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Leveraging Technological Characteristics and Perceived Values to Drive Continuance Intentions on Social Platforms: A Generation Z Perspective

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ABSTRACT

This study aims to explore how social commerce platforms retain specific user groups in the context of emerging economies post-COVID-19. Drawing on the stimulus-organism–response model, this study investigates how technological environments impact consumers' intrinsic and extrinsic values, and visualize how these technological characteristics contribute to the continuance intentions. The survey targets Generation Z in China and gathers 366 valid questionnaires. Data analysis is conducted using SPSS 22.0 and AMOS 21.0, employing Confirmatory Factor Analysis to assess the research model's reliability and validity. Subsequently, Scanning Electron Microscopy and Mediation Analysis test the proposed hypotheses. The findings suggest that for the major consumer group, the pursuit of social, informational, and emotional values is the primary motivation rather than hedonic value. Also, social commerce platforms should not be considered simply as a communication tool or a social network service, but as the artificial structural equivalence of social connections that carries users' social capital. This paper offers new insights into why young consumers join social network platforms in emerging economies and repeatedly use them during the post-pandemic period. The research findings may apply to other social media platforms of developing and developed countries with similar socioeconomic and cultural contexts.

Keywords: Social commerce platform, Generation Z, Technological characteristics, perceived value, continuance intentions

1. INTRODUCTION

In recent years, there has been an increasing trend in social commerce, as Internet giants have integrated social media and e-commerce functions [1]. The influence of this trend

is demonstrated by, for example, Pinduoduo becoming a unicorn company, Alibaba launching its social commerce platform, Taote, and the lifestyle social media company RED adding e-commerce functions to the RED app [2]. Social commerce combines social media interactions with online shopping platforms for buying and selling. As a subset of e-commerce, social commerce involves shoppers conducting the entire purchasing process from product research to checkout within social media platforms. It differs from traditional e-commerce due to its integration of social media content-based functions, which rely on specific technological environmental characteristics that impact consumer purchase intentions online [3]. As social commerce is still a relatively new phenomenon in the business world, studies have provided various definitions for it. For example, Kim and Park [4] define social commerce as "a new business model of e-commerce driven by social media, aimed at enhancing the online shopping experience". Wang et al. [5] define it as "a subset of e-commerce and a novel marketing tool". Building on these definitions and previous studies, this paper defines social commerce as a novel online shopping mode that leverages social media features to amplify purchase behaviours.

An overall review of the literature indicates that social commerce studies have focused mainly on the traditional general integrative perspective. For instance, Lam et al. [6] take a company perspective and examine how social commerce increases firms' stock returns. Zhang et al. [7] explore how consumers' online experiences affected their social commerce intentions, focusing on perceived interactivity, stickiness, personalization, and sociability in the user experience. Despite the rapid growth of both social commerce and social media, there has been little research exploring the effects of technological environments on young consumer's perceived values in promoting the continuance of online purchase intentions, despite evidence suggesting that there is a relationship between continuance intentions and trust-building with both the sellers and platforms [8]. In particular, few studies have examined how social commerce platforms retain specific user groups in the context of emerging economies post-COVID-19. This research attempts to provide essential insights not only concerning market entry decision-making in other similar emerging markets but also to develop marketing strategies for promoting consumer continuance online purchase intention (thereafter continuance intention) in current social commerce platforms. The study could be potentially generalized to other developing countries and developed countries with analogous socioeconomic and cultural circumstances.

China has notable emerging market economies. However, economic conditions in China have recently been negatively influenced by the consequences of the COVID-19 pandemic, as well as by tighter regulations imposed by the Chinese government to suppress the low-price subsidy war [3]. Consequently, growth in the social commerce market has become stagnant, and there has been no significant expansion in consumer participation, particularly in the case of major users, Generation Z (hereafter referred to as "Gen Z") [9]. It appears that marketing approaches that rely on social media may have reached a ceiling. Against this backdrop, this study aims to identify the factors affecting the shopping behaviours of Gen Z, the major consumer group, which are a

key issue that social commerce companies should explore and understand to further develop their business opportunities.

RED, also known as Xiaohongshu (or Little Red Book in English) is one of the largest social commerce platforms in China. It is commonly described as a combination of Pinterest, Instagram, and Amazon. As one of China's rapidly emerging social media platforms, RED distinguishes itself from others by placing a greater emphasis on products, shopping, and lifestyle rather than just social networking. The platform leverages the notion of "aspirational content," which is often successful on Instagram, YouTube, and TikTok, to establish connections with brands. RED primarily appeals to urban and overseas Chinese individuals with substantial purchasing power, who actively seek out new products. Unlike many other platforms, RED has fostered an environment where young users rely more on peer-generated content rather than heavily valuing celebrities and brands. While the platform's popularity extends to other demographics, it remains most widely used by younger women. By July 2019, RED had amassed over 300 million users, with 70% of them being born after 1990 [10]. Thus, this study adopts RED as a representative platform, delving into its functionalities, primary user groups, and potential for social commerce.

The research questions for this study are as follows:
a) How does the platform's environment influence consumers' intentions to continue using the platform, as perceived through their value assessment?
b) What are the key environmental attributes that facilitate stimuli within social commerce platforms and impact consumers' perceptions of the value associated with these stimuli?
c) What are the factors that precede and follow consumers' perception of value?

The primary objective of this study is to make a meaningful contribution to the existing literature by examining the technological environment's characteristics that significantly influence Chinese users' continuance intentions. The significance of this research lies in its focus on Gen Z, the cohort that grew up with and predominantly uses social media. Prior studies have overlooked this group's behaviour on social media platforms despite the unfavourable economic conditions arising from the pandemic.

This paper is organised as follows. Section 2 elaborates on the conceptual framework. Section 3 reviews the theoretical development and develops the hypotheses. Section 4 details the research methodology, sampling method, and empirical findings. Section 5 delivers the discussions, conclusion, and implications. Section 6 considers the limitations and future research.

2. CONCEPTUAL FRAMEWORK

2.1 SOR Model

Mehrabian and Russell [11] developed the Stimulus-Organism-Response (SOR) Theory, which suggests that environmental cues act as stimuli that elicit emotional and cognitive responses, leading to insights, prospects, and assessments. These responses

subsequently shape the consumer's attitudinal and behavioural reactions. The SOR framework has been extensively applied in various digitalization contexts [12] [13] [14] [15]. For example, Liu [16] applies the SOR framework to study the impact of interaction on traditional website shopping behaviour, using interactive features and product types as external stimuli, cognitive emotions as mediators, and continuance intention as responses. The success of the SOR framework lies in its ability to explain behavioural variations resulting from different marketing stimuli and cognitive factors. Jacoby [17] and Sultan et al. [18] highlight the flexibility of the SOR framework, as it allows the examination of various internal and external stimuli, tangible and intangible stimuli, experiential and non-experiential organisms (such as attitude, emotion, perception/feeling, judgment, belief, motivation, and thinking), and various response factors like intention, behaviour, avoidance, and so on [18].

The SOR model has been extensively examined in various consumer behaviour contexts, especially in the context of social commerce, which is a new sales model where consumers watch real-time broadcast videos and make online purchases [19]. In social commerce, users share content like text, pictures, and videos, and interact with other users through likes, comments, favourites, sharing, and following [20]. For instance, Cao and Li [21] propose that social support, community recognition, and community trust can enhance the participation of social business users. Hughes and Chanta [22] analyse the reasons behind social network users engaging in social commerce, emphasizing the significance of social networks. Additionally, Horng and Wu [23] confirm the positive influence of trust on social network shopping behaviour. Sun et al. [24] examine a specific form of social e-commerce called "on-site shopping" and find a positive correlation between immersion, social presence, and purchase intention.

With the emergence of new social commerce platforms and the impact of the COVID-19 pandemic, consumers' purchase intentions and behaviours are likely to differ from those identified in existing literature [25]. To help social commerce platforms retain users in the post-pandemic era, this study adopts the SOR model to develop a logical process for understanding environmental factors and consumer responses [26].

2.2 Social Commerce Platforms and Gen Z

Social commerce platforms have been most popular among Gen Z consumers compared with other generations [9]. Researchers [7] [9] advocate that young consumers are potentially a very attractive segment as the habits formed at this stage are enduring in the long term. Gen Z, born between 1995 and 2005 and raised in a diversified and digitally connected environment, is a group of consumers with strong and rapidly growing buying power and great openness to new trends. These consumers are possibly the main target of brands across different product categories ranging from necessities to luxury goods [9]. These young consumers have gravitated to virtual platforms, which empower them to take up experiences and boost their perceived value, or enable them to sprint and expand their possibilities. In the post-pandemic era, however, the uncertainty of the economic slowdown and Gen Z’s overdependence on the Internet are

likely to cause them stress and anxiety. Consequently, this study attempts to identify the technological environments in social commerce that influence the shopping behaviours of Gen Z, the major consumer group.

2.3 Technological Environments in Social Commerce

The technological environments of social commerce are categorised into four important areas based on consumers' perceived interactivity, stickiness, personalization, and sociability [27]. First, perceived interactivity refers to the personal psychological feelings experienced by users during their user-to-user, user-to-content, and user-to-system interactions on social commerce platforms [28]. As discussed extensively in the marketing and business literature, interactivity is an important environmental feature of online media [29]. Because this concept has diffused from websites to mobile apps, in our analysis, this study focuses on the perceived interactivity of social commerce platforms. Second, perceived stickiness refers to users' willingness to visit and use a social commerce platform repeatedly [30]. The concept of stickiness is well developed for both non-mobile websites and mobile apps, and its fundamentals concern the time spent by consumers on the app or website, their reuse, and the duration of usage [27]. Third, perceived personalization refers to users' perceptions of the adaptability of a social commerce platform, or its responsiveness to their needs and preferences [31]. Social commerce platforms recommend suitable content for users based on big data algorithms that learn their wants and needs, former actions, and relationships [32]. Thus, perceived personalization concerns whether a particular social commerce platform can provide a better, more convenient environment for users that fits their specific interests and needs. Finally, perceived sociability concerns users' perceptions of whether a social commerce environment, supported by social media technologies, facilitates quality consumer-to-consumer interactions. For instance, this area of perception concerns the process of developing virtual social relationships through the use of "likes," "comments," "subscriptions," or "chats" by users of the social commerce platform. Thus, perceived sociability is linked to interpersonal online interactions and the feeling of being part of an online community, which is an important aspect of the social functions performed by social commerce platforms [33].

2.4 Perceived Value and Continuance Intention

Perceived value refers to the relationship between the benefits of products or services and their costs [34]. It provides firms with a competitive advantage and is a crucial factor in their future development. Therefore, consumers' perceived value plays an important role in online shopping behaviour by strengthening purchase satisfaction and consumer loyalty [35]. Based on Holbrook's [31] value theory, perceived value can be divided into intrinsic and extrinsic values. In the case of intrinsic value, the aim of purchasing behaviour is self-justified and presents an end in itself, whereas, for extrinsic value, purchasing behaviour is instrumental or functional and aims to achieve a certain objective [31]. Additionally, Lin and Lu [36] suggest that in the context of social media, intrinsic value can be further categorized into hedonic and emotional values, and extrinsic value into information and social values. Hedonic value refers to consumers experiencing fun, amusement, and fantasy by interacting and taking part in

social commerce platforms [37], and emotional value refers to the feelings or affective states induced by the use of social commerce platforms [38]. Information value pertains to the perceived usefulness of the information and personalized content on social commerce platforms, and social value relates to the perceived benefits of self-expression and social identity.

Continuance intention refers to the phenomenon where consumers engaging in social commerce are immersed in interactive and entertaining experiences. The pursuit of such immersive experiences motivates them to continue shopping to maintain this state [39]. When consumers first use social media, they may not initially have a compelling desire to make purchases. However, after watching social media content and engaging in interactions, they start considering the perceived value, which leads to the generation of purchase intention [40]. To illustrate, Zhu et al. [41] utilize the para-social interaction theory to examine factors influencing customer satisfaction in the context of live stream shopping and continuous purchase intention. Similarly, Pandey et al. [42] propose a purchase intention relationship model to measure the purchase intention of Indian consumers for organic food. Taking these studies and previous research into account, it can be inferred that continuous purchase intention holds notable significance in the realm of social commerce platforms.

3. THEORETICAL DEVELOPMENT AND HYPOTHESES

3.1 Technological Environments and Perceived Value

Perceived Interactivity and Perceived Value

The social commerce platform RED is characterized by interactivity because its users interact with other users and with the platform, for example, by posting their own shopping experiences or chatting with other users to communicate product reviews. Such participation in the social commerce platform could create better purchasing experiences for users and enhance their social relationships and engagement [29]. Against this backdrop, users obtain social, informational, emotional, and hedonic values when using RED [43]. As a result, the interactivity of the platform's functions, which is demonstrated by the degree to which it helps users post their content and interact with the platform and other users to seek more personal news feeds, enhances consumers' perceived value of the platform. Thus, this study proposes that, if interactivity is properly managed by the platform [29] such as providing a set of policies and rules for governing members' interactions [44], customers should be able to better evaluate the potentials of the platform's environment, leading to the following hypotheses:

H1a*:* The perceived interactivity of RED has a positive impact on its social value for consumers.

H1b*:* The perceived interactivity of RED has a positive impact on its informational value for consumers.

H1c*:* The perceived interactivity of RED has a positive impact on its emotional value for consumers.

H1d*:* The perceived interactivity of RED has a positive impact on its hedonic value for consumers.

Perceived Stickiness and Perceived Value

Stickiness refers to users' willingness to visit and use RED repeatedly [30]. When a user visits the social commerce platform frequently and spends more time exploring it, perceived stickiness can increase because that user relies on the platform in terms of content, relationships built, and resulting feelings. Because such users browse more content and advertisements and engage in more activities on the social commerce platform than those frequent users, this generates greater profitability for the social commerce platform. In particular, the activities that frequent users engage in on the platform can lead to inertia, that is, a tendency to resist changes in their state of motion [27], meaning that these users value a particular platform more highly than other platforms because they obtain greater perceived value (i.e., social, informational, emotional, and hedonic values) from it. Bringing these ideas together, perceived stickiness can be considered an important factor contributing to the platform's environment, which leads to the following hypotheses:

H2a: The perceived stickiness of RED has a positive impact on its social value for consumers.

H2b: The perceived stickiness of RED has a positive impact on its informational value for consumers.

H2c: The perceived stickiness of RED has a positive impact on its emotional value for consumers.

H2d: The perceived stickiness of RED has a positive impact on its hedonic value for consumers.

Perceived Personalization and Perceived Value

The perceived personalization of RED refers to its ability to present content to "the right people at the right time" [32, p. 866], that is, content that fits with users' needs and preferences. Social media platforms aim to comprehend users' preferences by providing options for them to indicate whether they like or dislike content and, in this way, the platforms can generate customized and personalized recommendations for individual users. Moreover, users' exposure to content can help increase their engagement and sharing with targeted audiences [45]. Such personalized environments can encourage users to spend more time on a platform and they are likely to derive more value from content specifically tailored to them, leading to the following hypotheses:

H3a: The perceived personalization of RED has a positive impact on its social value for consumers.

H3b: The perceived personalization of RED has a positive impact on its informational value for consumers.

H3c: The perceived personalization of RED has a positive impact on its emotional value for consumers.

H3d: The perceived personalization of RED has a positive impact on its hedonic value for consumers.

Perceived Sociability and Perceived Value

Perceived sociability is generated from users' experiences through mutual interactions via RED [46]. The technological medium of the platform allows users with similar interests to make posts and share their opinions about products or services. In the process of such interactions, users build their own online identities and social networks on the social commerce platform and develop networks of social support, friendship, and intimacy. Sociability encourages people to generate ideas and influence others, and they then gain emotional benefits, such as a sense of belonging [33]. About social commerce platforms, the enhancement of sociability leads to an increase in the perceived value that users derive from their interactions with both the platform and other users [28], provided that the platform has well-established privacy rules and policies in place to prevent unfriendly or inflammatory behaviour, as noted by Zhang et al. [7]. As a result, the following hypotheses can be formulated:

H4a: The perceived sociability of RED has a positive impact on its social value for consumers.

H4b: The perceived sociability of RED has a positive impact on its informational value for consumers.

H4c: The perceived sociability of RED has a positive impact on its emotional value for consumers.

H4d*:* The perceived sociability of RED has a positive impact on its hedonic value for consumers.

Continuance of Online Purchase Intentions

Kang et al. [45] defined consumer purchase intention as the probability that a consumer will be willing to make a purchase. In this study, the continuance of online purchase intentions (hereafter referred to as "continuance intentions") specifically refers to the degree to which consumers are willing to continue buying products or services from the online social commerce platform [47]. As studies [38] have confirmed that perceived value has a positive influence on both behavioural intentions and the actual behaviour of consumers, and consumers prefer to maximize value in their decision-making processes, we propose that specific types of perceived values influence consumer continuance intentions. Continuance intention is an important predictor of behaviour and has a positive effect on online shopping behaviour [48].

Empirical research on technology acceptance has asserted that the salience of perceived usefulness and enjoyment has a positive influence on the intention of IT use [36]. In the case of RED, when users regard RED as a solid, reliable communication pathway to their dependable and trustworthy social connections, rich information resources, and emotional comfort and enjoyment, it is logical to infer that the four types of perceived values— social, informational, emotional, and hedonic values—will positively influence consumer continuance intentions [7].

Extrinsic Value and Continuance Intentions

Extrinsic value, which comprises informational and social values, makes consumers more motivated to respond to stimuli on social commerce platforms because they

perceive products or services with high extrinsic value as more stimulating [49]. Informational value is important because consumers are inclined to rely on the opinions and recommendations of social media users in making their purchase decisions. Alternatively, rather than relying on recommendations as such, consumers base their purchase decisions on their observations of the behaviour of other users of social commerce sites. They also make purchase decisions by interacting with other users or browsing platform content to obtain information that is useful to them. Because the messages received from social media can have different meanings and social impacts on different consumers, consumers' perceived value of information influences their purchase intentions and decisions [50].

Building social relationships with other users can facilitate positive actions on social commerce platforms, such as positive word-of-mouth or encouraging a final decision to purchase. According to Liu et al. [3], consumers develop trust by sharing experiences and interacting with each other regularly. Such relationships can facilitate positive consumer actions such as positive product or service reviews. Therefore, the social value that consumers perceive can have a positive impact on their purchase intentions. Based on the above discussion, we propose the following hypotheses:

H5a: Gen Z's perceived informational value is positively associated with their intentions to continue using RED.

H5b: Gen Z's perceived social value is positively associated with their intentions to continue using RED.

Intrinsic Value and Purchase Intentions

Zhao and Renard [49] argued that intrinsic value, being unique to an individual product, disappears after consumption. Thus, intrinsic value cannot be changed without changing the nature of the product itself. We focused on intrinsic value from the perspectives of hedonic and emotional values. Studies [43] have revealed that hedonic value can have a positive effect on consumers' product purchasing behaviour, impulse buying behaviour, and shopping attitudes. In the case of RED, consumers who receive hedonic value from the platform regard their shopping experience on RED as an act of entertainment, providing them with a multi-sensory emotional pleasure and a sense of fantasy fulfilment.

When consumers perceive that they have gained high hedonic value from their shopping experience, they tend to have positive emotional feelings, which in turn lead to positive behavioural intentions [43]. Emotional value is the value that results from consumers' feelings or emotional state when adopting and using RED's services. In their study of purchase intentions for online shopping festivals, Shang et al. [43] demonstrated that emotional value had an impact on continuance intentions. Therefore, we posit the following:

H5c: Gen Z's perceived emotional value is positively associated with their intentions to continue using RED.

H5d: Gen Z's perceived hedonic value is positively associated with their intentions to continue using RED.

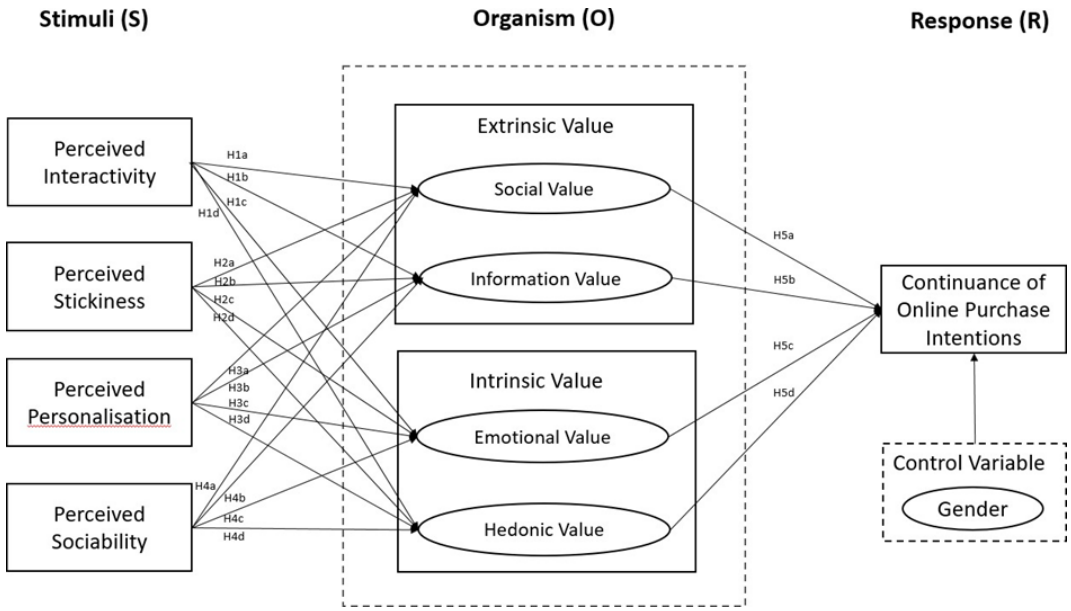


Figure 1. A Conceptual Model

4. METHODOLOGY

4.1 Questionnaire Design and Data Collection

This study adopts a questionnaire to collect data to test the hypotheses. All of the items in the questionnaire are based on previous studies [3] [7] [47], with minor changes made to each item to fit our research context. Because the questions were originally developed in English, the translation from English to Chinese was first proofread by an academic in the Department of Translation at the authors' university and then verified by an academic specializing in social marketing at the same university. Finally, three researchers with relevant experience back-translated the items from Chinese to English to ensure the accuracy of the translation; their feedback confirmed that there were no significant differences between the two versions.

This questionnaire is divided into three parts. Part I introduces the questionnaire topic and describes the purpose and application of the survey. Part II comprises five questions designed to gather descriptive demographic information on RED users, including their gender, age, education level, and average monthly income. We treat gender as a control variable in our study, but not age; the screening questions are used to select only Gen Z users of RED for our analysis.

Part II of the questionnaire comprises 34 items covering all of the variables in the study, namely, perceived interactivity (PI), perceived stickiness (PST), perceived personalization (PP), perceived sociability (PSO), social value (SV), informational value (IV), emotional value (EV), hedonic value (HV), and continuance of online purchase intentions (OPI). Three or four items are set for each of the variables and they are each measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

4.2 Data Collection

After two rounds of pilot tests, we administered the official survey through the selected professional survey company over 3 months from early March to the end of May 2023. This study targets only RED users of the Gen Z cohort in China. The survey respondents were invited by email to complete an electronic survey questionnaire. The survey platform tracked the respondents' IP addresses and confirmed their demographic information to ensure that each respondent submitted only one response. A small gift was presented electronically to each of the respondents. At the end of the survey period, a total of 500 questionnaires were distributed and 387 responses were gathered. Of these, 366 were considered valid with all required information completed. The recovery rate was 94.58%.

Table 1 summarizes the demographic information of the final sample. Responses are balanced in terms of gender distribution (male: 48.3%; female: 51.6%). Most respondents possess a bachelor's degree (77.9%), and 49.7% have monthly income in the range of RMB3,000 to 5,999.

Table 1. Demographics of the Survey Respondents (N = 366)

Items	Categories	*N*	Percentage (%)
Gender	Male	177	48.3
	Female	189	51.6
Income	RMB2,999 or less	120	32.8
	RMB3,000–5,999	182	49.7
	RMB6,000–9,999	48	13.1
	RMB10,000–13,999	13	3.6
	RMB14,000 or more	3	0.8
Education Level	Senior high school or below	14	3.9
	Junior college	32	8.7
	Bachelor's degree	285	77.9
	Master's degree or above	35	9.6
Total		366	100

4.3 Data Analysis and Hypothesis Testing

This research applies SPSS 22.0 and AMOS 21.0 to conduct multiple data analyses, including descriptive data analysis, confirmatory factor analysis (CFA), path analysis, and mediation analysis. CFA is initially used to assess the reliability and validity of the research model, followed by Scanning Electron Microscopy (SEM) and Mediation Analysis to test the proposed hypotheses.

4.4 Data Quality Testing

Reliability Testing

Table 2 shows that the reliability coefficient (Cronbach's alpha) is .95, exceeding the threshold of .70 [51] and confirming the high reliability of the research data. The corrected item-total correlation (CITC) values of the analysed items, as shown in Appendix A, are all greater than the required value of .40 [52], indicating a good

correlation between the items and good reliability. For all items, Cronbach's alpha based on standardized items is above .90, exceeding the required value of .70 [53]. Additionally, the KMO (Kaiser-Meyer-Olkin) test result is .0874, which is greater than .50 (see Appendix B). These results support that the internal consistency of the questionnaire is good, suggesting good reliability of the survey results for further analysis. With a sample size of 366, ten times greater than the number of items for analysis Fornell & Larcker [53] in Table 2, the sample size is considered moderate.

Table 2. Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	Number of items
0.955	0.956	33

Confirmatory Factor Analysis

This study conducts two rounds of analysis for Confirmatory Factor Analysis (CFA). In the first round, factor loadings and standard estimates are used to determine the correlation between factors and analysed items. Standard estimates below .40 were removed; however, as the average standard value in this study is greater than .60, no estimates have been removed. The second round of CFA performs the convergent validity analysis using average variance extracted (AVE) and composite reliability (CR). While an AVE greater than .50 is usually expected, in this study an AVE greater than .40 is considered acceptable as long as the CR is greater than .60. The AVE values corresponding to the nine factors are all greater than .40, and the CR values are all greater than .60 except for PT, which has a value of .595. Despite this, PT is still considered to indicate validity. Overall, the aggregate validity of the data is good. Appendix C reports on the details of Factor Loadings.

Table 3. AVE and CR Indicator Results

Constructs	Indicators	Items	Loading	AVE	CR
Perceived Interactivity (PT) [7]	PT1	The functions provided by RED allow me to publish a message and update its content (e.g., consultancy, comments) at any time before I make a purchase.	0.793	0.426	0.595
	PT2	The functions provided by RED allow me to choose what I want to see.	0.725		
	PT3	The consumer service of RED responded to my questions promptly.	0.765		
	PT4	The functions provided by RED allow me to share my shopping experience with other consumers.	0.730		

Constructs	Indicators	Items	Loading	AVE	CR
Perceived Stickiness (PST) [3]	PST1	I intend to spend more time on RED than other traditional e-commerce platforms (e.g., Taobao, JD).	0.758	0.456	0.768
	PST2	I often use RED (3 or more times a week may be considered "often").	0.698		
	PST3	I use RED every time I go shopping	0.722		
Perceived Personalization (PP) [3]	PP1	RED understands my personal needs.	0.798	0.516	0.665
	PP2	RED offers me targeted recommendations based on my preferences.	0.794		
	PP3	RED meets my personal needs.	0.771		
Perceived Sociability (PSO) [7]	PSO1	RED enables me to have a sense of belonging.	0.783	0.472	0.780
	PSO2	RED enables me to feel good about other RED users.	0.699		
	PSO3	RED enables me to develop good social relationships with other users.	0.648		
	PSO4	RED enables me to form close friendships with other users.	0.710		
Social Value (SV) [54]	SV1	I make a good impression when interacting with other RED users.	0.764	0.628	0.834
	SV2	I am being admired when interacting with other users.	0.662		
	SV3	I gain recognition when interacting with other users.	0.753		
	SV4	My knowledge of products is improved when interacting with other users.	0.680		
Information Value (IV) [54]	IV1	Interacting with other RED users can inform me of the required quality of the product I choose	0.811	0.460	0.718
	IV2	Interacting with other RED users can help me know	0.803		

Constructs	Indicators	Items	Loading	AVE	CR
		whether product quality follows an acceptable standard.			
	IV3	Interacting with other RED users can help me know whether the products are consistent with my expectations.	0.818		
	IV4	After purchases, I consulted RED for practical issues and applications.	0.783		
Emotional Value (EV) [38]	EV1	I receive adequate emotional care from other RED users.	0.772	0.518	0.809
	EV2	Interacting with other RED users makes me feel good.	0.788		
	EV3	Interacting with other RED users inspires me	0.735		
	EV4	Interacting with other RED users helps me generate ideas and gives my pleasure.	0.792		
Hedonic Value (HV) [37]		I was able to immerse myself in RED	0.698	0.517	0.811
	HV1	Using RED provides me with a lot of enjoyment.	0.828		
		Using RED makes me feel relaxed and good.	0.834		
		I have fun when using RED.	0.808		
Continuance of Online Purchase Intentions (OPI) [47]	OPI1	I intend to continue purchasing products on RED.	0.867	0.670	0.890
	OPI2	If I have shopping needs, I will continue purchasing products on RED.	0.917		
	OPI3	I will recommend my friends and family to purchase on RED.	0.890		
	OPI4	I will continue purchasing products only on RED.	0.901		

Note: Average variance extracted (AVE); composite reliability (CR)

Discriminant Validity

The discriminant validity ensures that constructs measure different underlying concepts and are distinct from each other. To meet the requirement for discriminant validity, the

square root of a latent variable's AVE must be higher than the correlations between the latent variable and the other variables in the study [55]. In Table 4, the diagonal elements are the square root values of AVEs, and the other elements are the Pearson correlation coefficients among the constructs. Take the high correlation coefficients as an example, the square roots of the AVEs for the two constructs of HV and OPI are 0.719 and 0.819, respectively, which is more than the correlation of 0.411, found between them in Table 4. It shows that there is adequate discriminant validity between the two latent variables. The square roots of this study's latent variables' AVEs are all greater than the correlations among all constructs in Table 4. Thus, the discriminant validity of the measurement is acceptable.

Table 4. Pearson correlation with AVE square root values

	PI	PST	PP	PSO	SV	IV	EV	HV	OPI
PI	**0.653**								
PST	0.322	**0.676**							
PP	0.403	0.364	**0.719**						
PSO	0.367	0.380	0.448	**0.687**					
SV	0.300	0.312	0.162	0.521	**0.793**				
IV	0.404	0.475	0.499	0.525	0.391	**0.678**			
EV	0.302	0.329	0.303	0.547	0.530	0.440	**0.719**		
HV	0.472	0.552	0.464	0.553	0.508	0.558	0.554	**0.719**	
OPI	0.229	0.307	0.193	0.477	0.557	0.427	0.534	0.411	**0.819**

Note: The bold diagonal numbers are the square root of the AVE; all other values are correlation coefficients.

Model Fit Validity

Model fit indices are used to validate the overall goodness of fit of the model. In Table 5, the seven commonly used indicators are presented to validate the goodness of fit. These indicators include the ratio of the chi-square statistic to the degrees of freedom (χ^2/df), which is expected to be around 3 or lower for an acceptable fit [56], the goodness of fit index (GFI) with a recommended value above .9 [57], root mean square error of approximation (RMSEA) with a recommended value of .1 or lower indicating a close fit [57], root mean square error (RMR) with a recommended value lower than .05 for a good fit [58], comparative fit index (CFI) with a recommended value above .9 indicating a good fit [56], normed fit index (NFI) with a recommended value above .9 indicating a good fit [57], and non-normed fit index (NNFI) with a recommended value above .9 indicating a good fit [56].

The results for all indicators are better than the recommended values, which validates the model's goodness of fit. Among the obtained results, the scores of χ^2/df (1.657 < 3) and RMSEA (.042 < .01) perform exceptionally well, confirming that the level of fit falls into the good fit category, with the remaining five results (GFI, RMR, CFI, NFI, and NNFI) indicating a marginal level of fit.

Table 5. Model Fit Indicators

Commonly used indicators	χ^2/df	GFI	RMSEA	RMR	CFI	NFI	NNFI
Criteria	< 3	> 0.9	< 0.1	< 0.05	> 0.9	> 0.9	> 0.9
Value	1.657	0.901	0.042	0.03	0.949	0.883	0.94

Note: Default Model: χ^2 (435) =5226.069, p=1.000, goodness-of-fit test (χ^2); degree of freedom (df); goodness of fit index (GFI); root mean square error of approximation (RMSEA); root mean square error (RMR); comparative fit index (CFI); normed fit index (NFI); non-normed fit index (NNFI); *N*= 366.

Hypothesis Testing

AMOS was used to test the proposed hypotheses. To determine whether the relationship between two variables was significant, we applied three indicators, the path coefficient value, *t* value, and *p-value*. To indicate a significant positive relationship, both the path coefficient value and the *t* value should be greater than 0 (path coefficient $\beta > 0, t > 0$) [59]. Smaller *p* values indicate a more significant relationship, with significance levels denoted by * $p < .05$, ** $p < .01$, and *** $p < .001$ [59] (Klem, 1995, pp. 65–97).

Table 6 presents 20 groups of path relationships, of which 16 are significant with the path coefficient value and the *t* value greater than 0, and *p* values smaller than .01. The remaining four relationships are not significant, namely, perceived interactivity and emotional value, perceived personalization and social value, perceived personalization and emotional value, as well as hedonic value and continuance intentions. The results of the path coefficient are presented in Figure 2.

Table 6. Hypothesis Testing Results

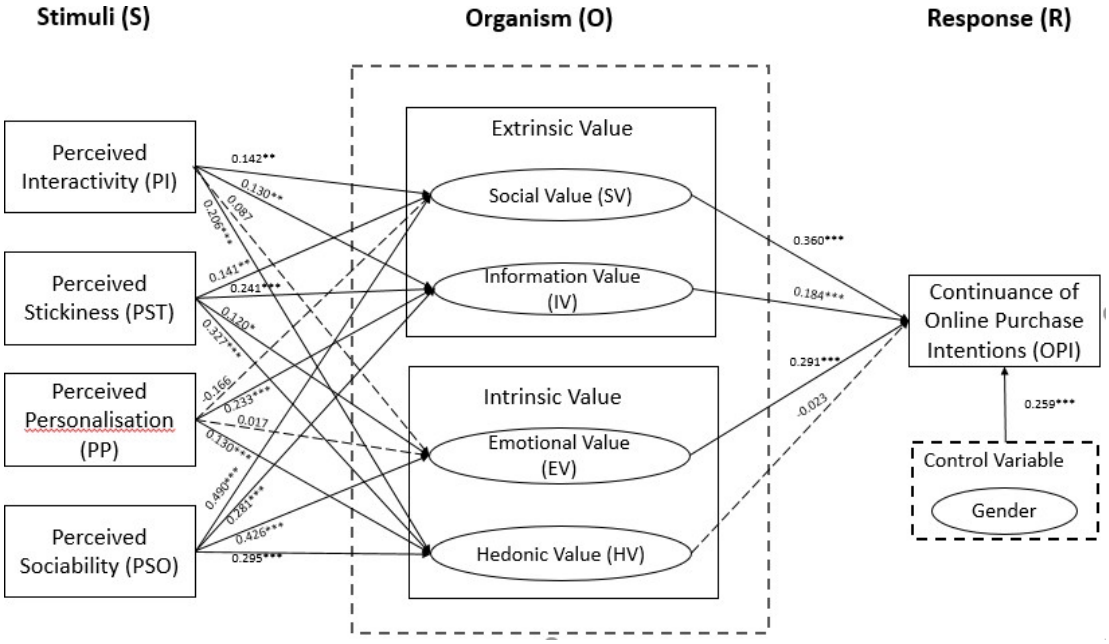
X	→	Y	*t* value	*p*	Path coefficients	Results
PST	→	**EV**	2.478	0.01	0.120*	Supported
PSO	→	**EV**	9.112	0	0.462***	Supported
PI	→	**EV**	1.791	0.07	0.087	*Not supported*
PP	→	**EV**	0.328	0.74	0.017	*Not supported*
PST	→	**HV**	7.854	0	0.327***	Supported
PSO	→	**HV**	6.782	0	0.295***	Supported
PI	→	**HV**	4.899	0	0.206***	Supported
PP	→	**HV**	2.961	0	0.130**	Supported
PST	→	**SV**	2.892	0	0.141**	Supported
PSO	→	**SV**	9.606	0	0.490***	Supported
PI	→	**SV**	2.892	0	0.142**	Supported
PP	→	**SV**	–3.231	0	-0.166	*Not supported*
EV	→	**OPI**	6.299	0	0.291***	Supported
HV	→	**OPI**	–0.47	0.64	–0.023	*Not supported*
SV	→	**OPI**	7.937	0	0.360***	Supported

X	→	Y	*t* value	*p*	Path coefficients	Results
IV	→	**OPI**	3.843	0	0.184***	Supported
PST	→	**IV**	5.437	0	0.241***	Supported
PSO	→	**IV**	6.049	0	0.281***	Supported
PI	→	**IV**	2.892	0	0.130**	Supported
PP	→	**IV**	4.974	0	0.233***	Supported

Note: * $p < .05$. ** $p < .01$. *** $p < .001$.

The path coefficient results are presented in Figure 2, indicating the correlations between the technological environments and the four perceived consumer values. Among all the results, this study focuses on the key findings. First, all four technological characteristics have a significant positive impact on social value, with perceived sociability having the most significant effect on social value ($\beta = 0.490$, $p < .001$). Second, for informational value, perceived sociability again has the most significant effect ($\beta = 0.281$, $p < .001$), and perceived interactivity has the least significant effect ($\beta = 0.130$, $p < .01$). Third, for emotional value, only two technological characteristics has significant positive effects, namely perceived sociability, which again has the most significant effect ($\beta = 0.426$, $p< .001$), and perceived personalization. Finally, all technological characteristics have a positive effect on hedonic value. Three of the four perceived consumer values, that is, social value, informational value, and emotional value, have a significant positive impact on continuance intentions; the exception is hedonic value. The strongest of these correlations is that between social value and continuance intentions ($\beta = 0.360$, $p < .001$).

As shown in both Figure 2 and Table 6, the relationship between hedonic value and continuance intentions is not significant, leading to nonsignificant path relationships from technological characteristics (perceived interactivity, perceived stickiness, perceived personalization, and perceived sociability) to continuance intentions. As a result, when comparing the hedonic value with the other three mediating variables (social, information, and emotional values), it is evident that hedonic value has a nonsignificant effect on continuance intentions despite there being significant relationships between hedonic value and technological characteristics.



Note: ** p < .05. ** p < .01. *** p < .001; dashed lines indicate non-significant path relationships.*

Figure 2. Results of the Research Model Tests

Testing the Mediating Effects

A regression model was constructed with the independent variable X (PI, PST, PP, and PSO) and the mediating variable M (SV, IV, EV, and HV) together with the dependent variable Y (OPI). There are six mediating regression equations which are listed below:

$$OPI=0.652-0.111*PP+0.201*PST+0.084*PI+0.592*PSO \quad (1)$$

$$SV=0.754-0.216*PP+0.169*PST+0.213*PI+0.612*PSO \quad (2)$$

$$IV=0.840+0.219*PP+0.209*PST+0.140*PI+0.253*PSO \quad (3)$$

$$EV=1.011+0.018*PP+0.118*PST+0.107*PI+0.472*PSO \quad (4)$$

$$HV=0.106+0.135*PP+0.313*PST+0.246*PI+0.295*PSO \quad (5)$$

$$OPI=-0.157-0.092*PP+0.067*PST-0.048*PI+0.173*PSO +0.339*SV+0.250*IV+0.344*EV-0.051*HV \quad (6)$$

For testing mediation hypotheses, this study adopts the Baron and Kenny [60] method in which several regression analyses are conducted, and the significance of the coefficients is examined at each step. Table 7 presents the overall regression results on the mediating effects, that is, the associations between technological environments, consumer perceived value, and continuance intentions. The results indicate 10 valid mediating effects, seven of which involve full mediation and three involve partial mediation. Although social value mediates the effect of perceived personality on continuance intentions, the results of the path analysis (see Table 6) reveal that perceived personalization has a significant negative effect on social value (SV) (t = -3.231, p = .001< .01), which contrasts with our hypothesis of H3a. Therefore, H3a is not included in further analysis.

Table 7. Results of Mediating Effect Tests

Items	Results	c Total Effects	a*b Mediating Effects	c' Direct Effects	Effects Size
PP=>SV=>OPI	Significant	-0.111	-0.073	-0.092	100%
PP=>IV=>OPI	Significant	-0.111	0.055	-0.092	100%
PP=>EV=>OPI	*Not significant*	-0.111	0.006	-0.092	0%
PP=>HV=>OPI	*Not significant*	-0.111	-0.007	-0.092	0%
PST=>SV=>OPI	Significant	0.201	0.057	0.067	100%
PST=>IV=>OPI	Significant	0.201	0.052	0.067	100%
PST=>EV=>OPI	Significant	0.201	0.041	0.067	100%
PST=>HV=>OPI	*Not significant*	0.201	-0.016	0.067	0%
PI=>SV=>OPI	Significant	0.084	0.072	-0.048	100%
PI=>IV=>OPI	Significant	0.084	0.035	-0.048	100%
PI=>EV=>OPI	*Not significant*	0.084	0.037	-0.048	0%
PI=>HV=>OPI	*Not significant*	0.084	-0.012	-0.048	0%
PSO=>SV=>OPI	Significant*	0.592	0.208	0.173	35.08%
PSO=>IV=>OPI	Significant*	0.592	0.063	0.173	10.71%
PSO=>EV=>OPI	Significant*	0.592	0.163	0.173	27.47%
PSO=>HV=>OPI	*Not significant*	0.592	-0.015	0.173	0%

Note: * denotes partial significance

As presented in Table 7, the mediation tests reveal three significant mediating effects for social value. Specifically, social value is found to mediate the relationships between perceived interactivity, perceived stickiness, and perceived personalization, leading to a significant impact on continuance intentions. However, it is worth noting that the path analysis indicates a significant negative effect of perceived personalization on social value, making its mediating effect between perceived personalization and continuance intentions inconclusive to support our hypothesis.

Conversely, all mediating effects are significant for informational value. Therefore, informational value is found to mediate the relationships between perceived interactivity, perceived stickiness, perceived personalization, and perceived sociability, resulting in a significant positive effect on continuance intentions. Regarding emotional value, two significant mediating effects are observed, namely perceived stickiness and perceived sociability. In contrast, the mediating effect of hedonic value on the relationships between continuance intentions and perceived interactivity, stickiness, personalization, and sociability do not support the hypothesis of this study.

Lastly, with regards to partial mediating effects, the relationship between perceived sociability and continuance intention is found to be partially mediated by social value, informational value, and emotional value, with respective proportions of 35.08%, 10.71%, and 27.47%. Apart from these three effects, all other significant relationships

indicate direct effects. Further explanations supporting the results of both significant and non-significant mediating effects can be found in the following section.

5. CONCLUSION AND IMPLICATIONS

This study utilizes the stimuli-organisms-response model to examine how technological environmental factors affect users' perceived values and continuance intentions on social commerce platforms. The results show that within the technological environment of social commerce platforms, factors including perceived interactivity, stickiness, and sociability significantly influence consumers' perceived values in social, informational, and emotional aspects. These perceived values, or "organisms," subsequently impact the purchasing behavior of Chinese Gen Z consumers on RED.

The study's results suggest that RED can enhance users' continuance intentions by improving its social and informational values through its technological features. The findings highlight that RED should not be viewed solely as a communication tool or social network service, but rather as an "artificial structural equivalence of social connections" [61, p. 242] that allows users to transfer their social capital online and digitalize their daily lives beyond the constraints of space and time [36]. By bridging the virtual social commerce platform and the real commercial world, this study explains why consumers join and repeatedly use social network platforms such as RED. These insights are relevant not only to RED but also to other social network service providers.

The study concludes that RED users are primarily motivated by social, informational, and emotional values rather than hedonic values like fun or enjoyment. It's important to recognize that RED is more than just a communication tool or social network service; it's an artificial structural equivalence of social connections that carries users' social capital. By joining and engaging with a social commerce platform like RED, individuals can transfer their social capital online and digitalize their everyday lives, transcending spatial and temporal boundaries. This research provides insights into why consumers join social network platforms like RED and continue to use them by bridging the virtual social commerce platform with the real commercial world. The implications of this study are both theoretical and practical, offering guidance for similar social platforms to enhance their platform design and increase consumer continuance intentions, particularly in the post-COVID-19 era.

5.1 Theoretical Implications

This study demonstrates that the characteristics of the technological environment (stimuli) positively and significantly impact Chinese users' continuance intentions through the mediating effects of consumers' perceived values (organisms). In contrast to most studies, this research differentiates consumer perceived value into intrinsic and extrinsic values and includes the concepts of hedonic and emotional values. The findings highlight the need for service portfolios to have a diverse focus to improve Gen Z's continuance intentions (response) by specifying perceived values (organisms).

As supported by the empirical evidence, the four functional mechanisms of social

commerce technological environments significantly impact the four types of values perceived by Chinese young consumers. The analysis shows that perceived sociability has the strongest mediating effect on social value (H4a). However, the study does not support the mediating effect between perceived personalization and social value (H3a). This may be due to RED's rules and settings, particularly its functions of providing news and sharing information with mutual friends, which make social ties and interactions crucial in determining the benefits users gain from using RED compared to their expectations. Without a close relationship between perceived sociability and social value (H4a), which is reflected in online social interactions and bonding, the influence of technological environments is significantly weakened.

This research focuses on Gen Z, the generation born with and the major users of social media. The findings reveal that extrinsic values, such as social and informational values, have the most significant mediating effects on RED's perceived interactivity, stickiness, and sociability. This suggests that young users of RED, particularly those within the Gen Z consumer group, maybe transitioning into more rational buyers due to the ongoing economic downturn caused by COVID-19 in China. The results indicate that the pursuit of social, informational, and emotional values is the primary motivation of RED users. Moreover, extrinsic values, such as social and informational values, have stronger mediating effects between environmental characteristics and user values and continuance intentions. Figure 2 shows that consumers' perceived social value not only influences their continuance purchase intentions through intrinsic and extrinsic values but also directly, demonstrating partial mediation.

This study examined the effects of three types of perceived values on Gen Z's continuance intentions using RED as a case study. The results suggest that these values have unequal effects on users' intentions, which implies that social media platforms should consider varying weights for influential factors. Previous studies, for example, Liu et al. [3] and Djafarova & Bowes [9] have suggested that hedonic and informational values positively impact continuance intentions in using social network services. However, the findings of this study contradict this perspective, demonstrating that hedonic value such as fun or enjoyment does not significantly influence continuance intentions for Gen Z users of RED. Theoretically, this finding highlights the divergence between RED and other social network services that are positioned around shared expertise and interests. The mediating role of extrinsic and intrinsic values indicates that the core competence of a social commerce platform is fundamentally determined by the time users want to invest in maintaining their social capital using the platform.

5.2 Practical Implications

This research empirically confirms that four functional mechanisms of the social commerce technological environment have a significant impact on the four types of values perceived by Chinese consumers. Throughout the analysis, perceived sociability has the strongest mediating effect on social value (H4a). However, the mediating effect between perceived personalisation and social value is not supported (H3a). The reason may be that RED’s rules and settings, particularly its functions of providing news and

sharing information with mutual friends, make social ties and social interactions pivotal, and determine any discrepancy between the benefits that users gain by using RED and those that they expect to gain. Without a close relationship between perceived sociability and social value (H4a), which manifests as online social interactions and bonding, the influence of technological environments is dramatically weakened. Based on the findings, more attention should be paid to technological features that enhance the stickiness of the social commerce platform. When users become more bonded and attached to the platform, their perceived social and informational values rise. Social commerce platforms could launch attendance incentive schemes to encourage users to spend more time using the platform and promote user stickiness.

Contrary to our hypotheses, perceived interactivity has a negative relationship with emotional value (as indicated by H1c), while perceived personalization has negative relationships with both social value (H3a) and emotional value (H3c). Additionally, hedonic value had a non-significant impact on the continuance of online purchase intentions (H5d). These four insignificant results imply that young users of RED, in particular the Gen Z consumer group in China, may be evolving into more rational buyers than other user groups. Facing the current economic downturn under the post-pandemic era, it seems that Gen Z users of social commerce platforms are driven to make purchases not solely for entertainment or pleasure but to fulfill their needs in an emerging market.

However, despite the positive impact of interactivity on product interaction in social commerce, there is a point where the perceived benefits of interactivity can become excessive, resulting in an overwhelming intensity that can negatively affect consumers. This may explain the negative relationship between perceived interactivity and emotional value (H1c). In particular, for Gen Z consumers, excessive interactivity can potentially lead to customer irritation, frustration, and information overload, thus explaining the observed negative relationship. The result of this study is in line with the work of Kang et al. [45] who argue that excessive interactivity can cause customer irritation, frustration, and information overload [45].

This study suggests that social commerce platforms should prioritize extrinsic values over other perceived values. This study suggests that Gen Z users' value extrinsic values. Therefore, social commerce platforms should prioritize functions that promote social and informational values. This approach aligns with this study's findings that social relationships and information are highly valued by consumers, and it can help social commerce platforms stand out in an unfavourable economy, particularly in the post-COVID-19 era. To enhance social value, platforms could add information on a user's friends' recent purchases and their comments on product sales pages. To enhance informational value, platforms could summarize and highlight the unique selling points of products. Overall, these insights provide valuable guidance for social media platforms seeking to enhance user experience and engagement.

5.3 Limitations and Future Research

There are several limitations to be acknowledged in this study. Firstly, while RED serves as the most popular and representative social commerce platform in China, it is important to note that our choice of platform may limit the generalizability of our findings. It would be valuable for future studies to test our model using different social commerce platforms in emerging economies. Additionally, to minimize common method bias, future research could consider adopting an experimental design or employing methods such as separating data collection in time. This would enhance the reliability and validity of the results. Furthermore, it is worth noting that current users who have no prior experience purchasing through the app may potentially become buyers in the future. Examining the differences between current and potential users, as well as measuring users' actual purchasing behaviour to compare with their intentions, could provide valuable insights. Adopting an experimental approach in future research would also help address any common method bias concerns. Lastly, conducting a comparative analysis between current and potential users would contribute to a more comprehensive understanding of user behaviour and preferences in social commerce.

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COMPLIANCE WITH ETHICAL STANDARDS

Conflict of interest All authors declare that they have no conflict of interest.

APPENDICES

Appendix A

Reliability Statistics (Cronbach Alpha)

Items	Corrected Item-Total Correlation (CITC)	Cronbach Alpha if Item Deleted	Cronbach's Alpha
PT1	0.531	0.955	
PT2	0.602	0.955	
PT3	0.495	0.957	
PT4	0.497	0.956	
PST1	0.500	0.957	
PST2	0.553	0.956	
PST3	0.564	0.955	
PP1	0.686	0.954	
PP2	0.587	0.955	
PP3	0.638	0.955	
PSO1	0.590	0.955	
PSO2	0.656	0.955	
PSO3	0.521	0.956	
PSO4	0.651	0.955	
SV1	0.622	0.955	
SV2	0.610	0.955	
SV3	0.623	0.955	0.956
SV4	0.647	0.955	
IV1	0.569	0.955	
IV2	0.650	0.955	
IV3	0.580	0.955	
IV4	0.540	0.955	
EV1	0.622	0.955	
EV2	0.734	0.954	
EV3	0.737	0.954	
EV4	0.695	0.954	
HV1	0.688	0.954	
HV2	0.736	0.954	
HV3	0.797	0.954	
HV4	0.783	0.954	
OPI1	0.681	0.955	
OPI2	0.705	0.954	
OPI3	0.637	0.955	
OPI4	0.613	0.955	

Appendix B

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.874
Bartlett's Test of Sphericity	Approx. Chi-Square	2257.181
	df	561
	Sig.	.000

Appendix C

Factor Analysis

Items	Factor Loadings									Communalities
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	
PT1	0.075	0.060	0.166	0.805	0.311	0.050	0.078	0.047	0.030	0.793
PT2	0.059	0.245	0.065	0.668	0.203	0.354	0.063	0.165	0.115	0.725
PT3	0.183	0.091	0.353	0.216	-0.297	0.027	-0.089	0.659	0.143	0.765
PT4	-0.028	0.088	0.117	0.702	0.010	0.306	0.340	0.057	0.049	0.730
PST1	0.350	0.098	-0.079	0.005	0.252	0.079	0.142	0.721	-0.099	0.758
PST2	0.143	0.191	0.132	0.184	0.743	0.150	0.091	-0.059	0.057	0.698
PST3	0.118	-0.065	0.164	0.200	0.522	0.411	0.441	-0.008	0.034	0.722
PP1	0.217	0.233	0.194	0.412	0.229	0.630	-0.084	0.170	0.061	0.798
PP2	0.023	0.085	0.191	0.339	0.218	0.714	0.199	-0.067	0.181	0.794
PP3	0.152	0.229	0.171	0.143	0.175	0.727	0.242	0.143	-0.084	0.771
PSO1	0.330	0.187	0.702	0.050	-0.023	0.215	-0.024	0.307	-0.048	0.783
PSO2	0.213	0.163	0.542	0.209	0.392	0.064	0.143	0.022	0.331	0.699
PSO3	0.201	0.181	0.495	0.117	-0.085	0.439	0.155	-0.251	0.169	0.648
PSO4	0.358	0.293	0.593	0.211	-0.075	0.257	0.053	-0.060	0.146	0.710
SV1	0.263	0.494	0.455	0.160	0.201	0.167	-0.013	-0.004	-0.386	0.764
SV2	0.326	0.147	0.654	0.019	0.259	0.048	0.145	0.127	0.004	0.662
SV3	0.081	0.193	0.687	0.275	0.297	0.107	0.185	-0.046	-0.16	0.753
SV4	0.143	0.367	0.171	0.588	0.138	0.186	0.292	-0.099	0.023	0.680
IV1	0.132	0.225	0.108	0.133	0.252	0.117	0.795	0.066	-0.001	0.811
IV2	0.330	0.612	0.023	0.173	0.160	0.028	0.505	-0.084	-0.02	0.803
IV3	0.084	0.25	0.178	0.291	-0.027	0.197	0.732	0.034	0.236	0.818
IV4	0.151	0.247	-0.138	0.251	0.279	0.358	0.365	-0.051	0.524	0.783
EV1	0.233	0.72	0.347	-0.025	0.005	0.049	0.184	0.096	0.179	0.772
EV2	0.169	0.398	0.291	0.284	0.289	0.142	0.345	0.033	0.460	0.788
EV3	0.172	0.621	0.344	0.177	0.353	0.162	0.104	0.091	-0.001	0.735
EV4	0.096	0.747	0.149	0.258	0.194	0.17	0.228	0.02	0.129	0.792
HV1	0.105	0.395	0.252	0.277	0.526	0.158	0.133	0.047	0.264	0.698
HV2	0.251	0.446	0.068	0.25	0.65	0.176	0.138	0.164	-0.001	0.828
HV3	0.376	0.645	0.186	0.169	0.236	0.321	0.065	0.225	-0.012	0.834
HV4	0.316	0.438	0.08	0.342	0.48	0.347	0.118	0.147	-0.077	0.808
OPI1	0.830	0.159	0.282	0.070	0.118	0.097	0.151	0.145	-0.039	0.867
OPI2	0.849	0.222	0.209	0.09	0.041	0.134	0.173	0.212	0.007	0.917
OPI3	0.848	0.129	0.238	0.069	0.277	-0.014	0.008	0.063	0.107	0.890
OPI4	0.900	0.184	0.145	0.010	0.068	0.146	0.048	0.064	0.059	0.901