyalty to C2C platforms is critical to the survival and sustainability of C2C platforms in China.

In the era of relationship marketing, customer satisfaction is considered one of the key success factors^[2,3]. Prior research has shown that satisfied customers are characterized by high rewards and low risk and are more likely to lead to higher ratings and more cash flow, revenue, and market share than new

or potential customers^[4,5]. However, 99% of dissatisfied customers will never buy a company's product again, which means that improving customer satisfaction would be an efficient way to reduce customer dissatisfaction and churn^[6]. Understanding the antecedents of satisfaction is helpful to help sellers and platforms understand the formation of satisfaction to better meet the needs of customers in all aspects and improve customer satisfaction. Especially in low-margin and highly competitive e-commerce markets, where resources are usually limited, platforms or sellers must better understand which factors generate more revenue to achieve a differentiated competitive advantage.

Most prior e-commerce research has focused on business-to-consumer (B2C) platforms, while C2C platforms have been largely ignored^[7]. Existing knowledge of B2C satisfaction and loyalty may not be applicable due to the different environments and characteristics between B2C and C2C platforms. Specifically, in a B2C environment, online suppliers own their brands or eponymous stores, offer standardized products and quality, and engage in direct economic exchange with their customers^[8]. Online consumers can identify with the brand and create a strong and lasting connection with

① <https://report.iresearch.cn/content/2016/05/260788.shtml>.

② <https://report.iresearch.cn/content/2020/04/322029.shtml>.

the brand or store of the same name^[9]. In the C2C online trading environment, the platform only provides an intermediary platform for members to conduct transactions, and they do not hold their goods^[8]. Online sellers are relatively independent of the platform, with the characteristics of decentralized stores, a rich and diverse range of goods, and nonstandardized products and quality. Some scholars have noted that the C2C online environment can be riskier than B2C due to the difficulty of identifying the nature of anonymous traders^[10,11]. When members of one C2C platform switch to another C2C platform, they take with their goods and their network of relationships, which is the core competitive resource for C2C platform providers, i.e., the aggregation of individual buying and selling relationships^[8,12]. In contrast, B2C providers can still rely on their products as a key competency^[8].

The few studies on C2C loyalty have mostly focused on the overall satisfaction of the platform^[13], service quality^[14], and the quality of the website system^[15], mostly from a single perspective of the platform or sellers, but ignoring the cross-influence of sellers and the platform. The underlying reason is that previous literature has focused on the antecedents and consequences of customer satisfaction formation, while little attention has been given to the different perspectives and functions of satisfaction. Most scholars agree that satisfaction is a one-dimensional concept^[13], limiting our understanding of customer satisfaction. In a B2C and B2B context, the platform mainly selects brand owners and companies to be stationed for platform self-management, and the objects of specific transaction satisfaction and overall satisfaction are often measured for a firm^[16]. Nevertheless, in the context of C2C (for instance, Taobao and Xianyu), online sellers are relatively platform-independent and characterized by one-time transactions. Buyers form seller-based transaction satisfaction and platform-based overall satisfaction through multiple one-time transactions established with multiple sellers on the platform, respectively. In addition, in the C2C online shopping environment, the information and services provided by sellers are more prominent than in the B2C situation because of the nonbranded nature and the inability to experience them in offline physical stores. Consequently, Taobao, China's leading C2C shopping platform, may be affected by complaints from online buyers about the misconduct of online sellers. Therefore, in the context of C2C online shopping, it is necessary to distinguish between the specific transaction satisfaction of a particular online seller and the overall satisfaction of the platform.

Members are an important component of C2C platforms, and this study attempts to investigate the impact of seller satisfaction on platform satisfaction and platform loyalty from the seller's perspective. To better help C2C platform providers improve satisfaction and loyalty, we explore the antecedents affecting seller satisfaction in an attempt to provide suggestions and support for building features and better mechanisms for platforms to be more useful to sellers. Most previous studies of satisfaction antecedents, especially in C2C environments, have focused on a single antecedent, while the framework is not comprehensive. This paper aims to integrate several quality factors applicable to C2C platforms from

the perspective of perception for the following reasons. First, Molinari et al.^[17] proposed that objective quality does not exist because all quality is perceived by the consumer. Second, Howard et al.^[18] also argued that consumers' perception of quality varies from person to person. Moreover, it is the perception that influences the behavior, not the attribute itself^[18]. Previous studies have shown that perceived quality leads to customer satisfaction and distinguished perceived quality into perceived product quality and perceived service quality^[19]. However, in the context of C2C, in addition to products and services, price comparison behavior can easily occur^[20], and more direct communication behaviors between buyers and sellers occur compared to B2C^[8]. Some studies have considered the impact of perceived product quality, perceived service quality, and perceived price fairness on satisfaction^[21] but have neglected the more important factor of the relationship with the seller in the C2C environment. This study integrates four dimensions of perception based on product, service, price, and relationship as antecedents of satisfaction from the perspective of customer perception and the characteristics of C2C.

Similar to the previous arguments, it is crude to consider seller-based transaction satisfaction as a one-dimensional concept. Two different types of activities take place between buyers and sellers on the C2C platform: economic exchange and social interaction^[8]. Buyers evaluate not only the economic or instrumental outcome of the online transaction process but also the enjoyment of the social exchange with the seller^[22]. Moreover, relationships between buyers and sellers in C2C are much closer, and buyers' decisions are usually more dependent on interactions between buyers and sellers than in B2C and offline contexts. More importantly, the Chinese C2C market is highly socially oriented, and social relations between buyers and sellers are essential to maintaining online customers on the platform^[23]. Abu-ELSamen et al.^[13] noted that satisfaction can be assessed from economic and noneconomic perspectives. In our study, we classify specific transaction satisfaction into economic and social satisfaction based on the research of Dabholkar et al.^[24]. It is necessary to distinguish between these two types of satisfaction to help us understand more clearly how these antecedents affect platform satisfaction and loyalty by influencing different aspects of seller-based transaction satisfaction and to help us improve the effectiveness of satisfaction in long-term customer relationship management. The research questions are as follows:

(I) How would a buyer's social satisfaction and economic satisfaction affect overall satisfaction toward the platform?

(II) How would a buyer's social satisfaction, economic satisfaction, and overall satisfaction ultimately affect loyalty to the platform?

(III) What are the antecedents of social satisfaction and economic satisfaction for buyers, and how would these antecedents affect each type of satisfaction?

This study makes several important theoretical and practical contributions to the C2C e-commerce literature and satisfaction literature. First, we consider the characteristics of C2C platforms and explore the impact of seller satisfaction on platform satisfaction and platform loyalty from the seller's per-

spective, which extends the previous studies from a single perspective. Second, our study shows that economic and social satisfaction behave differently in terms of their association with antecedents, thus providing support for the validity of considering satisfaction as a two-dimensional construct in the C2C e-commerce environment. Moreover, this study first integrates four different types of satisfaction into a model. Third, we expand the perceived relationship quality to the previous antecedent model from the perspective of customer perceptions, taking into account the characteristics of the C2C environment, and explore the different effects of different dimensions on seller satisfaction, which helps sellers understand how to improve each type of satisfaction. Finally, understanding the relationships between various types of satisfaction and loyalty can give platform managers insights into how to better manage and retain online customers for long-term platform growth.

2 Literature review

2.1 Transaction-specific satisfaction and overall satisfaction

Jha et al.^[25] suggested that shopping satisfaction can be divided into transaction-specific satisfaction and overall satisfaction. Satisfaction refers to a customer's cognitive and affective state of fulfilment as a consequence of a purchase. Specific transaction satisfaction has been referred to as a kind of consumer dissatisfaction or satisfaction with a particular shopping experience, while overall satisfaction has been referred to as a kind of consumers' overall dissatisfaction or satisfaction with the organization based on all experiences and encounters^[25]. Therefore, overall satisfaction can be viewed as a set of previous instances of satisfaction based on a particular transaction^[1]. In addition, overall satisfaction is relatively stable compared to transaction-specific satisfaction.

A study by Jones et al.^[26] confirmed the difference between specific transaction satisfaction and overall satisfaction. Specifically, overall satisfaction has a direct effect on repurchase intention and moderates the relationship between specific transaction satisfaction and repurchase intention. Previous studies have also shown that without the concept of specific transaction satisfaction, the relationship between customer satisfaction and service quality is easily confused^[27]. Scholars further proposed in the conceptual model that service quality, product quality and price are all prerequisites for specific transaction satisfaction^[27].

However, most scholars studied a single overall satisfaction to conduct their research. Hult et al.^[11] explored the differences between the antecedents and consequences of satisfaction in online and offline environments and still adopted the overall customer satisfaction (ACSI) index. Moriuchi et al.^[28] studied the effect of different types of trust (toward the platform provider and the third-party seller) on satisfaction in the context of C2C e-commerce. However, satisfaction is still only measured as overall satisfaction with the C2C shopping experience.

2.2 Seller satisfaction and platform satisfaction

Previous scholars have studied the influence mechanism of

various antecedents on satisfaction under the background of e-commerce to improve customer satisfaction and loyalty. However, most previous studies focused on a single dimension, such as perceptual acquisition value^[29], service quality^[16, 30], customer engagement^[31], interaction^[32, 33], and website quality^[12, 34], without a comprehensive antecedent framework of satisfaction. Chen et al.^[12] explored the impact of website quality on customer satisfaction and repurchase intention in the context of C2C. It is worth noting that website quality can be controlled by sellers, so this study only considered the single perspective of sellers. In the C2C e-commerce environment, due to the relative independence of sellers and the platform, most scholars considered the influence of various antecedents on customer satisfaction and loyalty from the perspective of sellers and the platform but ignored that customers still generate satisfaction and loyalty to sellers and the platform, respectively. For example, Yen et al.^[14] integrated e-service quality from the perspective of the C2C website and online sellers and explored its impact on transaction satisfaction and loyalty. Chiou et al.^[30] explored the interaction between satisfaction and loyalty of different roles based on sellers and the platform. Their research has confirmed that seller-based loyalty increases website-based loyalty and in turn reduces it^[30]. This shows that the relationship between online sellers and the platform is not entirely interdependent and may even be competitive. However, the research of Chiou et al.^[30] was conducted in the context of online auctions. In the C2C online shopping context, the relationship between sellers and the platform, as well as their satisfaction influencing mechanism, is still unclear.

2.3 Social satisfaction and economic satisfaction

The concepts of social satisfaction and economic satisfaction have been proposed in B2B and B2C environments. Geyskens et al.^[35] conducted a meta-analysis of satisfaction and found that it is not a one-dimensional concept. Economic satisfaction has been described as an assessment of the economic results generated in the relationship. Economic satisfaction stresses the relationship between productivity, effectiveness, and financial results^[36]. Nevertheless, social satisfaction has been referred to as an assessment of the psychological aspects of the relationship, i.e., that the interaction with the object of exchange is satisfied and relaxed^[35]. Social satisfaction comes from the interpersonal level, with an emphasis on enjoying personal interactions^[36].

In previous studies, social satisfaction and economic satisfaction are mainly studied in the context of channel membership. Geyskens et al.^[35] pointed out two reasons for distinguishing them: first, the activities of channel members may generate economic satisfaction for their adversaries while undermining their social satisfaction, and vice versa. Second, these two different types of satisfaction have different impacts on channel members' coping strategies. They found that economic satisfaction increases loyalty, while social satisfaction decreases loyalty. Dabholkar et al.^[24] extended these concepts to the B2C online shopping environment and demonstrated that both economic and social satisfaction can lead to purchasing intention through commitment and trust. Chen et al.^[8] pointed out that buyers in C2C online shopping plat-

forms can obtain economic value and social support through social interaction. Chen et al.^[12] also distinguished social satisfaction and economic satisfaction in the context of C2C e-commerce. Although website quality has a positive effect on both economic and social satisfaction, repurchase intentions are mainly affected by economic satisfaction^[12]. These studies all demonstrated the validity of distinguishing between social and economic satisfaction in C2C contexts.

3 Theoretical model development

Before developing the hypotheses and as part of our preliminary research, we conducted a small-scale set of interviews with online buyers from Taobao to understand the research context and research topic more clearly. We interviewed 30 buyers, all of whom had previously engaged in at least three successful transactions on Taobao, to ensure their familiarity with the Taobao context. Each interview lasted 10 to 30 minutes. The interviews are conducted online using WangWang, a proprietary instant messaging tool specifically designed for and mainly used by sellers and buyers on Taobao. Past research and related statistics show that more than 95% of transactions are facilitated with WangWang. We ask open questions about satisfaction formation during transactions. Answers from online buyers are coded following open coding techniques, classifying textual answers from buyers into different factors. After open coding, we used axial coding to group the concepts into similar themes. The coding results of these interviewees are shown in Table 1. Due to space constraints, more complete coding results can be seen in Appendix S2. In addition, the demographic information of these interviewees is displayed in Appendix S1. See the Supporting Information.

According to the interview coding results, we can find that, first, interviewees evaluate and measure their evaluation

based on their own perception standards, and the level of such perception quality may vary from person to person. This also proves the rationality of our choice of perceptual perspective. Second, most respondents mainly care about product/service/price/relationship quality when shopping on the Taobao platform. On the one hand, when these kinds of perceived quality are good, online buyers are more satisfied; on the other hand, when these kinds of perceived quality are poor, online buyers are deeply dissatisfied. Finally, the theoretical framework accepted by most marketing researchers is that perceived quality (rather than objective quality) leads to satisfaction, especially when perceived quality is framed as a specific belief assessment and satisfaction as a more general assessment^[37]. According to the interview results, we can also find that the interpersonal level/benefit level of seller satisfaction is one of the aspects of the seller-based overall evaluation, which can be predicted from quality belief as a component of evaluation cognition. Therefore, we propose perceived product quality, perceived service quality (perceived assurance and perceived empathy), perceived price fairness, and perceived relationship quality with sellers as antecedents of seller-based satisfaction in the C2C context based on the perspective of customer perception. In this study, we combine the specific transaction satisfaction evaluation model from Parasuraman et al.^[27], as well as the transaction-specific satisfaction and overall satisfaction framework from Zhao et al.^[38] to study the relationships between economic satisfaction, social satisfaction, overall satisfaction, and loyalty.

3.1 Perceived product quality and seller satisfaction

In our study, we employ perceived product quality, which has been referred to as the consumer's judgment of the overall excellence or superiority of the product^[39]. Previous studies have confirmed that perceived product quality has a positive impact on satisfaction^[39]. For C2C e-commerce platforms, sellers

Table 1. Interview coding results.

Quotations	Open coding	Axial coding
<i>"When I want to buy a product on Taobao platform, I often look at the reviews of other buyers while browsing the product details to learn as much as possible about the possible effectiveness of the product, and if there are many bad reviews, I will remain sceptical about the quality of the product and may not buy it. Even if I get enough information on Taobao platform, such as the store has high praise, I will go and feel for myself whether the product is consistent with the seller's description after I receive it."</i>	Buyers in prepurchase based on the seller's product details, other buyers' evaluation information and their own real touch or try to feel the quality of the product when they receive the goods after purchase.	Perceived product quality
<i>"After browsing the product details, I still have some questions that need to ask the seller, the seller's answers at this time will greatly reduce my doubts, thus enhancing my confidence to buy this product."</i>	The seller has enough knowledge to answer buyer's questions about the product.	Perceived Service Quality (Perceived Assurance)
<i>"When I ask the seller which color is better for this item, the seller not only tell me which one sells more but also his personal preference. This thoughtful behavior will make me feel that this seller is like a friend for me to refer to the color choice, which greatly enhances my presence."</i>	The seller will offer me advice like a friend.	Perceived relationship quality
<i>"When I choose the return service, the seller will take the initiative to prompt me that the store can make up the difference in shipping insurance. This makes me feel that the seller would rather pay the shipping cost themselves than let me suffer, and I feel that this seller is looking out for me."</i>	The seller will put himself in my position and look after my interests.	Perceived Service Quality (Perceived Empathy)
<i>"I will perceive for myself whether the quality of the product is worth the price. Through the price of the product quality, I will have an expectation. I will test whether the product meets the expectations and the cost is proportional when I receive it. These will determine whether the business is false propaganda."</i>	The quality of the product is worth the price.	Perceived price fairness

mainly meet the needs of consumers by providing products. After a buyer receives the product and finds that the quality meets his/her expectation, he/she will probably recognize a seller's effort and then enhance his/her sense of economic satisfaction with the transaction. Usually, perceived product quality is the central factor in a buyer's judgment of a successful transaction, i.e., whether they actually bought the right product. Moreover, C2C markets are riskier than B2C markets because of the "physical separation and anonymity of traders"^[10]. Hence, the final perceived product quality judged by the buyer would be important to reduce buyers' perceived risk in C2C markets, and we hypothesize the following:

H1. Perceived product quality will positively affect economic satisfaction.

3.2 Perceived service quality and seller satisfaction

Quality evaluation antecedents include a mixture of product (tangible) and service (intangible) characteristics^[27]. The quality of the seller's service as perceived by the consumer throughout the transaction also affects satisfaction^[40]. Sellers' familiarity with the product (e.g., perceived assurance) and concern for the buyer (e.g., perceived empathy) are especially important, which are also two vital aspects of perceived service quality. Assurance has been considered to be the knowledge acquired by employees as well as the ability to inspire trust and competence in customers, while empathy has been referred to as the personalized care and attention that a company provides to its customers^[41]. In the C2C online shopping platform, there is a lag between a transaction and a product being received by a buyer. During an online transaction, the buyer can obtain information about the product by browsing the product details or asking the seller. After the purchase, the seller is required to deliver the product and is responsible for any problems after the sale. Sellers with sufficient expertise in the product can promptly answer buyers' questions, such as whether this product is suitable for this buyer or not. Through interactions between buyers and

sellers, buyers can easily determine whether the seller is familiar with the product or not, which can lead to confidence in the transaction. Finally, sellers' experiences and knowledge can help buyers make the right purchase decisions. Thus, the economic satisfaction of online buyers comes from the quality of sellers' tangible products and intangible services (i.e., the seller's assurance). At the same time, sellers provide personalized care and attention during the exchange between buyers and sellers so that buyers feel they are noticed and receive personal attention, which in turn enhances their emotional trust and satisfaction. Care and attention as a form of empathetic relationship, these concerned behaviors of the seller can increase the social satisfaction of the buyer.

Dabholkar et al.^[24] proposed that economic satisfaction is related to rational factors such as cognitive trust and calculative commitment, while social satisfaction is related to emotional factors such as affective trust and affective commitment. Similarly, assurance is associated with the rational aspect of economic satisfaction, whereas empathy is associated with the emotional aspect of social satisfaction. We propose the following hypothesis:

H2. Perceived assurance will positively affect economic satisfaction.

H3. Perceived empathy will positively affect social satisfaction.

3.3 Perceived price fairness and seller satisfaction

It has been proposed that customer satisfaction results from evaluating the rewards and sacrifices that occur after the transaction. According to this logic, price is regarded as a crucial attribute in evaluating satisfaction from a sacrificial point of view^[29]. Sun et al.^[40] considered that price fairness plays a vital part in online retail platforms because price cues are more easily relied upon by buyers, while products are unavailable to be tested. Price has proven to be a substantial factor that cannot be ignored in the C2C shopping context. A prior study demonstrated that price is the primary factor influ-

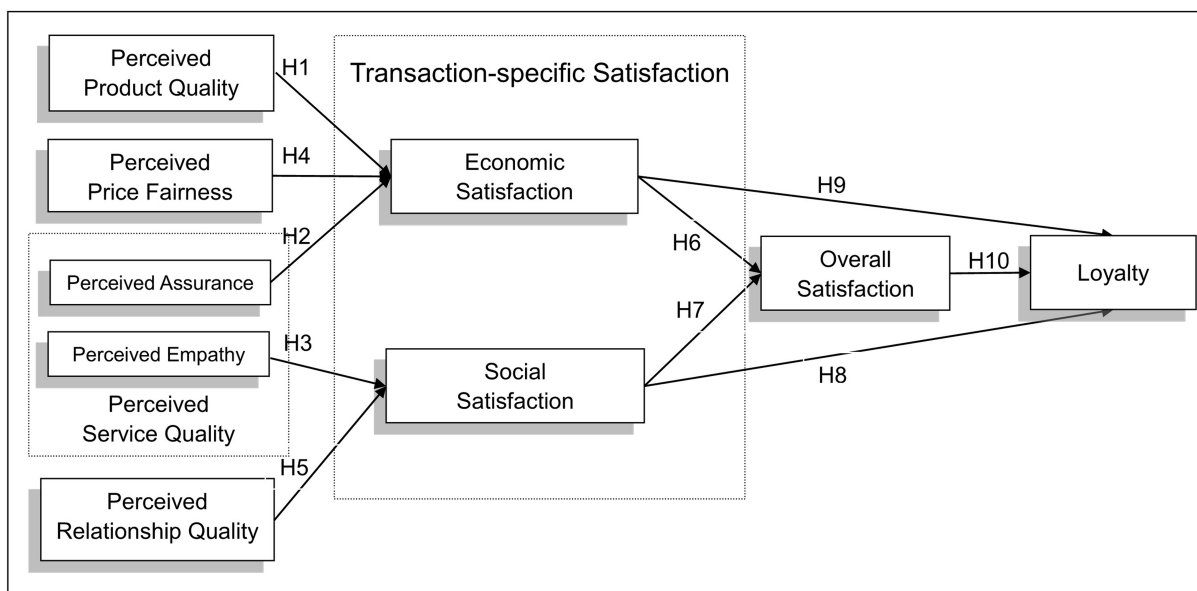


Fig. 1. Research model.

encing C2C online buyers to choose a seller^[42]. One of the major advantages of online shopping is low prices. Pandey et al.^[20] considered that lower prices allow customers to benefit from a superior choice, leading to greater customer satisfaction. Bolton et al.^[43] proposed that price, as one of the most important website attributes, can lead to overall site satisfaction. Some scholars have also proven that price positively affects specific transaction satisfaction^[44]. As price has the most significant economic characteristics, we hypothesize the following:

H4. Perceived price fairness will positively affect economic satisfaction.

3.4 Perceived relationship quality and seller satisfaction

With the rise of the concept of relationship marketing, the focus of companies has gradually shifted from basic product quality to customer relationship management. Perceived relationship quality has been defined as the extent to which a relationship meets the needs of the customer associated with the relationship^[45]. However, unlike traditional offline relationships, buyers in online markets usually do not want to spend a long time building a deep relationship with sellers, especially individual sellers who offer nonstandardized products and services^[22]. Since most transactions on C2C platforms are one-time, the social relationship between buyers and sellers tends to be a kind of swift relationship, which can lubricate online transactions. This swift relationship has been defined as the buyer's perception of a rapidly forming interpersonal relationship with the seller, including mutual understanding, reciprocal benefit and relationship harmony^[22]. C2C platform providers provide instant messaging, message boxes and other functions to enhance the communication and stickiness between buyers and sellers. In this context, the effective use of communication functions by sellers can build swift relationships with buyers by enhancing their interactivity and presence, bridging their distance, and further enhancing emotional pleasure and satisfaction. Especially in China, interpersonal relationships dominate social life; they are a key component of transactions between buyers and sellers^[46]. It has been pointed out that relationships are considered personal and specific, which applies to the C2C online shopping environment because most sellers on C2C platforms communicate directly with their buyers^[47]. Research shows that the quality of the buyer–seller relationship constitutes an important prerequisite for customer satisfaction^[5, 48]. Ashnai et al.^[49] demonstrated how successful relationships could facilitate information sharing and bring additional benefits. Huang et al.^[13] indicated that social relationships have a stronger impact on loyalty than transactional services, suggesting that successful relationships lead to greater social satisfaction. Previous research has suggested that a kind of emotional bond exists between well-connected parties^[25]. Mwangi et al.^[50] proposed that high-quality relationships often exhibit more cordiality, fewer disagreements, less questioning, and more obedient behaviors than lower-quality relationships. Therefore, interacting with sellers with high-quality relationships is more likely to lead to a sense of enjoyment and satisfaction in shopping. Accordingly, we propose the following:

H5. Perceived relationship quality will positively affect so-

cial satisfaction.

3.5 Seller satisfaction and platform satisfaction

Zhao et al.^[38] demonstrated a positive relationship between specific transaction satisfaction and overall satisfaction. A relatively causal relationship exists between the platform and sellers, which differs from the traditional relationship between the organization and the salespeople. In a traditional transaction environment, overall satisfaction can be seen as an accumulation of past satisfaction for each specific transaction^[1]. However, a C2C shopping platform consists of numerous independent sellers. Although the platform has promulgated many rules to regulate the behavior of buyers and sellers to protect their interest in their transaction processes, inappropriate behavior is usually unavoidable. If buyers perceive unpleasantness in shopping, they are more likely to complain about ineffective management of the platform^[8]. In contrast, a pleasant shopping experience will give them confidence that the platform is being managed effectively. Similarly, overall platform satisfaction can be seen as an accumulation of satisfaction with each seller based on a particular transaction. Despite the relative independence of sellers from the platform, buyers always assume they have a relationship with the platform, and Pizzutti et al.^[51] demonstrated this positive impact. Thus, we hypothesize the following:

H6. Economic satisfaction will positively affect overall satisfaction with the platform.

H7. Social satisfaction will positively affect overall satisfaction with the platform.

3.6 Satisfaction and loyalty

Much of the previous literature has demonstrated the positive impact of customer satisfaction on loyalty^[31, 52]. Loyalty has been referred to as a customer's intention to complete more transactions on the platform and to recommend the platform to other customers. In previous literature, loyalty has usually been measured by assessing customer repurchase intention and the practice of giving recommendations^[51]. A dissatisfied customer is more inclined to consider alternatives and resist developing a closer relationship with the seller. Chen et al.^[12] indicated that satisfied customers are more likely to have a stronger repurchase intention and to recommend the product/service to others. Diversified marketing techniques used by sellers may lead buyers to focus increasingly on the interactive aspects of the service but ignore the core service quality. Although these interactive behaviors mostly occur in their communication process, economic satisfaction and social satisfaction may be viewed differently from the customers' perspective. Notably, previous research has found that social interactions and relationships are key factors influencing customer loyalty on C2C platforms in China because Chinese people emphasize social interactions so that loyalty can be built more easily through relationship building and maintenance^[53]. Zhao et al.^[38] demonstrated that higher transaction-specific and overall satisfaction might increase consumers' willingness to repurchase, which is a typical behavior of consumer loyalty. Therefore, we propose the following hypothesis:

H8. Social satisfaction will positively affect loyalty.

H9. Economic satisfaction will positively affect loyalty.

H10. Overall satisfaction with the platform will positively affect loyalty.

4 Research methodology

The survey method is adopted to test our hypotheses. We choose Taobao’s platform (www.taobao.com) as the research context primarily because it has the largest share (84.8%) of the C2C online market in China (<http://www.iresearch.com.cn/View/125972.html>). From Taobao’s platform, we select all eight categories of tangible products that are preassigned by Taobao and listed on the platform’s home page. We identify the stores located in the top 10 sellers in 8 categories. These sellers are randomly provided by the Taobao website without any classification criteria. To obtain the user names of buyers who had purchased products from these sellers, we access the feedback profiles of the sellers. To facilitate the invitation of these buyers to participate in the survey, we employ Taobao’s online message system to invite the first ten buyers of each seller to complete an online questionnaire based on their contact information, which ended up with 800 buyers. We try to stimulate responses by holding a lucky draw (participation or not optional), and 13 respondents win prizes ranging from 30 to 100 (5-16). Finally, we received a total of 269 valid responses with a response rate of 33.63%. Table 2 shows the demographic information of the respondents.

As suggested by Churchill^[54], most items are adapted from prior literature, and some are customized to fit our research context better. All items in the survey use a seven-point scale ranging from “strongly disagree” to “strongly agree”. In addition, we invite three MIS Ph.D. students with Taobao shopping experience to check the measurement items to ensure the validity of the content. All items are translated into Chinese, following the practice of the translation committee^[55]. A pilot test is then conducted using 20 online buyers from the Taobao platform. One item of social satisfaction and one item of relationship with the seller are deleted because of low item-to-total correlations. The sources of items are listed in Table 3, and more details are provided in Appendix S3. See the Supporting Information.

5 Results and discussion

5.1 Results

We follow a two-stage analysis procedure to check the structural relationships, as well as our measurement model. The content validity, convergent validity, and discriminant validity of the measurement model are examined to validate it according to general test methods. Content validity is assessed by reviewing the literature and pilot-testing the instrument. We examine the value of factor loadings, Cronbach’s Alpha, composite reliability, and the average variance extracted (AVE) to assess convergent validity, which is great in our model. For the formative construct, the variance inflation factor (VIF) statistical test is conducted to ensure that multicollinearity is not present in the data. The results indicate that no indicator’s VIF values are greater than 2.60, suggesting that multicollinearity is unlikely to be a problem in this dataset. Meanwhile, with PLS, weights can be used to determine

Table 2. Demographics of respondents.

	Items	Percentage (%)
Gender	Male	44.60%
	Female	55.40%
	Below 20	2.95%
Age range	20-29	71.38%
	30-39	24.16%
	40 or above	1.51%
	High school	
Educational Level	Undergraduate	37.55%
	e	59.48%
	Master or above	2.97%
Online shopping frequency (times in a month)	1-3	65.06%
	4-6	27.14%
	7 or above	7.80%
Internet experience (in years)	1-3	45.35%
	4-6	48.33%
	7 or above	6.32%
Personal income in RMB (monthly)	Below 1000	41.26%
	1000-3000	32.34%
	3001-5000	14.87%
	5001-10,000	8.18%
	Above 10,000	3.35%
	Household	8.85%
Product Types	Mother & child Sports & stationery	12.50%
	Food	11.13%
	Accessories	18.75%
	Clothes	20.65%
	Cosmetics	13.54%
	Digital products	13.02%

Table 3. Constructs & sources.

Construct	Number of items	Source
Perceived product quality (PPQ)	3	Sun et al. ^[40] , Mavlanova et al. ^[56, 57]
Perceived relationship quality (PRQ)	3	Moliner et al. ^[17]
Perceived price fairness (PPF)	3	Voss et al. ^[58]
Perceived empathy (PE)	3	Parasuraman et al. ^[59]
Perceived assurance (PA)	3	Parasuraman et al. ^[59]
Social satisfaction (SS)	3	Dabholkar et al. ^[24]
Economic satisfaction (ES)	3	Dabholkar et al. ^[24]
Overall satisfaction with the platform (OS)	3	Zhao et al. ^[38]
Loyalty (LO)	3	Caceres et al. ^[60]

the meaningfulness of the indicators in forming the formative construct. As Table 5 shows, all the indicators have significant formative weights for economic satisfaction, which indicates that all the indicators are critical elements of economic satisfaction in this study. Table 6 shows that the square root of each construct AVE is greater than the correlation between the constructs, confirming the discriminant validity. Never-

Table 4. The confirmatory factor analysis results.

Measures	Cronbach's	Composite	Average variance
	alpha	reliability	extracted
Perceived product quality (PPQ)	0.911	0.944	0.849
Perceived price fairness (PPF)	0.888	0.930	0.817
Perceived empathy (PE)	0.778	0.871	0.693
Perceived assurance (PA)	0.832	0.900	0.750
Perceived relationship quality (PRQ)	0.888	0.930	0.817
Social satisfaction (SS)	0.745	0.855	0.664
Overall satisfaction with the platform (OS)	0.949	0.967	0.907
Loyalty (LO)	0.807	0.889	0.730

Table 5. Psychometric features of the formative construct.

Constructs	Measures	VIF	Weight	Std. error	p value
Economic satisfaction (ES)	ES1	1.394	0.483	0.011	0.000
	ES2	1.334	0.399	0.011	0.000
	ES3	1.215	0.408	0.012	0.000

theless, considering the high correlation between some structures, we further examine the value of HTMT, and all scores are below the 0.9 threshold. Therefore, the discriminant validity of our measurement model is good.

In addition, Table 6 shows that some interconstruct correlations are higher than 0.60. Therefore, we analyze the variance inflation factors (VIFs) to examine potential multicollinearity. The results show that the highest VIF is 2.948, which is far below the threshold of 10.0^[61]. Hence, multicollinearity is not a significant problem in this research. In addition, we use Harmon's single-factor method to test the common method bias of the dataset^[62]. We find that the eigenvalues of all five constructs are greater than 1.0. In addition, the results show that the fit of the one-factor model ($\chi^2=2986.30$, d.f.=350, CFI=0.87, NFI=0.86, IFI=0.87, RMSEA=0.168) is significantly lower ($p<0.01$) than that of the fitted model ($\chi^2=638.65$, d.f.=314, CFI=0.98, NFI=0.96, IFI=0.98, RMSEA=0.062) by comparing the fit of the one-factor model with the measurement model. This indicates that common method bias is not a serious issue impacting this study's results. In addition, we include a common method factor in the PLS model whose indicators include all the principal constructs' indicators. We then calculate each indicator's variances substantively explained by the principle construct and the method. The results indicate that the average substantively explained variance of the indicators is 0.748, while the average method-based variance is 0.012. The ratio of substantive variance to method variance is approximately 62:1. In addition, most factor loadings are not significant. Thus, we contend that the method is unlikely to be a serious problem for this study. See the Supporting Information.

We choose Smart Partial Least Squares software to validate this model. In Fig. 2, we can easily find that perceived product quality ($\beta=0.319$, $p<0.001$), perceived price fairness ($\beta=0.163$, $p<0.05$), and perceived assurance ($\beta=0.331$, $p<0.001$) all significantly influence economic satisfaction, in support of H1, H2, and H4. In addition, both perceived em-

pathy ($\beta=0.419$, $p<0.001$) and perceived relationship quality ($\beta=0.451$, $p<0.001$) have a significantly positive impact on social satisfaction, in support of H3 and H5. Meanwhile, the results show that social satisfaction ($\beta=0.378$, $p<0.001$) and economic satisfaction ($\beta=0.280$, $p<0.001$) significantly influence overall satisfaction. Hence, H6 and H7 are also supported. Finally, we find that social satisfaction ($\beta=0.375$, $p<0.001$), economic satisfaction ($\beta=0.232$, $p<0.001$), and overall satisfaction ($\beta=0.400$, $p<0.001$) all have a significantly positive effect on loyalty, in support of H8, H9, and H10. Moreover, it is worth noting that the explained variance in social satisfaction ($R^2=0.504$), economic satisfaction ($R^2=0.489$), overall satisfaction ($R^2=0.317$) and loyalty ($R^2=0.669$) all have a high level.

In addition, additional statistical tests are conducted to examine the differences among these effects, in particular the strength of the effect of social satisfaction and economic satisfaction on both overall satisfaction and loyalty and different kinds of perceived quality on seller-based satisfaction. We follow the approach^① of previous scholars in conducting t tests^[63]. Except that perceived product quality and perceived assurance have no significant difference in seller-based economic satisfaction, the other results are significant in Table 7.

5.2 Discussion

The study innovatively proposes and validates the model of online customer satisfaction in the context of C2C based on Parasuraman et al.^[27]. In addition, our research model incorporates both seller-based transaction satisfaction and platform-based overall satisfaction. Unlike the universal concept, the findings demonstrate that the two types of satisfaction can be distinguished. We simultaneously verify the positive correlation of seller satisfaction on platform satisfaction and loyalty. The findings suggest that buyers' satisfaction with sellers, a key player on C2C platforms, is an important antecedent of platform satisfaction and loyalty. In addition, we confirm that economic satisfaction and social satisfaction can be differentiated from both theoretical and statistical perspectives, which is in accordance with previous research^[12]. Furthermore, we also find that social and economic satisfaction have different antecedents and consequences on the online C2C platform. Perceived product quality, perceived price fairness, and perceived assurance contribute to economic satisfaction, whereas perceived empathy and perceived relationship quality mainly contribute to social satisfaction. It is worth noting that the effect of social satisfaction on both overall satisfaction and loyalty is stronger than that of economic satisfaction. However, in Western research, economic satisfaction has been found to have a stronger effect than social satisfaction^[35]. Therefore, in the human-oriented Chinese environment, social satisfaction has a greater weight on overall platform satisfaction, which confirms the effectiveness of customer relationship management again in C2C contexts. Pavlou et al.^[64]

① We follow the approach of previous scholars:

$$t = \frac{Path_{sample_1} - Path_{sample_2}}{\sqrt{\frac{(m-1)^2}{(m+n-2)} * S.E.^2_{sample1} + \frac{(n-1)^2}{(m+n-2)} * S.E.^2_{sample2}}} * \left[\sqrt{\frac{1}{m} + \frac{1}{n}} \right],$$

which follows a t -distribution with $m+n-2$ degrees of freedom.

Table 6. Correlations between constructs (the numbers shaded on the diagonal are the square roots of the extracted average variance).

	1	2	3	4	5	6	7	8	9
1. Economic satisfaction	NA								
2. Perceived product quality	0.611	0.922							
3. Perceived empathy	0.506	0.514	0.833						
4. Social satisfaction	0.453	0.614	0.569	0.815					
5. Loyalty	0.583	0.767	0.423	0.683	0.854				
6. Perceived relationship quality	0.131	0.235	0.333	0.590	0.322	0.904			
7. Perceived assurance	0.593	0.514	0.486	0.442	0.476	0.214	0.866		
8. Perceived price fairness	0.598	0.742	0.501	0.519	0.650	0.161	0.598	0.904	
9. Overall satisfaction	0.451	0.596	0.394	0.505	0.694	0.196	0.447	0.549	0.952

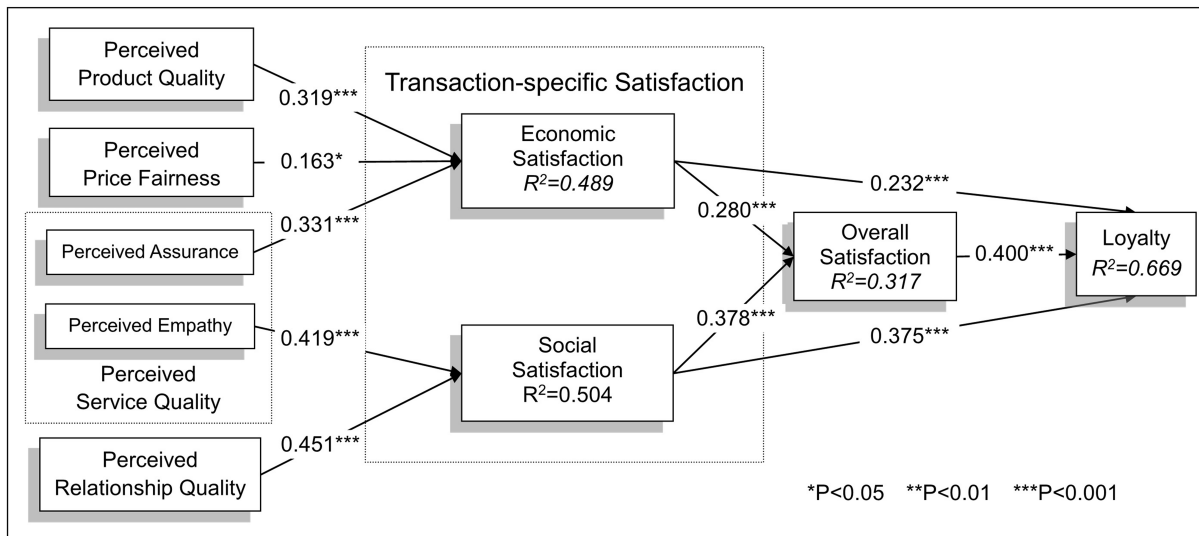


Fig. 2. PLS analysis results.

also discovered that benevolence has a greater impact than credibility. In addition, due to the hard-to-imitate nature of caring relationships, the social satisfaction correlated with the seller’s empathy and caring will impress buyers more than economic satisfaction.

The ACSI (American Customer Satisfaction Index) has indicated that customer satisfaction is more concerned about quality than price^[65]. In this study, perceived product quality is more important than perceived price fairness by sellers, which also confirms that product quality is the most fundamental factor for buyers to judge online transactions. Nevertheless, in interviews, many buyers contend that cost-effectiveness is an important reason for buying from Taobao sellers. Some buyers have even gotten into the habit of trying them on offline and buying them online, mainly attributed to the price advantage online. It is worth mentioning that perceived assurance plays almost as important a role as perceived product quality. This shows that buyers still pay attention to product quality and focus on transaction processes at the same time.

In the context of dominant interpersonal relationships, for Chinese C2C buyers, in addition to perceived product quality, the role of empathy and relationships with the seller are also vital factors in customer satisfaction. Few studies have paid attention to interpersonal relationship issues on online shop-

ping platforms. The former view pointed out that building relationships between online sellers and buyers is challenging because of the low switching costs and the fact that competitors need only a few clicks^[31]. Nevertheless, these research data indicate that buyers can build the best relationships with them during the transaction by understanding their preferences and individual needs. For example, one interviewee says, “I am very close to 3 online sellers on Taobao platforms, we have the same opinion and taste on the products. I am glad that the relationship I kept with the sellers can let me enjoy the transactions more”. In addition, our study also confirms that perceived relationship quality has a stronger effect on social satisfaction than perceived empathy. The significant contribution of social satisfaction and human relations is consistent with China’s long-standing culture of human kindness and the value of living together amicably^[13]. Our study demonstrates that this need for relationship harmony is embodied in both offline and online social activities.

6 Implications and limitations

6.1 Limitations and future research

This study has some limitations that should be addressed in future studies. First, purchasers may have different expecta-

Table 7. T test for the strength of the effect.

Social Satisfaction v.s. Economic Satisfaction -> Overall Satisfaction	Social Satisfaction -> Overall Satisfaction	Economic Satisfaction -> Overall Satisfaction
Path Coefficients	0.378	0.280
Standard Error (SE)	0.0164	0.0154
t value		4.367
p value		0.000
Social Satisfaction v.s. Economic Satisfaction -> Loyalty	Social Satisfaction -> Loyalty	Economic Satisfaction -> Loyalty
Path Coefficients	0.375	0.232
Standard Error (SE)	0.0140	0.0136
t value		7.322
p value		0.000
Perceived Product Quality v.s. Perceived Price Fairness -> Economic Satisfaction	Perceived Product Quality -> Economic Satisfaction	Perceived Price Fairness -> Economic Satisfaction
Path Coefficients	0.319	0.163
Standard Error (SE)	0.0162	0.0172
t value		6.597
p value		0.000
Perceived Product Quality v.s. Perceived Assurance -> Economic Satisfaction	Perceived Product Quality -> Economic Satisfaction	Perceived Assurance -> Economic Satisfaction
Path Coefficients	0.319	0.331
Standard Error (SE)	0.0162	0.0148
t value		0.547
p value		0.585
Perceived Price Fairness v.s. Perceived Assurance -> Economic Satisfaction	Perceived Price Fairness -> Economic Satisfaction	Perceived Assurance -> Economic Satisfaction
Path Coefficients	0.163	0.331
Standard Error (SE)	0.0172	0.0148
t value		7.404
p value		0.000
Perceived Empathy v.s. Perceived Relationship Quality -> Social Satisfaction	Perceived Empathy -> Social Satisfaction	Perceived Relationship Quality -> Social Satisfaction
Path Coefficients	0.419	0.451
Standard Error (SE)	0.0132	0.0138
t value		1.680
p value		0.094

tions and evaluations of different kinds of products, which in turn bring different satisfaction levels. We have only made a general classification based on the homepage of the website, focusing mainly on tangible products, which may have limitations. Future research could categorize products more precisely and thus examine whether customer loyalty varies by different product categories.

Second, this research mainly emphasizes the interaction between sellers and buyers. Nevertheless, we believe that the interaction between the buyers and the platform is also an important factor contributing to customer satisfaction and loyalty. Therefore, future studies will also consider factors from both individual sellers and platforms. In addition, we recommend that researchers continue to investigate the effects of different facets of satisfaction on loyalty in other online contexts.

Finally, because our study is conducted in China, a strongly

socially oriented society, we recommend that future research be conducted in other cultural environments to investigate how social and economic satisfaction contribute to overall satisfaction and loyalty to the platform.

6.2 Theoretical implications

This study provides several important insights into the theory. First, a major contribution of this study is to explore the impact of seller satisfaction on platform satisfaction and platform loyalty from the seller's perspective, which helps us to fully understand e-commerce behavior in the C2C environment. Previous studies have explored service quality from a single platform or seller perspective^[4], website-based system quality and technical factors^[15], or related satisfaction with sellers and platforms individually^[66]. However, we propose that the satisfaction that buyer experiences can be transferred from an individual seller to the whole online shopping plat-

form.

Second, we further divide transaction-specific satisfaction into economic and social satisfaction in terms of both economic and noneconomic characteristics, rather than just a one-dimensional concept^[38]. In this way, these four types of satisfaction are integrated into a single research model. By exploring the antecedents and outcomes of each type of satisfaction, the study helps to better understand the process of customer satisfaction formation on C2C platforms. More importantly, our study shows that economic and social satisfaction behave differently in terms of their association with antecedents, thus providing support for the validity of considering satisfaction as a two-dimensional construct in the C2C e-commerce environment.

Third, we integrate perceived product quality, perceived service quality, perceived price fairness, and perceived relationship quality into a single model from the perspective of customer perceptions, which extends previous studies of satisfaction antecedents by incorporating the characteristics of the C2C environment. This study also explores the different impacts of different dimensions on seller satisfaction, which helps sellers understand how to improve each type of satisfaction.

6.3 Practical implications

This study also provides some insights into online sellers and platforms. First, online sellers should focus on interaction and closing the loop with buyers and actively try to establish and maintain that relationship continuously during the transaction. While product quality and service are also important antecedents influencing customer satisfaction, online sellers must be aware that these factors are not competitive and irreplaceable; however, good relationships may be more helpful in keeping buyers as loyal customers.

In addition, platform managers should also be aware that they are obligated to create a better environment to trigger more interactions between buyers and sellers. In addition to building a more stable system and communication channel, building customer databases may help sellers recognize those buyers who had previous purchase experiences and then offer buyers the option to share their preference information with sellers so that they can offer better services and suggestions on purchase decisions. The platform may also provide a linked space for sharing sellers' personal information so that buyers may feel closer to them after viewing it. Therefore, when sellers and buyers disagree, platform managers should consider the interests of both parties to retain customers rather than overprotecting the interests of sellers.

Considering the salient effect of social satisfaction, managers of C2C platforms should also try to enhance buyers' social satisfaction to increase overall satisfaction and loyalty. There are several ways in which they can do this. For example, they can build online virtual communities for their buyers and sellers to encourage interaction. It may also be possible to hold online events where buyers and sellers can participate and enhance the quality of their interactions. Finally, C2C platform managers can provide online training courses for sellers that emphasize the importance of both making buyers satisfied and explaining how this can be

achieved.

7 Conclusions

In the C2C e-commerce context, it is important to build and maintain buyer satisfaction and loyalty to the C2C platform. Most previous studies of satisfaction antecedents have been explored from a single perspective, applying it to B2B and B2C environments, but have ignored the particularity of the relationship between sellers and C2C platforms. In addition, satisfaction has been considered as a single dimension, and no studies have examined the cross-sectional effects of different dimensions of customer perception on different types of satisfaction. This study explores the important role of seller satisfaction on C2C platform satisfaction and loyalty from the perspective of sellers and platforms, respectively, and explores the relationship between sellers and platforms using overall satisfaction. This study further distinguishes seller-based transaction satisfaction into economic and social satisfaction, integrates four dimensions based on product, service, price and relationship as antecedents affecting seller satisfaction from the perspective of customer perception, and then explores the different effects of different antecedents on seller satisfaction. We highlight the importance of social satisfaction and its antecedents (i.e., the relationship with sellers and empathy) on overall platform satisfaction and loyalty in the Chinese C2C environment. In summary, the findings of this study provide guidance on how online sellers and platforms can strategically promote buyer satisfaction and loyalty.

Supporting information

Supporting information includes an English version of the questionnaire and a table that is the common method bias analysis in the PLS model.

Conflict of interest

The authors declare that they have no conflicts of interest.

Preprint Statement

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