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The psychological facets of consumer-brand relationship in the digital world

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The psychological facets of consumer-brand relationship in the digital world

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The Influence of Entrepreneurs' Online Popularity and Interaction Behaviors on Individual Investors' Psychological Perception: Evidence From the Peer-To-Peer Lending Market

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Inappropriate social interactions of entrepreneurs can generate negative effects in the peer-to-peer lending market. To address this problem and assist peer-to-peer entrepreneurs in customizing their online interaction strategies, we used the cutting-edge cognitive-experiential self-system conceptual model and studied the relationship between peer-to-peer entrepreneurs' interactions and financing levels. Online interactive information was categorized as emotional or cognitive, adding the moderator of entrepreneur popularity, and the effect of these interactions on individual investors was analyzed. We found that the entrepreneurs' online interactive information affected psychological perception of entrepreneurs and their corresponding brand image. The interaction between popularity and interactive information types was significant. The findings imply that less popular entrepreneurs should engage in emotional interactions, while more popular entrepreneurs should choose cognitive interactions. Online interaction created comparative advantages in the financing activities of peer-to-peer companies. These results expand understanding of the psychological facets of the consumer–brand relationship in the digital world, and extend the current literature. This study also highlights key areas of learning and application for both practitioners and scholars of organizational psychology.

Keywords: online popularity, interaction behavior, peer-to-peer lending, entrepreneurship, psychological perception, individual investors

INTRODUCTION

When studying entrepreneurship, the impact of social interaction must be considered (Aldrich and Zimmer, 1986). In recent years, the focus of academic research on the role and behavior of entrepreneurs has gradually shifted from internal managers to external social influencers. The social interaction of entrepreneurs is an important aspect of front-end behavior display, and has received extensive attention within academic and professional circles. Entrepreneurs' positive social behaviors enhance the company's legitimacy and goodwill (Daily and Schwenk, 1996). As leaders of a company, entrepreneurs' personal behaviors and information they provide have a direct bearing on corporate image and value. For example, on September 6, 2018, the chairman and CEO of

JD.com was arrested during a visit to the United States. JD's stock price fell by 16% within 2 days, and the group's market value evaporated by US$7.2 billion (Sohu, 2018). On September 10 of the same year, the chairman of the Alibaba Group announced his retirement plan. The stock price fell 3.7% on the same day, and US$15 billion of the group's market value was lost (IFeng Finance, 2019). The CEO of Tesla was exposed as having smoked marijuana, which caused market concerns about the group's prospects. That day, the Tesla stock price fell 6.3% (NetEase Tech, 2018). Business leaders can directly affect the value of the company, and a negative personal reputation may reduce the company's legitimacy and goodwill. With the rapid development of the internet, entrepreneurs face ever-increasing intensity of online social interactions and frequency of information demanded. Etemad et al. (2010) wrote: "Relations on the internet are more explicit than those based on interpersonal and culturally or socially based relations. In fact, most of the online relations are of functional and professional nature, explicitly articulated, and do not lend themselves to interpersonal or cross-cultural misunderstandings or misinterpretations, whether favorable or not." Aouadi et al. (2013) pointed out that Google search volume is a reliable proxy of investor attention, and a lot of investment information content is often available on the internet.

Compared with other industries, there are particularities in the peer-to-peer lending field (P2P). At the time of the study, China's P2P lending industry was an investor's market, with more demand for financing than supply of funds. Because P2P online loans require a large amount of social capital investment, this industry is attracting a large number of individual investors (Wang, 2018). It should be noted that, in this paper, we exclude institutional investors. In the field of P2P lending, the purpose of entrepreneurs when interacting online is not only to send information to those who need funds, but also to attract the attention of investors. Compared with consumption, investments pose higher risks. Investors make funds available without the exchange of products, services, or added value, and face the risk of losing their principal investment. China's P2P lending market was a late entrant. Because of asymmetric information in the industry, lack of supervision, and inadequate platform risk control, many of the hazards in the industry have been realized in recent years. Some platform's capital chains have ruptured, causing many investors to suffer losses, thus increasing the negative impact on the development of this industry (Zhang, 2013). In the field of P2P lending, the three factors of high industry risk, severe information asymmetry, and investor risk aversion have been compounded, leading to the individual investor's preference for more reliable rather than higher-yield projects (Wang, 2015). Simultaneously, there are small- and medium-sized platform enterprises in China's P2P industry (with a registered capital of less than 30 million yuan, or approximately US$ 4.29 million). Braune et al. (2016) pointed out that the financial efficiency of SMEs is low, with poor profit outlook for members in this industry cluster. These small- and medium-sized P2P enterprises are more dependent on their own comparative advantages (Song et al., 2018). Due to policy restrictions, P2P platforms cannot publish advertisements in the mainstream media, and it is difficult to relay reliable information to individuals (Yeo and Jun, 2020). Therefore, compared with other industries, the influence of business leaders is more prominent, and personal, social, and online interaction of entrepreneurs using P2P platforms has become an important comparative advantage. To what extent does the online popularity of entrepreneurs affect P2P lending platforms? What types of information released by entrepreneurs achieve superior results? These extremely practical problems have piqued the author's research interest.

This paper is divided into several parts: literature review, theoretical framework, methodology, analysis and discussion of results, and conclusion. We also fully discuss the existing research, theoretical logic, data extraction, and measurement, analysis of results, and the conclusions drawn, offering several academic contributions and managerial implications. This paper innovatively takes the P2P lending industry as a research object and explores the impact of entrepreneurs' online interactions on financing, through empirical research, which has associated practical implications. Additionally, the innovative inclusion of variables that enhance the popularity of entrepreneurs and their online interactive content, while analyzing their interaction and resultant impact on corporate financing, can provide a reference for further academic research.

LITERATURE REVIEW

P2P Lending

P2P lending refers to the use of internet platforms to complete transactions between the demanders and suppliers of funds, constituting small loans between individuals. P2P online lending originated in the United Kingdom, and then expanded to the United States, Germany, and other countries. Its typical model consists of an online credit company that provides a platform where both borrowers and qualified lenders can bid freely. In the traditional P2P model, the online loan platform only provides information-sharing activities—information on value identification and other services that facilitate the completion of transactions for both parties—but without directly participating in the loan value chain. There is a direct relationship between the borrower and the lender, and the online loan platform charges a service fee from the borrower and lender to maintain its operation. The modern P2P platform also has crowdfunding investment projects, together with wealth management products. In 2015, China's online loan transaction volume exceeded one trillion yuan (US$0.14 billion), a year-on-year increase of 258.62%, and historical cumulative transactions were 16.31 billion yuan (US$2.33 billion) (China Economics, 2016). Likewise, with its unique role, P2P online lending has emerged on a large scale around the world and become a major supplement to traditional finance sources. Wang and Liao (2010) pointed out that this new form of borrowing reduced transaction costs and greatly expanded the coverage of financial services. Empirical research on P2P online lending found that, in terms of borrower characteristics, the main targeted users of P2P loans are short-term, low-value lenders who are rejected by traditional financial institutions because credit information cannot be transmitted accurately or because they cannot provide sufficient collateral. Most borrowers come from the working class with poor credit. Zhuang and Zhou (2015), by reviewing order statistics released by PPdai.com, found that, on average, loan amounts were 7371.795 yuan (US$1053.11); bids attracting investors to participate in the loan slip were 19.9148; the winning rate of the loan slip was 0.3252; the term was 6.5 months; and most P2P borrowers had a loan period of less than 1 year. Guo's (2013) research concluded that users of P2P network loans are unevenly distributed in terms of region, age, education, and credit rating. You and Zhang (2010) believe that P2P online loans have filled the gap created due to the lack of services provided by financial institutions to small- and medium-sized enterprises and vulnerable groups in formal finance. The unsecured guarantee, self-service transaction model, short-distance transaction space, and new financial management options provided by P2P lending have met the financial needs of many small- and medium-sized customers, and play an active role in promoting independent entrepreneurship. The P2P platform can share interest rates with borrowers and lenders due to lower credit evaluation and operating costs, which is an effective way to serve small and micro businesses and realize inclusive financing (Song et al., 2014).

Online Interaction

Overview of Online Interaction Vehicles

In 2006, Evan Williams, the founder of Twitter, first proposed the concept of microblogging. Gaonkar and Choudhury (2007) suggested a comprehensive definition, describing it as a multimedia blog that mainly focuses on the following four functional elements: wireless networks, information processing, space visualization, and mobile phone sensors. Subsequently, scholars defined micro-blogging from the perspective of information dissemination; the most cited definition, proposed by Kaplan and Haenlein (2010), is that of a micro-blog which is a technology-based internet exchange tool that allows users to create or exchange user-generated information content. In the past, people used the internet to simply consume "content," such as reading online information, watching online videos, or purchasing products and services (Kietzmann et al., 2011). A micro-blog is a social media tool that uses technology to achieve communication, transactions, and relationship construction between users, and enables enterprises to gather consumers and create value together (Andzulis et al., 2012). People will also publish descriptions, opinions, and evaluations of brands and products on micro-blogs (Jansen et al., 2009). In addition, micro-blogging is an important platform to convey personal values. For example, in emergencies, micro-blog content has often indicated concern for the status of refugees, by suggesting rescue actions, while fostering commitment and cooperation (Smith, 2010). Users with higher sociability, extraversion, or emotional needs prefer to use Facebook, while those with higher cognitive needs tend to choose Twitter (Hughes et al., 2012). Unlike in Western countries, because of policy reasons, mainland Chinese netizens cannot use Facebook or Twitter. Instead, Weibo was launched by a Chinese company called Sina. Statistics show that the number of Chinese Weibo users in 2018 was 337 million, an increase of 34.56 million compared with 2017, accounting for 42.3% of the total number of internet users. Because of the lack of competition, Weibo has become China's most used text self-media (AskCI, 2019).

Business Applications of Micro-Blogging

Because users often communicate with each other and share opinions about brands through micro-blogging, as an important "word-of-mouth" disseminator of resource data, it is used by companies to drive business forecasting. Asur and Huberman (2010) used consumer comments on movies on Twitter to predict movie box office hits. The study found that people's attitudes to movies on micro-blogs were significantly positively correlated to movie box office revenues. Tayal and Komaragiri (2009) used micro-blogs and blog data to predict stock prices. Their results showed that the correlation coefficient between the predicted value of micro-blog data samples and the company's real stock price was greater than 0.9, and the accuracy of micro-blog data prediction was significantly higher than that of blog data. By analyzing the content of consumers' micro-blog information, enterprises may better understand the factors and changing trends that influence consumers' evaluation of brands. Jansen et al. (2009) analyzed the semantic and attitudinal structure of 150,000 pieces of consumer micro-blog content containing brand information on Twitter, and found that micro-blog information contained a large number of consumer evaluations (both positive and negative) of different brands, as well as changing trend characteristics. Additionally, by using these data, companies collect information about competitors and predict their actions. Thus, consumers have adopted micro-blogs as an important and credible channel to obtain brand information and exchange brand opinions, which has created new opportunities for companies to establish consumer-brand relationships through these platforms. Enterprises can interact online with consumers *via* micro-blogs and influence their purchasing decisions and perceptions of brand image, while assisting them in solving their product-related problems (Hsu et al., 2010; Coyle et al., 2012).

Entrepreneurs' Online Interaction on Micro-Blogs

Entrepreneurs publicly disseminate information, communicate, and interact with the public under their real-name identity in the micro-blog environment. Entrepreneurs experience three stages, i.e., "textualization," "mediatization," and "digitalization" in external communications (Girginova, 2013). From the earliest paper media, such as newspapers and magazines, to electronic media such as radio and television, and now to the digital communication methods of micro-blogging, entrepreneurs' information has been disseminated at an ever-increasing pace to an expanding audience. In modern marketing practice, it has become a trend for entrepreneurs to identify themselves on the micro-blog platform and interact directly with the public. Scholars believe that their primary motivation is to influence and impact (potential) consumers and target groups (Fischer and Reuber, 2011; Hartzel et al., 2011; Huang et al., 2014). When entrepreneurs, as representatives of the enterprise and symbols of personalization (Mazur, 1999; Gaines-Ross, 2000), use micro-blogs to communicate directly with the public, their image is established as genuine and transparent in the minds of consumers (BrandFog, 2012). Micro-blogs thus deepen consumers' awareness of entrepreneurship and brand image (Samuel, 2009), and foster mutual connections and relationships (Girginova, 2013). Research shows that 82% of consumers trust entrepreneurs who participate in online activities, while 77% indicate a purchasing preference for their products and services (Cruz and Mendelsohn, 2012). Girginova (2013) collected and analyzed 2086 tweets and interview records published by ten entrepreneurs and found that the micro-blog information released by entrepreneurs may generally be categorized as personal-related content or work-related content. This information will affect consumers' perceptions of, and preferences for, the entrepreneurs' image and branding. From the perspective of social interaction, Fischer and Reuber (2011) found that, compared with information devoid of emotion, emotion-rich information compels consumers to evaluate entrepreneur image and brand image more highly; relative to corporate-related information, entrepreneur-related information will elicit a more positive consumer evaluation of corporate image and branding.

Introductory and theoretical studies on micro-blogging have been conducted by enterprises and entrepreneurs. However, given that the online interaction goals and communication characteristics of entrepreneurs in the P2P lending field are different from those in traditional industries, their financing, rather than sales characteristics, have prevented the application of existing entrepreneur interaction strategies to the P2P lending field; this highlights the importance of the current discussion, as undertaken in our research, which supplements the relevant literature on entrepreneurial behavior theory and provides practical implications.

Comparative Advantages of Entrepreneurs' Social Interaction

The intentional presentation or unintentional exposure of entrepreneur information to the public has a direct impact on their image shaping. Examples include entrepreneurs' advertising endorsements, external communications, charitable acts, and negative behaviors, among others. First, it is commonplace for entrepreneurs to offer advertising endorsements to great effect. Friedman et al. (1976) took a virtual brand of sparkling wine as an example, and used movie stars, typical consumers, experts, and entrepreneurs as spokespersons in the advertisements to test the endorsement effect. The study found that compared with other types of spokespersons, entrepreneurs were rated most highly by consumers on image evaluation and product purchase intentions, and their findings were later supported by Freiden (1984). Second, for entrepreneurs, public speaking (external communication) is an important way to shape their image. Their personal charm can be successfully demonstrated by explaining the vision, language, and emotion of their brand (House and Shamir, 1993). Clearly, the unique communication styles of entrepreneurs will cause consumers to develop special image associations. Third, the charitable behavior of entrepreneurs, especially their actions taken in the face of sudden catastrophic events, can earn the public's goodwill (Wang, 2011; Huang et al., 2012; Guo et al., 2020).

The brand personality of an enterprise is critical (Cai and Mo, 2019). First, entrepreneurs' social interactions can affect corporate branding (Nazir et al., 2020). When interacting with the public, the entrepreneurs' personality and voice represent and shape those of the entire organization (Garbett, 1988; Gray and Balmer, 1988). Cognitive balance theory proposes that if consumers have a positive impression of entrepreneurs, this will be reflected in their attitudes to the brands and products of the entrepreneurs' company, as indicated by numerous empirical studies (He and Wang, 2005). Moreover, when consumers strongly associate entrepreneurs with corporate brands, this has significant positive impact on corporate brand image (Huang et al., 2010).

Second, entrepreneurs' social interaction affects corporate performance (Agle et al., 2006). Effective social interaction by entrepreneurs has a significant impact on company stock prices (Tosi et al., 2004). Leadership styles also have a significant impact on the company's financial performance (Yuki, 2008). Nguyen-Dang (2005) conducted a study on Fortune 500 companies from 1992 to 2002, and the results indicated that level of media exposure to CEOs had a significant positive impact on company performance, with positive reports having a greater impact.

Third, the social interaction of entrepreneurs affects their key role in securing access to external resources from investors, including financial, material, and intangible capital (Starr and MacMillan, 1990). Securing external resources not only enables companies to undertake development opportunities, but also greatly enhances their prospects of survival and profitability (Brush et al., 2001). Flynn and Staw's (2004) research shows that entrepreneurs who enhance their personal charm by actively interacting with the public ensure that their companies obtain additional external resources. Charismatic entrepreneurs are better able to attract attention and commitment of external investors, especially when the macroeconomic situation is poor or the company encounters a crisis. Treadway et al. (2009) found that media attention and entrepreneurs' political skills will affect their ability to convert their reputation into goodwill, enhancing their personal success and the financing efficiency of their companies. Shaping the public image of entrepreneurs means expanding their personal popularity and ultimately assisting companies in gaining the favor of investors.

In summary, there are still two areas of extant research that require improvement. First, the analysis of entrepreneurs' social interaction is one-way rather than two-way. In the past, scholars have mostly discussed passive interaction behaviors, wherein, rather than being actively shared with the public, most information about entrepreneurs was passively exposed by the media. This is inconsistent with the current two-way interaction model between entrepreneurs and the public. The second is that the communication media in extant studies, including TV, radio, and printed media, were generally outdated. Studies of the impact of entrepreneurs' active communication behaviors on consumers and investors in the context of new digital media were lacking. In the online environment in particular, entrepreneurs can achieve direct dialogue, self-presentation, and disclosure with the public: this requires further study. This research was thus performed from the perspective of online interaction.

THEORETICAL FRAMEWORK

The research question established in the literature review is as follows: how do the online interactions of entrepreneurs affect public perception of their image and the financing level of P2P platforms? The theoretical model and research hypotheses of this study are constructed considering relevant research concepts, namely reputation theory, and cognitive-experiential self-system theory.

Individual Reputation Theory

Fama (1970) proposed the reputation theory and applied it in many fields of research and business administration. With the continual advancement of internet technologies, many consumers purchase goods and services from online companies. Consumers are cautious in accepting new processes inherent in internet-based companies, and reputation is a key factor for them. As components of the internet financial industry, P2P online lending companies are no exception. Therefore, many scholars have begun to pay attention to the reputation of online entrepreneurs. Moreover, in an online environment, reputation formation, and accumulation is rapid, the resultant flow of this information is efficient, and the generation of information networks is effective. Koufaris and Hampton-Sosa (2004) define the reputation of internet-based entrepreneurs as the public's trust in, and consumers' attention to, these company leaders. Pavlou (2002) indicates that online entrepreneurs are concerned that customer's dissatisfaction will affect their reputation; hence, they pay more attention to behaviors that may adversely affect this. Jarvenpaa et al. (2000) found that there is a positive correlation between the personal reputation of internet-based entrepreneurs and customer trust; that is, entrepreneurs with a positive reputation can help alleviate the negative impressions formed by customers.

The problem of adverse selection due to information asymmetry may cause the market to collapse. In the P2P online lending market, one way to overcome this problem is for the P2P lending platform to assume guarantee responsibility by establishing their own reputation through repeated lending transactions. Through high-credit transaction matching, investors can evaluate the stability and reliability of the platform and make secondary investments. At the same time, through the actions of investors, a P2P platform with a strong reputation may create arbitrage opportunities and benefit from more favorable interest rates. Therefore, the "reputation model" in this market should be based on dynamic analyses.

There are two types of P2P platforms in the network lending market: high-quality and sub-optimal, which are labeled as platform 1 and platform 2. The financing cost corresponding to the high-quality platform is r_1, and the financing cost corresponding to the sub-optimal platform is r_2, where $r_2 > r_1 > 0$; that is, the financing cost corresponding to the high-quality platform is lower than that corresponding to the sub-optimal platform. We suppose that the P2P lending platform has financing needs, and the income from the project invested or lent is B, and the investor's reputation for the platform is s. Further, we assume that the investor's utility function is L = Ns-B, where $N = 1$ means that the high-quality platform gets financing; and $N = 0$ means that the low-quality platform gets financing. Then, the utility function of platform 1 is b_1 = B-r_1, and the utility function of platform 2 is b_2 = B-r_2, where $b_2 < b_1$. The utility of investing funds in high-quality platforms is s-B, and the utility of investing in sub-optimal platforms is -B. The social welfare generated by investors who give capital to high-quality platforms is F = (B-r_1)+(B-s) = s-r_1. If s is greater than r_1, the social welfare is greater than zero. If the investor invests the funds in a sub-optimal platform project, the social welfare is F = (B-r_1)+(-B) = -r_1, which is less than 0, indicating that the overall benefits of online lending are impaired.

Assuming that the high-quality platform has undertaken online lending k-1 times, and now it is the kth time, assuming the discount factor of time is a ($a < 1$), the utility obtained after engaging in several lending transactions is:

$$(B - r_1)\, a\, (B - r_1) \ldots\ldots a_{k-1} (B - r_1) \;=\; \frac{(1 - a_k)(B - r_1)}{(1 - a)}$$

If platform 1 deteriorates and drops in quality to become a sub-optimal platform, then the current gain is B-r_2. So, the platform will continue to maintain a good reputation:

$$\frac{(1 - a_k)(B - r_1)}{(1 - a)} \;>\; B - r_2$$

If the number of loans becomes infinite, that is, the value of k tends to infinity, the above formula can be transformed into:

$$\frac{(B - r_1)}{(1 - a)} \;>\; B - r_2$$

Rearranged as:

$$\mathrm{B} \;>\; \mathrm{r}_1 + \left(\frac{1}{\mathrm{a}} - 1\right)(\mathrm{r}_1 - \mathrm{r}_2)$$

The part of the formula that is less than the borrowing cost r_1, which is [(1/a)-1](r_1-r_2), can be regarded as the "reputation rent" of the P2P platform—that is, the borrower's utility satisfaction obtained from its reputation. It can also be found from this equation that if the borrower's borrowing strategy continues to operate, from a probabilistic point of view, the borrower is unlikely to risk opportunism. The above helps to increase buyer loyalty (Cassia and Magno, 2012).

Cognitive-Experiential Self-System Theory

Types of Online Interactive Information Used by Entrepreneurs

Since the 1990s, the changing economic environment has increasingly affected business operations, and it has become necessary for companies to adopt innovations and other means to protect their competitiveness (Geerguri-Rashiti et al., 2017; Ramadani et al., 2017). Scholars in the field of social psychology believe that entrepreneurs' image is a competitive advantage for companies, and have conducted numerous studies and explored mechanisms for evaluating the attitudes of consumers. Among them, the cognitive-experiential self-system theory is a relatively representative theoretical achievement. It has been widely used in advertising research, consumer behavior, and other marketing fields. The model suggests that when people are processing information, there may be two sets of systems that function independently, namely, the cognitive and emotional systems. For a given stimulus, without additional cognitive coding, people's emotional system will take the lead in responding. Cognitive systems tend to respond more slowly and require longer processing times (Epstein, 1994).

Emotional systems refer to self-cultivation and self-improvement in interpersonal communication to attain perfection, in the form of aesthetic sublimation, moral perfection, or deepening of religious belief. This aspect of cognition can manifest as the transmission of personal values, such as charitable behavior, the release of positive energy, or the transfer of social evaluations. The cognitive system emphasizes the relentless pursuit of knowledge, and applies the acquired knowledge combined *via* scientific methods to all aspects of people's lives, such as political and economic considerations, to obtain practical benefit. In the commercial field, this is mostly expressed as the promotion of enterprises and products. Emotional processing refers to a person's communication within the scope of the family and private interactions. Cognitive processing refers to communicating with others in the public domain (Kim et al., 2012). The cognitive and emotional systems, also known as the cool and hot systems, deal with information differently. The cool system is responsible for complex characterization, analysis, and thinking, involving time, space, and scenario analysis. Information processing speed is slow. The hot system is mainly responsible for the rapid emotional response to processing of information. It often produces an intuitive and automated response, and the processing speed is relatively fast (Metcalfe and Mischel, 1999). Both systems can independently influence the persuasive effect of information (Rosselli et al., 1995). Based on the above, different types of online interactive information of entrepreneurs will lead to different responses from consumers.

Entrepreneur Popularity and Interactive Information Types

Entrepreneur popularity refers to the public's knowledge of entrepreneurs, that is, how well known they are. The amount of information available to consumers about entrepreneurs depends on the entrepreneurs' popularity, resulting in alternative knowledge bases for consumers to judge and evaluate entrepreneurs (Briley and Aaker, 2006). When the popularity of entrepreneurs is low, consumers obtain less information from the cognitive system and more from the emotional system. Extant research shows that prominent celebrity endorsements can attract consumers' attention and increase their willingness to process information (MacInnis et al., 1991) by prompting consumers to remember product features and advertising content. Therefore, compared with high-popularity entrepreneurs, consumers pay less attention to micro-blog information of low-popularity entrepreneurs, and their motivation to process complex information is weaker (Briley and Aaker, 2006).

Theoretical Derivation and Hypotheses

According to the previous theoretical analysis, in the context of the P2P lending industry and differing levels of popularity among entrepreneurs, this article attempts to analyze what kind of online, interactive information—whether emotional or cognitive—investors prefer. We make the following theoretical derivations and hypotheses.

Entrepreneurs' Online Interactive Behavior and Investor Feedback

Entrepreneur image is the overall perception of entrepreneurs by individuals or the public, which is affected by the words and behaviors of entrepreneurs (Gao et al., 2020). According to the theory of social information processing, people make judgments and evaluations of others through available information channels (Walther, 1992). Information dissemination through online social media has the characteristics of immediacy, wide radiation range, and fast speed (Mujahid and Mubarik, 2021), providing entrepreneurs with a platform for direct interaction and communication with consumers (Tafesse and Korneliussen, 2021). Compared with other self-display methods (news releases, behavioral exposures, etc.), entrepreneurs' online interactive information is easier to retain and trace back, and thus easier for consumers to obtain, enabling them to directly respond to, participate in, and interact with this information (Girginova, 2013). Therefore, the online interactive information of entrepreneurs serves as an important clue for the public to evaluate entrepreneurs and affects the image of entrepreneurs in the minds of the public (Olanrewaju et al., 2018).

When entrepreneurs spread information online, investors or consumers will directly obtain internal clues to evaluate entrepreneurs (Choi, 2021). According to impression management theory, people often try to influence the process of others' impression formation. In the process of interacting with others, people manage others' impressions of themselves by conveying favorable identity characteristics, with the goal of obtaining the desired results in the interaction (Abbas et al., 2019). In this context, entrepreneurs try to shape and spread a positive image of themselves through online social platforms, because a positive entrepreneur image can be used as a powerful signal to influence the audience (such as consumers and investors) and thus promote corporate brand performance (Shu et al., 2018). Through "emotional" information, investors can interpret the entrepreneurs' behavior. Such information reflects the entrepreneurs' morality and enhances the investor's empathy and psychological identity (Metzker et al., 2021). In comparison, through cognitive information, consumers can assess how the entrepreneurs undertake achievements by carrying out creative activities, which reflect the ability of the entrepreneur (Yuan and Peluso, 2019). Through the interaction of emotional and cognitive information, entrepreneurs try to convey a positive image to investors and the public. Therefore, we propose the first hypothesis:

H_1: During their online interactions, entrepreneurs will get positive feedback from investors regardless of whether they convey cognitive or emotional information.

Entrepreneur Popularity and Investor Feedback

Entrepreneur popularity refers to the degree of public awareness of individual entrepreneurs. When the popularity of entrepreneurs is different, the amount of entrepreneur information acquired and possessed by investors is different, leading to different knowledge bases for investors to judge and evaluate entrepreneurs (Kašperová, 2021). When the entrepreneurs' reputation is low (high), the consumer or investor's personal knowledge obtains less (more) entrepreneur information. Studies have shown that information containing celebrity clues attract consumers' attention and increase information processing willingness more strongly (Albert et al., 2017; Liu and Liu, 2019; Zhu et al., 2020). For example, advertisements endorsed by celebrities can prompt consumers to remember product features and advertising content. Therefore, the public is less willing to pay attention to the microblog information of low-popularity entrepreneurs than that of high-popularity entrepreneurs, and the motivation for information processing is weaker for the former. In the case of insufficient information processing motivation, the public's cultural knowledge clues will become an important aspect that affects their judgment and decision-making (Briley and Aaker, 2006). The so-called cultural knowledge includes beliefs, values, attitudes, and other concepts used to explain and guide behavior, shared by members of the community (Torelli et al., 2021). Cultural knowledge clues are the emotional information mentioned in this article, which is highly available and can be automatically activated at an unconscious level (Stanley et al., 2021). Therefore, we propose the second hypothesis:

H_2: The popularity of entrepreneurs and online interactive information have a positive effect on investor feedback.

Types of Entrepreneurs' Interactive Information and Investor Feedback

When consumers are less motivated to process information, how do people use cultural knowledge clues to evaluate entrepreneurs? Briley and Aaker (2006) suggest that when entrepreneurs are less well-known, the public is more likely to be influenced by cultural knowledge clues. The public is more likely to pay attention to the ethics of entrepreneurs rather than how professional they are. Relevant emotional information can reveal the entrepreneurs' personality and credit level, and it is more likely to be highly praised and psychologically recognized by the public. Therefore, we propose the third hypothesis:

H_3: For less-popular entrepreneurs, investors respond more positively to the presentation of personal values and other emotional information.

However, when entrepreneurs are well-known, the public has more information about entrepreneurs. Compared with less popular entrepreneurs, the interactive information of highly popular entrepreneurs will attract more public attention and trigger more information processing (MacInnis et al., 1991). According to Weber's (1966) social stratification theory, personal prestige, power, and wealth signify the level of different individuals in social stratification. Compared with less popular entrepreneurs, people are more likely to associate highly popular entrepreneurs with high personal reputation, high power, and wealth, and therefore are more likely to believe that they have a higher social status (Bonner et al., 2021). Consumers pay more attention to people with high social status in terms of how they succeed and obtain achievements, i.e., rational cognitive information. Therefore, we propose the fourth hypothesis:

H_4: For more-popular entrepreneurs, investors respond more positively to the presentation of product details and other cognitive information.

Through the above theoretical derivation and argumentation, a theoretical framework, as shown in **Figure 1**, is proposed.

METHODOLOGY

Variables

Independent Variable: Types of Online Interactive Information

We encoded and classified all Weibo (the most popular micro-blog platform in China) data from the previous year. Among these data, we identified entrepreneurs' emotional online interactive information, indicating self-expression or relationship processing with others; this included information on their hobbies, family and life experiences, and opinions on public social events (Zhu, 2014). Cognitive information is defined as information about the practical affairs of entrepreneurs in their professional roles. These include their entrepreneurial management philosophy, insights into the development of industries and enterprises, daily management of work, and product updates (Zauberman et al., 2006).

Referring to the method of Bakshy et al. (2011), we invited three independent adjudicators to encode the content of each Weibo message, distinguishing between "emotional" and "cognitive" information. Before coding, we explained the related concepts to ensure consistency, independent assessment, and thorough understanding of concepts. Values were then assigned to the information content (based on the ratio of the two different types of information published by each entrepreneur), with a value range of 1–9. The closer to 1 the values were, the greater the proportion of "emotional" information they represented; the closer to 9, the greater the proportion of "cognitive" information. Finally, we take the average value of the three independent adjudicators (Berger and Iyengar, 2013) as the basis for measuring the type of information (TOI) in Weibo.

The Moderating Effect of Entrepreneurs' Online Popularity

In the context of Weibo, the number of fans reflects the entrepreneurs' influence, popularity, and the overall attitude of

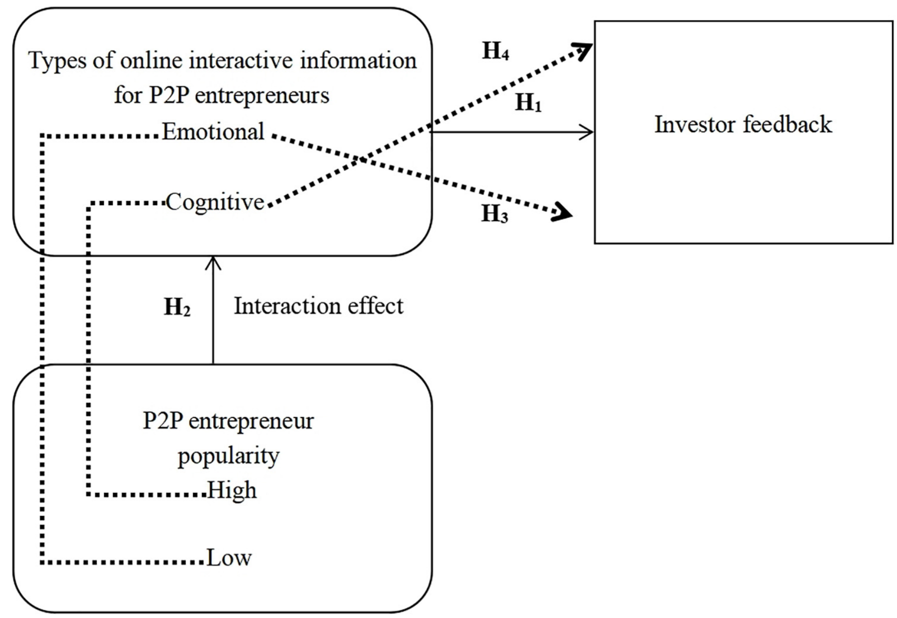

FIGURE 1 | Theoretical logic framework.

the audience (Cha et al., 2010). Zhu (2014) used the number of Weibo fans to measure the online popularity of entrepreneurs, and the median of the total sample to distinguish between high and low popularity. We referred to her method and recorded high popularity as 1 and low popularity as 0. Because of the limited sample period and the relatively static online popularity of entrepreneurs, we referred to the method of Jin et al. (2011) and set a recent observation date to determine the number of fans. Popularity was recorded as POP.

Dependent Variable: Lending Amount per Capita

Hoffmann et al. (2015) and Thomas et al. (2021) defined the perception and feedback of investors as the degree of investor recognition of investment projects. Scholars such as Richardson et al. (2012), Autore and Kovacs (2014), and Liu (2019) have used the amount of investment to quantify the degree of recognition. On the basis of the above, we carried out per capita corrections on the variables. Our method recorded the per capita investment amount per investor on the P2P platform as an indicator of their recognition of the P2P platform, which was recorded as LPC.

Control Variables

Liu et al. (2002) and Zhu (2014) found that the length of time a user spends on social networks and the frequency of posting information will significantly affect others' impressions of them and the effectiveness of information transmission. The relationship between these two variables and the dependent variables in this article has been empirically tested. They are not experimental variables that we found necessary to investigate in this research. Therefore, we take the time span of entrepreneurs' online interaction and the frequency of information release as control variables. Referring to the method of Liu et al. (2002), elapsed time, being the number of months for which entrepreneurs' data was retrieved from Weibo, was denoted by TIM. The weekly number of micro-blogs published during the period was recorded as NUM.

Data

Samples are generated from 252 P2P lending companies operating normally in mainland China. The filter conditions (and eligible candidates for each) are: a. As of the cut-off date, the company has been in normal operation for at least 5 years (from 252 number of samples to 88); b. There has been complete disclosure of enterprise-related data (from 88 number of samples to 69); c. The paid-up registered capital of the enterprise is more than 50 million RMB or approximately US$7.14 million (from 69 number of samples to 57); d. Entrepreneurs have registered on Weibo and are in an active state, that is, there are no fewer than 2 reposts or original posts per month (from 57 number of samples to 43). Details are shown in **Table 1**.

It can be seen from **Table 1** that the average registered capital of the P2P platform selected is 285 million RMB (US$40.71 million), the average borrowing period is 274 days, and the average interest rate is 9.39%. The above data approximate the average values for China's P2P lending industry, indicating that the sample selected is representative. In terms of methodology, this article focuses on the research methods of Dana and Dana (2005). The above data comes from the 01 Caijing database.[1] The entrepreneurs' micro-blog data were manually collected and sorted from Sina Weibo,[2] and the time range is 1 year (from June 1, 2019 to June 1, 2020). The data processing tool is SPSS 25.0.

[1] https://www.01caijing.com/finds/index.htm
[2] https://weibo.com/

Model

According to the previous theoretical analysis and research assumptions, this article builds a regression model with effects on interaction, as follows:

$$LPC = \alpha + \beta_1 \times TOI + \beta_2 \times POP + \beta_3 \times TOI \times POP + \beta_4 \times Cont + \varepsilon$$

ANALYSIS AND DISCUSSION OF RESULTS

Descriptive Analysis

Descriptive statistics are shown in **Table 2**. Forty-three entrepreneurs published 43,963 Weibo posts during the research period, and the average number of Weibo messages posted by each entrepreneur per week was approximately 21. The average number of fans is 614,400. From the perspective of information content, entrepreneurs on P2P lending platforms are more inclined to publish emotional information than cognitive information. The average time that sample entrepreneurs have used Weibo is 31.4 months.

Regression Analysis

The multiple regression method is used, where independent variable, moderator, the interaction term of the independent variable and the moderator, and the control variable are included gradually. To test the interaction term, we performed mean centralization of all continuous variables to reduce the problem of multicollinearity. The average value of the processed variable samples is zero, and the sample distribution remains unchanged. The diagnosis of multicollinearity shows that all VIF values are lower than 5, which indicates that the problem of multicollinearity is negligible and has no effect on the hypothesis test results. The specific results are shown in **Table 3**.

First, we analyze the results for model one. From the given equation, it is evident that POP is a 0/1 variable. When the popularity of entrepreneurs is low, that is, POP = 0, β_1 represents the influence coefficient of online interactive information on the financing level of P2P platforms. **Table 3** shows that $\beta_1 < 0$, and the test is significant at a 5% level. Therefore, H_3 is accepted, that is, when the entrepreneurs' popularity is low, TOI and LPC have a significant negative relationship. The greater the amount of emotional information reflected in the entrepreneurs' online interaction, the better the investor's feedback will be. This is inconsistent with most existing research results. The research conclusions of many scholars have shown that entrepreneurs with low popularity play little role in social networking. Both MacInnis et al. (1991) and Zhai (1999) pointed out that the public is less willing to pay attention to the microblog information of low-popularity entrepreneurs, and their motivation for information processing is weaker. This may be mainly attributed to the classification of the online interactive information of entrepreneurs, which is one of the innovative points of this article. Studies that do not consider information classification and interaction effects may report different results. Despite this, this result still holds theoretical logic. Based on the cognitive-experiential self-system, emotional information will not be ignored, but will be treated intuitively. When entrepreneurs were less well-known, the public was also influenced by cultural knowledge clues (Briley and Aaker, 2006). In addition, there is another point that needs special attention. In

TABLE 1 | P2P lending platform sample statistics.

Number	Enterprises	Entrepreneurs	Registered capital (million RMB)	Average loan duration (days)	Average interest rate
1	Renrendai	YANG	2,000	244	10.20%
2	Niwodai	YAN	550	360	10.80%
3	Eloancn	ZHANG	1,000	360	10.24%
4	5aitou	LIU	535	360	9.60%
5	PPmoney	CHEN	500	381	9.24%
6	Guangxindai	ZHANG	500	360	11%
7	Yooli	ZHANG	1,000	578	11.58%
8	Xiaoniu	PENG	103	360	8%
9	XSjinfu	Yuan	100	352	11%
10	HYJF	LIU	500	182	7.11%
11	Lending51	ZHANG	500	180	11%
12	Gxyclub	LIN	200	304	9.50%
13	91wangcai	XU	60	30	6%
14	Iqianjin	DONG	1,000	304	12.83%
15	Hurbao	MENG	60	100	10.33%
16	Juzilicai	XIAO	510	477	11%
17	Xywj	TANG	500	288	6.59%
18	Huilc	GUO	50	210	11.30%
19	Jrjc	ZHANG	66	180	9%
20	XSPH	ZHENG	111	90	8%
21	CGN	LUO	50	180	7.50%
22	Souyidai	ZHOU	300	395	8.55%
23	BJDP2P	WEN	142	103	7.28%
24	FYJF	LI	50.4	65	5.56%
25	51rzy	ZHONG	100	90	9%
26	NNb	LIN	100	730	12%
27	PHLC	LI	50	177	9.17%
28	YYfax	WU	70.4	720	8.20%
29	Qianlindai	HU	100	90	9%
30	HYR	SONG	500	785	11.83%
31	Niuyan	LUO	118	91	8.52%
32	Myerong	LIN	100	1,080	11%
33	TGJR	LI	50	180	9%
34	CCD	LIU	50	164	6.82%
35	WSD	Zhang	50	90	10%
36	GLJR	YANG	50	180	12%
37	XWJR	CHEN	50	95	5.60%
38	BGNC	ZHENG	120	462	7.44%
39	HJB	PAN	50	53	12%
40	I2p	CHEN	100	30	8%
41	JPB	GE	100	90	9%
42	CTZR	ZHONG	66.15	60	12%
43	ZYXR	LUO	52.63	180	10%
Mean			**285**	**274**	**9.39%**

China, because of the influence of traditional culture and values, people tend to pay more attention to the morality of the other party in their interactions, even in business. This kind of business partnership established by trust can sometimes extend beyond factors such as price and profit, the difference being that western countries have a long history of capitalist development and pay more attention to non-subjective factors such as efficiency, profit, and spirit of contract in their relationships, and the attributes of economic man are more prominent (Liao, 2004). Therefore, this research result is also, to an extent, a product of the unique Chinese cultural background.

When the entrepreneurs' popularity is high, that is, POP = 1, $(\beta_1+\beta_3)$ represents the impact of the entrepreneurs' online interaction type on investor feedback. **Table 3** shows that $(\beta_1+\beta_3) > 0$, and both β_1 and β_3 are significant at a 5% level. Therefore, both H_2 and H_4 are accepted, that is, the popularity of entrepreneurs and the type of online interactive information have significant effects on investor feedback. When the popularity of entrepreneurs is high, TOI and LPC have a significant positive correlation. The more cognitive interactions entrepreneurs make, the better the investor's feedback will be. This is consistent with the existing literature, such as BrandFog (2012), Cruz and Mendelsohn (2012), and Bonner et al. (2021). The presentation of product details and other cognitive information needs to be processed by the cold system, as described earlier in this paper. The slow speed of information processing requires the high popularity of entrepreneurs to mobilize investors' enthusiasm for information processing.

In model two, we added relevant control variables, and the model's goodness of fit was improved. The correlation and interaction relationships between the respective independent variables and dependent variables was unchanged, and the significance level was consistent with that for model one. This shows the robustness of the model, while verifying H_2, H_3, and H_4. Both models β_1 and β_3 are significant at the 5% level and $(\beta_1+\beta_3)$ is greater than 0; therefore, H_1 is verified. During the online interaction of entrepreneurs, regardless of whether they convey cognitive information or emotional information, they will get positive feedback from investors. Although other scholars have reached similar conclusions (Larson, 2009; Zhang and Wang, 2016; Tian, 2017), it is worth noting that they did not classify information types, which is one of the innovations of this paper. All research hypotheses in this article are accepted. Most of them are similar to existing research (Shu et al., 2018; Abbas et al., 2019; Choi, 2021) and supported by theories such as individual reputation theory.

In terms of control variables, the number of online interactions of entrepreneurs is positively correlated with investor feedback. This shows that a larger number of online interactions leads to a higher probability that investors will participate in the company's business. This is consistent with previous studies. Lemay et al. (2020) found that there is a positive correlation between the frequency of online social networking and social quality. Candel et al. (2021) suggested that the frequency of interaction is an important indicator of social relationship satisfaction. The length of time that entrepreneurs use Weibo has no relationship with independent variables. There was a reason for this, i.e., people use Weibo mainly through dynamic push. In this process, the time and content of the release are more important than the frequency of the release. The value of posting on Weibo on weekends may be greater than that of posting late at night on a working day (Kumar and Sinha, 2016).

TABLE 2 | Descriptive analysis.

Title	Min.	Max.	Mean
LPC (thousand RMB)	0.19	78.8	8.5
TOI	1	9	4.07
POP (thousand people)	24.3	3757.1	614.4
NUM	2	299	21.3
TIM	14	49	31.4

TABLE 3 | Regression analysis.

	Model 1		Model 2	
Variables	**Coefficient**	***t*-value**	**Coefficient**	***t*-value**
Constant	0.126	10.573**	0.128	10.321**
TOI	–0.154	–4.561**	–0.186	–3.958**
POP	–0.017	–5.903**	–0.016	–6.362**
TOI*POP	0.033	4.909**	0.034	5.069**
TIM			0.027	1.042
NUM			0.036	3.051**
Adjusted R^2	0.662		0.679	
Prob (F-statistic)	0.000**		0.000**	

***Represents significance at the 5% level.*

CONCLUSION

The purpose of this research was to investigate the extent to which the online popularity of entrepreneurs affects P2P lending platforms and what types of information released by entrepreneurs achieve superior results. In addition, we sought to assist peer-to-peer entrepreneurs in customizing their online interaction strategies from the perspective of investor psychological perception. We examined the related literature themes, such as online interaction, entrepreneur impressions, and other relevant issues, at both theoretical and practical levels, focusing on the area of P2P lending. On the basis of current literature and theory, we proposed an innovative classification standard for online interactive information of entrepreneurs and discussed its impact on financing. We used the cutting-edge cognitive-experiential self-system conceptual model to divide the types of online interaction information into emotional and cognitive types, and examined the problems related to interactions. Supported by the reputation theory and cognitive-experiential self-system theory, the following conclusions were drawn through theoretical deduction and empirical research.

First, we found that on P2P platforms, entrepreneurs act as social influencers and transmitters of reliable corporate information, and their online interactive content has a significant impact on public investors. Within the theoretical framework, this article classified this interactive content as emotional or cognitive information, and clarifies the impact of these two types of content on the public. Through empirical research, it was verified that entrepreneurs can produce positive effects regardless of whether they present emotional or cognitive information. Second, with the help of reputation theory, we included the popularity of entrepreneurs in the scope of observation and used it as a moderating variable to consider its effect on interactions. We were surprised to find that the popularity of entrepreneurs can be added to the model as a moderating variable, and the interaction between it and the TOI is significant. When the popularity of entrepreneurs is low, they can also get a positive response from investors by publishing more emotional information online; on the other hand, when the popularity of entrepreneurs is high, cognitive information release is the better choice. The above research results show that the popularity of entrepreneurs and online interaction behaviors do have a significant impact on public feedback. These findings are consistent with research conducted by other academics (Briley and Aaker, 2006; Albert et al., 2017; Olanrewaju et al., 2018).

With the support of theory, through the discovery of the interaction between different variables, this paper expands the research horizon of the psychological facets of the consumer-brand relationship in the digital world, and extends the current literature and theory. In addition, there are particularities in the P2P lending industry. We have refined the research areas and variables, while proposing theoretical models and research equations. The empirical test in this research identified the interaction effect between entrepreneurs' popularity and online interactions and drew corresponding conclusions based on their level of popularity, which can provide a clear quantitative reference for subsequent research. This article further indicated that online interaction of entrepreneurs is not a straightforward, personal behavior, but requires careful planning by enterprises and entrepreneurs as part of long-term enterprise strategy implementation to provide information to investors. It can thus positively impact P2P companies, improve their financing levels, and provide comparative advantage through the optimization of corporate strategy. Through its strong theoretical foundation, this study highlights key areas of learning and application for both practitioners and scholars of organizational psychology.

We have designed a strategy for online interaction among P2P entrepreneurs. Entrepreneurs should clearly identify their online, interactive content characteristics, and combine their own popularity in adopting appropriate and effective interactive strategies. Low levels of popularity require a focus on the use of emotional content to influence the audience, such as sharing daily life experiences, life philosophy, views on public events, and charitable behavior. Well-known entrepreneurs should focus on the promotion of products and corporate information, including sharing business, and management insights, insights on development, and successful experiences of the enterprise and industry, so as to minimize the transmission of emotional information. This article further indicates that the online interaction of entrepreneurs is not a straightforward, personal behavior, but requires careful planning by enterprises and entrepreneurs, as part of a long-term enterprise strategy implementation to bring information to investors. It can thus positively impact P2P companies and improve their financing levels, and provide comparative advance through the optimization of corporate strategy (Dana et al., 2008). Relevant empirical research conclusions can also be considered in the selection of entrepreneurs' online interaction strategies.

This article does not consider how the process of studying entrepreneurs' online interaction, may be magnified by situational factors such as major emergencies or new product launches. Different situations, such as the outbreak of negative news or a crisis in corporate public relations, will affect the impact of online interaction by entrepreneurs. Therefore, future research should focus on situation theory to explore the impact of the corporate life cycle and special contexts on online interactions. Situational variables may play a moderator role, and some may also be considered as independent variables, thereby enriching and improving the research process.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

JA and HD were responsible for writing the initial draft of the manuscript and putting forward the main propositions. HD was responsible for further modification and improvement of the manuscript. GL was responsible for reviewing and editing the manuscript. All authors contributed to manuscript revision, and read and approved the submitted version.

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Stimulating Brand Innovation Strategy *via* Knowledge Acquisition, Market Orientation, and Strategic Capability Using Social Media Within China's Online Technology Industry

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In the context of China's online technology business, this study explores the linkages between knowledge acquisition *via* social media, two modes of market orientation (proactive and responsive), social media strategic capability, and brand innovation strategy. Data were collected from 853 Chinese technology firms with the help of questionnaire. To analyze the collected data structure, equation modeling was applied using smart-PLS 3.3 version. Results indicate that knowledge acquisition from social media, market orientation (proactive and responsive), and strategic capability has significant impact on brand innovation in the context of social media. Furthermore, strategic capability on social media moderates the relationship between knowledge, market orientation (proactive and responsive), and brand innovation in the context of social media. This study offers new perspectives on market orientation and brand innovation strategy by extending the literature and testing key assumptions. Moreover, using social media knowledge in social media marketing and innovation management is a sensible approach for making changes and transforming an organization.

Keywords: social media, brand innovation, strategic capability, knowledge acquisition, market orientation, proactive, responsive, China

INTRODUCTION

Social media usage is booming as marketers find new ways to reach consumers. Businesses can interact directly with their customers through social media, engage with them, and amplify their voices. Unfortunately, companies are still unsure how to effectively utilize social media. Social media strategies often focus on platforms as separate entities rather than interrelating to form a coherent whole. With its constant changes, social media requires an even more holistic approach (Cai et al., 2015).

Social media marketing has been extensively researched in recent years. Social media initiatives and brand innovations are among the topics explored in this study, including how to acquire knowledge from social media, strategic capabilities when using social media, market orientation, and how to use social media for brand innovation (Muduli and Trivedi, 2020; Gupta and Syed, 2021).

Despite this, the research on the topic is rarely accompanied by a strategic perspective. Social media is particularly effective in driving marketing strategies when firms use it. It is rare for a holistic empirical view of social media as a strategic marketing platform in the literature (Pang, 2021).

Research on social media market knowledge and subsequent innovations lacks a comprehensive understanding of how it contributes to market orientation and brand innovation. Two of the essential firm-level activities and drivers of economic development, according to researchers, are the acquisition of knowledge and the direction of the company on the market (Zhao et al., 2019). In examining, how companies are inspired by social media knowledge to become more informed about market opportunities and become more market-oriented, such as in their relationship with clients and competitors, an understanding of the processes of acquiring social media knowledge, and how it is used in organizations can be provided (Wang et al., 2016).

Literature review indicates that most firms are motivated to discover market opportunities by either being proactive or responsive (Duffett, 2015; Gul et al., 2021a). A responsive market orientation organization meets customers' needs within the existing market structure in response to customer preferences. In contrast, proactive market orientation speaks to latent customer needs, i.e., those that are not explicit and simply not conscious of. These orientations are, however, found to affect innovation differently (Hanusch and Tandoc, 2019; Geissinger et al., 2021). Furthermore, these topics are seldom researched in transitional economies, and they are rarely applied to social media. By examining how market orientation, knowledge acquisition, and brand innovation in China's dynamic social media environment contribute to new online ventures, we aim to bridge this knowledge gap (Salo, 2017; Gul et al., 2021b).

We examine the direct impact of social media on these relationships since research indicates that the strategic capability plays a direct and moderating role in the above relationships. A unique opportunity presents itself to assess the impact of social media branding in China when the Chinese economy is undergoing structural change (Chen et al., 2020; Jamil et al., 2022). To better understand the effect of social media knowledge acquisition and market orientation on innovative brand strategies, we intend to analyze the influence of social media on new online technology ventures. According to our model, we rely on the theory of social capital, which stresses the benefits of information flow within social networks and reciprocal cooperation among them. Accordingly, the research will examine organizations' social media strategic capabilities, namely, their ability to integrate social media skills, resources, and knowledge into strategic planning. During this study, we examined the impact of innovation on social media strategic capabilities, which is, according to our understanding, the first of its kind. The knowledge acquired through social media can determine how effective an organization is at managing its brand. Failure by industrial marketers to recognize the importance of social media knowledge will lead to a drop in market and customer awareness, which will erode both innovation and innovation landscapes and a critical source of brand innovation.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Using Social Media for Knowledge Acquisition and Brand Innovation

The use of social media facilitates knowledge acquisition, searching for knowledge, discovery, and transfer of knowledge. Getting the most out of every knowledge resource at a firm's disposal and transforming it into activities that create value is what determines its performance. The importance of knowledge acquisition is highlighted by Geissinger et al. (2021) regarding new technology ventures. Companies with limited resources and dynamic environments must gain knowledge of the external environment through social media to succeed with brand innovation. Khan et al. (2021) argue that knowledge acquisition plays a vital role in a positive performance and the quality of innovation. Kaimkhani (2018) pointed out that acquiring knowledge makes it easier to understand a wide range of information, making it easier to develop innovative products or processes to meet market needs. According to Wang et al. (2016), the development of technology relies on two factors associated with knowledge acquired from external relationships. Knowledge increases the capabilities of the organization. In addition, knowledge can be utilized to develop technologies that differentiate organizations from each other. New technology firms must constantly learn and adapt to new technologies and markets to create new products and improve in response to dynamic social media environments.

Durana et al. (2021) showed that you have a better chance of enjoying the benefits of traditional sales approaches if you adjust your attitude to one that relies on industry and market knowledge. With the support of exploitative or exploratory learning characteristics, organizations can improve their positioning strategy by participating in the dissemination and production of knowledge about their competitors and consumers (Kovacova and Lăzăroiu, 2021; Valaskova et al., 2021). People believe these skills or methods of learning are critical to success in the marketplace. The concept has been discussed extensively in a variety of business and marketing texts. Competitive advantage is most often gained through resource combination and resource switching, with capabilities serving as the primary means by which this is accomplished. Resource advantage theory and market orientation are both relevant here (Matkevičienė and Jakučionienė, 2021).

Often, knowledge is gained by interacting with external stakeholders. Companies can accurately evaluate new opportunities, information, and added value with such knowledge. Having more knowledge makes companies more capable of strategically orienting their products and differentiating them (Chen et al., 2020; Gul et al., 2021c). If multiple resources and processes are available, it is easier to recombine existing information and ideas to develop more innovative solutions. A substantial repository of knowledge related to the task may be required to create innovative solutions and achieve goals. The acquisition of new technologies allows companies to change how they manufacture new products by using new raw materials (Al-Maroof et al., 2021). Knowing the market, customers' preferences, distribution channels, and production methods are better understood. Companies can develop or improve products based on evolving market demands using their expertise in new and innovative ways using such information (Awan et al., 2021a). Therefore, firms that utilize strategic and tactical actions will better discern the type of market change and its potential effects. There is a possibility that businesses with more insight from social media might perform better than their counterparts. Here, we proposed the following hypothesis:

> *H1*: Knowledge acquisition from social media has a significant impact on brand innovation strategy on social media.

Using Social Media for Market Orientation and Brand Innovation

A market-oriented organization discovers and understands the needs of its customers. In other words, the development of new technologies is driven by latent market needs, both internal and external, including the requirements of lead customers or users. For many scholars (i.e., Hanusch and Tandoc, 2019), it is difficult to obtain accurate information about latent customer needs. Customers may not know their preferences for innovative products in potential markets.

It is believed that the development of new products, services, and ideas will originate from addressing consumers' latent needs. Mpandare and Li (2020) stated that proactive market orientation emphasizes understanding customers' needs as a process that starts from the outside. An innovative social media strategy can be launched by leveraging proactive market orientation and customer knowledge.

Social media brand innovation requires a proactive market orientation. In their study of market orientation and innovation, Levine and Zahradnik (2012) pointed out that market orientation promotes radical innovation offline. Social media channels appear to have the same effect in today's context. Focusing on long-term developments is an essential element of proactive market orientation since it is related to market information and thus can lead to radical product innovations. Actions requiring continuous awareness of latent customer needs can then be achieved by discovering, understanding, and innovatively satisfying them (Mitchell et al., 2010; Awan et al., 2021b).

An approach is known as "responsive market orientation" aims to identify and meet customers' expressed needs (Ferrucci, 2020). The interaction between users on social media and their use of online reviews and blogs demonstrate that users are adept at expressing their opinions and using products and services. According to research, an orientation toward responsive markets can lead to incremental rather than drastic improvements in products or services. Tajurahim et al. (2020) discussed that customer centricity is positively related to innovation in some studies. It does not seem that market orientation negatively impacts China's level of innovation. The explanation for this can be found in the study of Khamaludin et al. (2022), who explains that customers' expressed needs can be met both explicitly and implicitly. Chinese emerging market consumers have many expressed needs that are not met.

Gul et al. (2021) described market orientation as an organization's ability to combine or integrate its skills and resources in a way that adapts quickly. Poole has created a correlation between the development of a new product, the direction of the market, and the company's export capacity (Kovacova et al., 2020). Market trends such as the expansion of market intelligence businesses, the transmission of information to other departments, and a company's overall response are all taken into account when forecasting the market's future direction. As a result of Lu et al. (2020) study, people have developed a greater interest in the market's direction. Competitive advantage has been thoroughly examined, and a more comprehensive technique for quantifying it has been developed. Inter-functional coordination is critical, as are competition and customer orientations. These are only a few of the aspects that contribute to a market-oriented strategy. Kovacova and Lewis (2021) refer to this as market orientation when discussing or describing anything intangible. Being aware of your competitors, your consumers, and their activities can provide you a competitive edge. This resource is inextricably linked to the rest of the globe.

Cai et al. (2015) emphasized that Chinese typesetting characters by hand before laser technology was developed were a bothersome task. A series of lasers was used to typeset Chinese characters, a technological breakthrough. We can create more radically innovative solutions if we understand the customer's needs despite no existing solutions if we understand the customer's needs. Hence, we proposed the following hypotheses:

> *H2a*: Proactive social media market orientation has a significant impact on brand innovation strategy on social media.

> *H2b*: Responsive social media market orientation has a significant impact on brand innovation strategy on social media.

Strategic Capability and Brand Innovation on Social Media

In today's market, staying abreast of the changing landscape of online technology is essential. A company needs to react rapidly to market changes, technological uncertainties, and competitors' action\s if it is successful (Habibi et al., 2015; Awan et al., 2021c). The process of building firm-specific advantages, which enhance the firm's strategic benefits, uses both tangible and intangible resources (knowledge and assets). The firm's strategic direction encompasses exploring new opportunities or utilizing existing products and expanding into other areas in which it is active. Resources determine how strategic capabilities are implemented. According to Herrero et al. (2018), an organization's strategic capabilities are limited by its resources. Levine and Zahradnik (2012) described social media strategic capability as a unique resource, which is similar to a resource that represents a unique competitive advantage, as well as helping to facilitate strategic value creation since it provides the ability to manage resources, a characteristic of capabilities of this kind. By acquiring and integrating resources, firms can enhance their innovation capabilities (Mohsin et al., 2021a).

Companies with more substantial strategic capabilities in social media have better access to information and technology critical to success. Such firms will benefit from such capabilities by gaining access to unique data, technology, and support and responding to environmental changes more proactively (Saavedra et al., 2014; Jamil et al., 2021a). It can take a while for start-ups without affiliations and limited resources to build such a capability. While trial-and-error can be expensive, the knowledge it provides can assist an organization in identifying and assessing useful information for innovation in a proactive manner once it is complete (Odoom and Mensah, 2019; Li et al., 2021). A turbulent environment can enable new, innovative activities by reallocating resources based on such information. In discussing the sources of help and social capital derived from networks and, particularly, social media knowledge, we conclude that organizations can better access and integrate resources using social media networks and be more innovative (Arrigo, 2018). Hence, the following hypothesis was proposed as:

H3: Strategic capability on social media has a significant impact on brand innovation strategy on social media.

Moderating Role of Strategic Capability

Muninger et al. (2019) proposed that an organization's sustainable competitive advantage may originate from its resources and its ability to integrate and transform them. In addition, these researchers state that non-tangible external resources can contribute to internal capital only if they are transferrable. In addition to organizing and coordinating different resources and functional units, Tarsakoo and Charoensukmongkol (2020) observed that strategic capability can only benefit an organization's innovation agenda without adequate resources. Strategic capability is essential to ensuring a firm's competitiveness; it plays a significant role in making strategic decisions, especially innovation. Firm-specific capabilities can be supported and promoted *via* better strategic social media capabilities (Garrido-Moreno et al., 2020; Mohsin et al., 2021b). By acquiring social media knowledge, companies can obtain valuable information and other resources to develop innovative solutions and use this information to achieve their strategic goals. Companies use social media to interact and conduct business among themselves and improve productivity and efficiency. Social media strategists need a higher level of strategic capability if they are going to increase brand innovation through social media. Zhang and Zhu (2021) argued that a strategic decision can be made within an organization efficiently and precisely under social media strategic capabilities, based on the organization's resources and ability to convert knowledge into a competitive edge.

A strategic approach to resource allocation and product design also increases the likelihood of successful brand innovation. Adoption is accomplished by absorbing and applying new external resources, which stimulates the development of new product variants and the exploration of new capabilities. Our study indicates that companies' ability to integrate and use external resources (such as technology resources) in combination with a broad range of social media strategic capability with vast information will likely increase their ability to discover and experiment with novel brand innovation opportunities through social media (Jamil et al., 2021b; Ngammoh et al., 2021).

Researchers examine the relationship between market demand and innovation, looking at internal technological capabilities and the uncertainty of market needs (Wang et al., 2017). They contend that both of these factors contribute to innovation. Radical innovations requiring significant investment resources require both technology and investment capabilities. When a firm competes, these commitments determine its survival and development. It is also vital to have strategic capabilities. Trying to anticipate latent customer needs in a proactive market orientation by focusing on unfamiliar information and knowledge (Mention et al., 2019). To achieve more significant results, proactiveness in the marketplace and brand innovation can be brought together with effective social media strategic capabilities owing to better alignment and focus (Sarfraz et al., 2021; Zhang and Zhu, 2021). We expect that China's social media market will be a dynamic and turbulent one that will require superior social media capabilities to drive brand innovation and enhance proactive market positions effectively. Consequently, proactive market orientation will significantly impact brand innovation where social media strategies are employed (Garrido-Moreno et al., 2020).

We further propose that companies with immense social media strategic capability better understand their available resources and how they should be allocated and integrated, which will cause improved brand innovation through a market-responsive orientation (Foltean et al., 2019; Odoom and Mensah, 2019). Although social media strategic capabilities may improve proactive and reactive actions, they can also directly impact proactive/reactive market orientation and brand innovation. It may moderate market orientation and innovation to a greater extent because social media has a short-term focus, therefore aligning well with social media strategic capability (Maghsoudi Ganjeh et al., 2019; Naseem et al., 2021). Social media strategic capabilities are also emphasized in the rapidly changing market context. Social media strategies can still assist these companies in achieving proactive market orientation, however, as they give them an increased chance of identifying latent consumer demands. A proactive marketing strategy involves selecting high-return projects (Liu et al., 2021). The best way to do this is to identify latent needs that opportunistic companies can exploit in social media. Through social media development, the integration of expressed knowledge, and a solid market-oriented approach, brand innovation efforts can also be enhanced. With the help of social media-related strategic capabilities, firms can leverage existing customer knowledge, information, resources, and knowledge to improve their performance by focusing resources quickly and allocating resources to the right project (Tarsakoo and Charoensukmongkol, 2020). Hence, we proposed the following hypothesis:

> *H4a*: Strategic capability on social media moderates the relationship between knowledge acquisition from social media and brand innovation on social media.

> *H4b*: Strategic capability on social media moderates the relationship between proactive social media market orientation and brand innovation on social media.

> *H4c*: Strategic capability on social media moderates the relationship between responsive social media market orientation and brand innovation on social media (see **Figure 1** for all relationships).

Conceptual Framework

Research Methodology

This study designed a questionnaire according to the hypotheses stated above. The participants in this study were online technology firms in China. Based on the technology commercialization practices of firms and social networks, we included our primary sampling frame to invite LinkedIn China, Weibo China, WeChat China, RenRen, Ozone and company websites. We approached each firm's principal founder or senior managers to collect accurate data utilizing an online questionnaire-survey approach. Online questionnaires have the following advantages (Tan and Teo, 2000): (1) sampling is not restricted to a single geological location, (2) lower cost, and (3) faster questionnaire responses. Before the final analysis, a pilot study with 100 participants was carried out. Since providing recommendations, revisions were made to the final questionnaire to make it more understandable for the study's respondents. To ensure the content validity of the measures, three academic marketing experts analyzed and made improvements in the items of constructs. The experts searched for spelling errors and grammatical errors and ensured that the items were correct. The experts have proposed minor revisions to market orientation and brand innovation strategy items and advised that the original items be maintained. A total of 853 questionnaires were returned from respondents. There were 853 appropriate replies considered for the final analysis.

Measures

The study used items established from prior research to confirm the reliability and validity of the measures. All items are evaluated through five-point Likert-type scales where "1" (strongly disagree), "3" (neutral), and "5" (strongly agree).

Dependent Variable

To get a response about brand innovation strategy, we used four items adapted from the prior study of Cheng and Shiu (2008), and the sample item is "Brand innovation using social media is a breakthrough innovation practice."

Independent Variables

To get the response about knowledge acquisition, we used five items adopted from the prior study of Zhou and Li (2012), and the sample item is "Our company has a process for continuously collecting information from customers using social media." Furthermore, to get a response about proactive orientation, we used four items adapted from the previous study of Narver et al. (2004). The sample item is "We help customers anticipate developments in the markets using social media." Moreover, to get a response about responsive orientation, we used three items adopted from the prior study of Narver et al. (2004). The sample item is "We measure customer satisfaction systematically and frequently using social media."

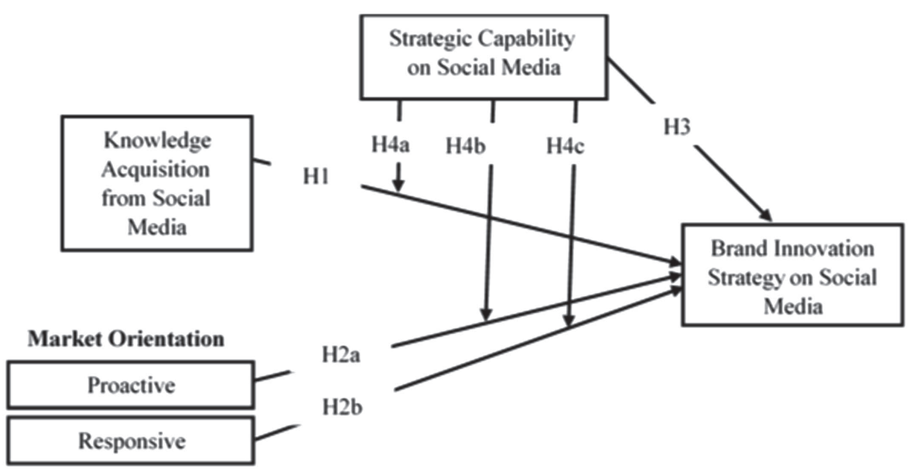

FIGURE 1 | Conceptual framework.

Moderating Variables
We used strategic capability as moderating variables in this study. To get a response about strategic capability, we used four items adapted from the prior research of Croteau and Raymond (2004), and the sample item is "My organization owns future competitive flexibility in social media."

RESULTS

Measurement Model (Outer Model)

The measurement's model analysis explains how dimensions of latent variables are dignified regarding their measurement properties and perceived (observed) items. This specific section highlights the evaluation of the outer model (measurement) by assessing the internal consistency, item's reliability, discriminant validity, and convergent reliability (Henseler et al., 2009; Hair et al., 2011; Usman Shehzad et al., 2022).

Inclusively 20 items to explain the four constructs of the model. Using the PLS algorithm for all reflective constructs was accomplished. The SMART-PLS algorithm assessed the reflective scale's reliability through convergent reliability and discriminant validity estimations. The following model depicts latent variables (circles), and their measuring items (rectangles) appear in **Figure 2**.

These results show that all latent variables in the model are reflective by nature. Results define it that all-inclusive quality of the reflective variable's measure of PLS loadings, Cronbach's alpha, constructs AVE and composite reliability, shown in **Table 1**. By evaluating the first-order construct, the item's loading was assessed (**Table 1**). Regarding Knowledge Acquisition from Social Media, it consisted of five items. The outer loadings fluctuated from 0.651 to 0.737 for concerned items, and all items are significant at the level of 0.5, shown by the *t*-value results. Proactive Social Media Market Orientation with no dimension, but it comprises four items. The outer loadings fluctuated from 0.882 to 0.746 for concerned items, and all items are significant, as shown by the *t*-value results. Three items with no dimension assessed responsive Social Media Market Orientation. The outer loadings fluctuated from 0.711 to 0.711 for concerned items, and all items are significant at the level of 0.5, shown by the *t*-value results. Four items assessed social Media Strategic Capability. It has no dimension as well. The outer loadings fluctuated from 0.790 to 0.878 for concerned items, and all items are significant at the level of 0.5, shown by the *t*-value results. Four items assessed social Media Brand Innovation. It has no dimension as well. The outer loadings fluctuated from 0.785 to 0.858 for concerned items, and all items are significant at the level of 0.5, shown by the *t*-value results.

Convergent Validity

Additionally, the discriminant validity of the framework was tested using Fornell and Larcker criterion (Sarstedt et al., 2014). The Fornell Lacker criteria suggest that the square root of the AVE values for all constructs should be greater than the correlation among the pair of constructs (Fornell and Larcker, 1981). The model is discriminately valid when the criteria are fulfilled, as shown in **Table 2**.

R-Square

The hypothesis was tested using 5000 bootstraps. R-square and Q-square, as suggested by, were used to assess the structural model (Hair et al., 2016). To be termed moderate, the coefficient of determination (R-square) must have a value over 0.33 (Chin, 1998). For Social Media Brand Innovation, the R-square is 73.8 per cent. The panel also backed up the Q-positive square's results. The predictive significance of the model was evaluated using the "cross-validated redundancy" Q2 test (Hair et al., 2014). Q2's value must be bigger than "zero" to be considered acceptable. Greater than 0 is seen in the Q squared values. Q2 values of exogenous construct demonstrate the accuracy of the study framework in predicting outcomes (Hair et al., 2016). According to the researchers, the prediction accuracy of a model may be evaluated using R2 (Henseler et al., 2015; see **Table 3**).

Hypothesis Testing

This study evaluates the significance of relationships by using Bootstrapping at 5000 with a replacement sample (Hair et al., 2016). The results indicate that knowledge acquisition from social media significantly impacts brand innovation strategy ($\beta = 0.643$, $t = 12.284$, $p = 0.000$); these findings support the H1. The proactive social media market orientation significantly affects brand innovation strategy on social media ($\beta = 0.047$, $t = 3.162$, $p = 0.002$); results approve the H2a hypothesis. Responsive social media market orientation significantly impacts brand innovation strategy on social media, where the results are significant with (β =0.119, $t = 4.542$, p = 0.000), which support H2b. On the other side, strategic capability on social media has a significant impact on brand innovation strategy on social media with significant (β =0.129, $t = 0.128$, $p = 2.224$), these findings support the H3 (see **Table 4** and **Figures 3, 4**).

Testing the Moderating Effect

A moderating impact happens when a third factor (so-called mediator) decreases or improves the quality or direction of the relationship between independent and dependent variables (Lindley and Walker, 1993). A moderator variable communicates under what conditions independent variable impacts on dependent variable (Baron and Kenny, 1986). Considering a causal variable, a moderator is similar to an independent variable. A few measurable procedures have been predicted in testing moderating impacts, contingent upon whether the moderator is categorical or continuous.

When the exogenous variable effect on endogenous variable depends upon the estimations of another variable, which moderates the link, Vinzi et al. (2010) evaluate different approaches for testing moderation in Smart-PLS-SEM far as their relevance to statistical power and reflective and formative measure. Institutional pressure moderates the relationship between HR practices and proximal factors.

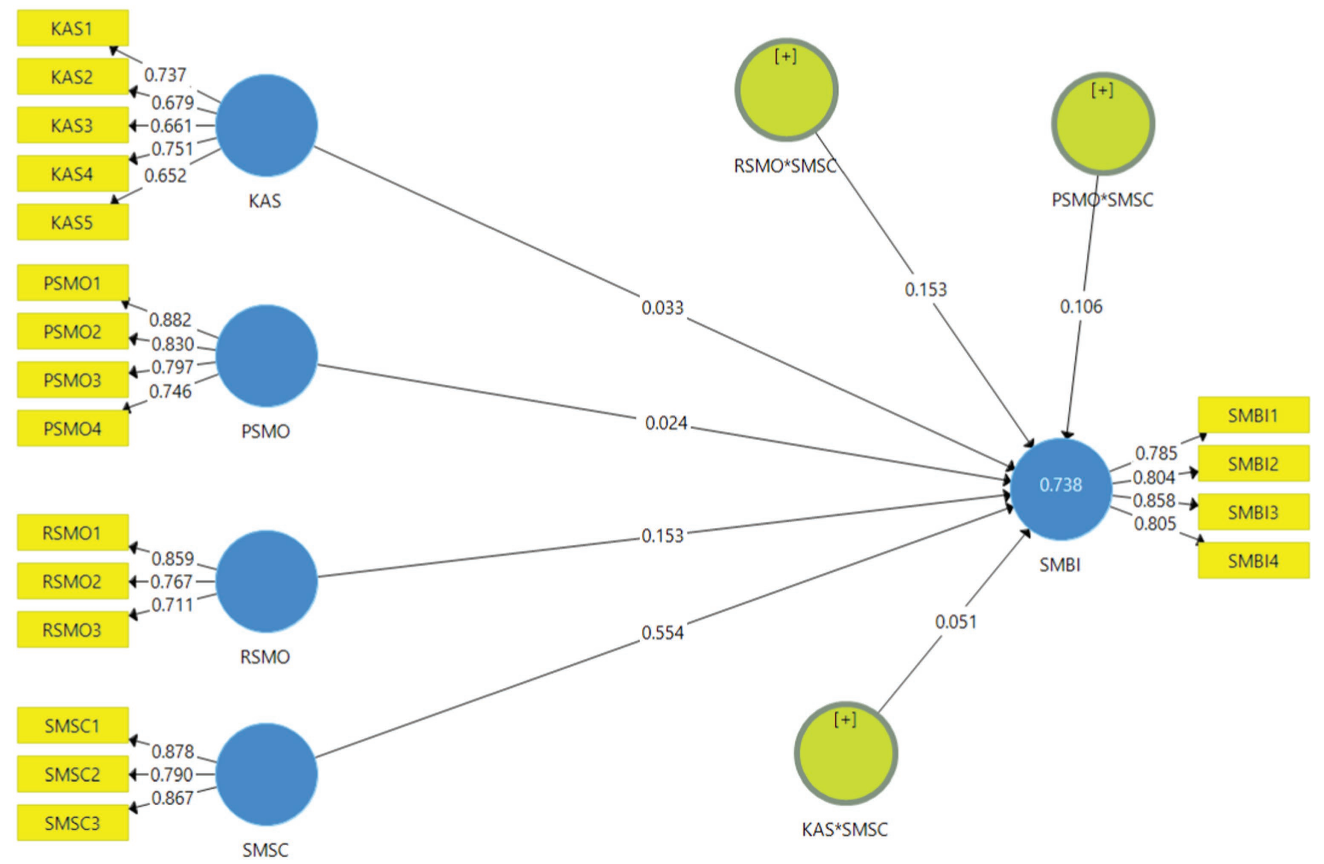

FIGURE 2 | Measurement model.

The association between knowledge acquisition from social media, proactive social media market orientation, responsive social media market orientation, strategic capability on social media, and social media and brand innovation on social media are shown in the table. All the moderating effects are positive and significant. It offers significant results consistent with the previous research; the results show that strategic capability on social media influences the relationship between knowledge acquisition from social media, proactive social media market orientation, responsive social media market orientation, and brand innovation on social media are significantly and positively (see **Table 5**).

Moderating Effect 1

According to **Figure 5**, strategic capability on social media moderates the relationship between knowledge acquisition from social media and brand innovation on social media. Thus, Hypothesis H4a is supported.

Moderating Effect 2

In **Figure 6**, strategic capability on social media moderates the relationship between proactive social media market orientation and brand innovation. Thus, Hypothesis H4b is supported.

Moderating Effect 3

According to **Figure 7**, strategic capability on social media moderates the relationship between responsive social media market orientation and brand innovation on social media. Thus, Hypothesis H4c is supported.

DISCUSSION

This paper explores market orientation, social media knowledge, brand innovation, and social media strategic capability and empirically tests them in China's dynamic social media environment. We propose that social media learning, including market orientation and knowledge acquisition, fosters brand innovation complemented by social media strategic capabilities. In the following section, we discuss the study's significant findings in detail and discuss the contribution and implications.

According to the results, the factors associated with learning-centered brand innovation can be divided into several groups. The path coefficients indicate that the most influential construct on brand innovation is social media knowledge acquisition. The influence of responsive market orientation, and proactive market orientation, is also significant this result is parallel with the previous study of Odoom and Mensah (2019). For researchers, market orientation and knowledge acquisition boost

TABLE 1 | Measurement statistics of constructs.

Constructs, Dimensions, Items	Item loading	AVE	CR	A
Knowledge Acquisition				
KAS2	0.878	0.904	0.924	0.636
KAS3	0.759			
KAS4	0.874			
Proactive Market Orientation				
PSMO2	0.801	0.816	0.854	0.595
PSMO3	0.648			
PSMO4	0.848			
Responsive Market Orientation				
RSMO1	0.868	0.831	0.887	0.663
RSMO2	0.810			
RSMO3	0.581			
Strategic Capability				
SMBI1	0.813	0.882	0.919	0.740
SMBI2	0.821			
SMBI3	0.798			
SMBI4	0.813			
Brand Innovation				
SMSC1	0.878	0.840	0.889	0.689
SMSC2	0.774			
SMSC3	0.868			

TABLE 2 | Discriminant validity.

	KAS	PSMO_	RSMO	SMBI_	SMSC
KAS	0.880				
PSMO_	0.867	0.870			
RSMO	0.658	0.646	0.763		
SMBI_	0.762	0.726	0.671	0.868	
SMSC	0.860	0.753	0.652	0.840	0.841

The square root of AVE' is visible on the main diagonal; correlations are lower left.

TABLE 3 | Predictive relevance of the model.

	R-Square	R-Square Adjusted
Brand Innovation	0.738	0.741

TABLE 4 | Result of structural model and hypotheses testing.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	Values of *p*
KAS ->SMBI_	0.643	0.641	0.052	12.384	0.000
PSMO_ ->SMBI_	0.047	0.045	0.015	3.162	0.002
RSMO ->SMBI_	0.119	0.119	0.026	4.542	0.000
SMSC ->SMBI_	0.129	0.128	0.058	2.224	0.026

the focus firm's competitiveness because they enable it to co-create value with internal and external stakeholders. In light of this nuanced finding, companies should use social media as their primary source of knowledge acquisition. It stands to reason that the new online technology company will have to allocate its limited resources more efficiently due to this finding.

The degree of radical brand innovation on social networks is positively associated with proactive and responsive market orientations. These studies provide evidence that proactive market orientation and innovation are related, in line with earlier studies conducted in a traditional offline context (Cai et al., 2015). Innovative product and service creation are facilitated by this model, which can enable social media ventures to remain competitive. A market orientation strategy can, contrary to conventional wisdom, contribute to brand innovation, as evidenced by the results of this study. Social media allows for more comprehensive searches and identification of customers' needs, expressed and latent (or unexpressed). The new rules of the competition and strategic behavior presented by social media should be considered by online technology companies.

Chinese online technology firms benefit from a market-driven focus when developing an innovation strategy that leads to radical change. It has been found that the results of this study conflict with most theories developed in Western contexts; however, transitional economies are more volatile and dynamic, which is exacerbated by the presence of social media in this case. Study results confirm this viewpoint by demonstrating that firms in China can sustain rapid and stable growth by focusing short-term on expressed needs during the country's transitional economic phase. It is critical to focus on customer needs that cannot be described to advance radical innovation to a new level (Migdadi, 2021). Our study found that both the transitional country effect and the social media context are influential in brand innovation strategies in distinct ways.

Theoretical Implications

Three new contributions are made to the literature by studying social media branding. On the one hand, we show how proactive and responsive marketing orientation can be applied to social media. Our work offers new perspectives on market orientation and brand innovation strategy by extending the literature and testing key assumptions. In general, radical innovations are more likely to emerge in companies with a proactive orientation to the market. Several conclusions can be drawn from our study, including that marketing orientation types and brand innovation are interconnected, as well as the possibility that strong social media strategic capability can lead to a more radical approach to brand innovation. Resource constraints often determine the use of one orientation over the other (Tarsakoo and Charoensukmongkol, 2020). This study demonstrates that organizational ambidexterity may be moderated by social media strategic capability.

In addition, this study adds empirical support to the theory of social capital by demonstrating that the capability of social media to assume a strategic role in knowledge acquisition is an important mediating factor. Social media can improve the process of knowledge acquisition by reducing the negative effects of poor organizational infrastructure, especially given

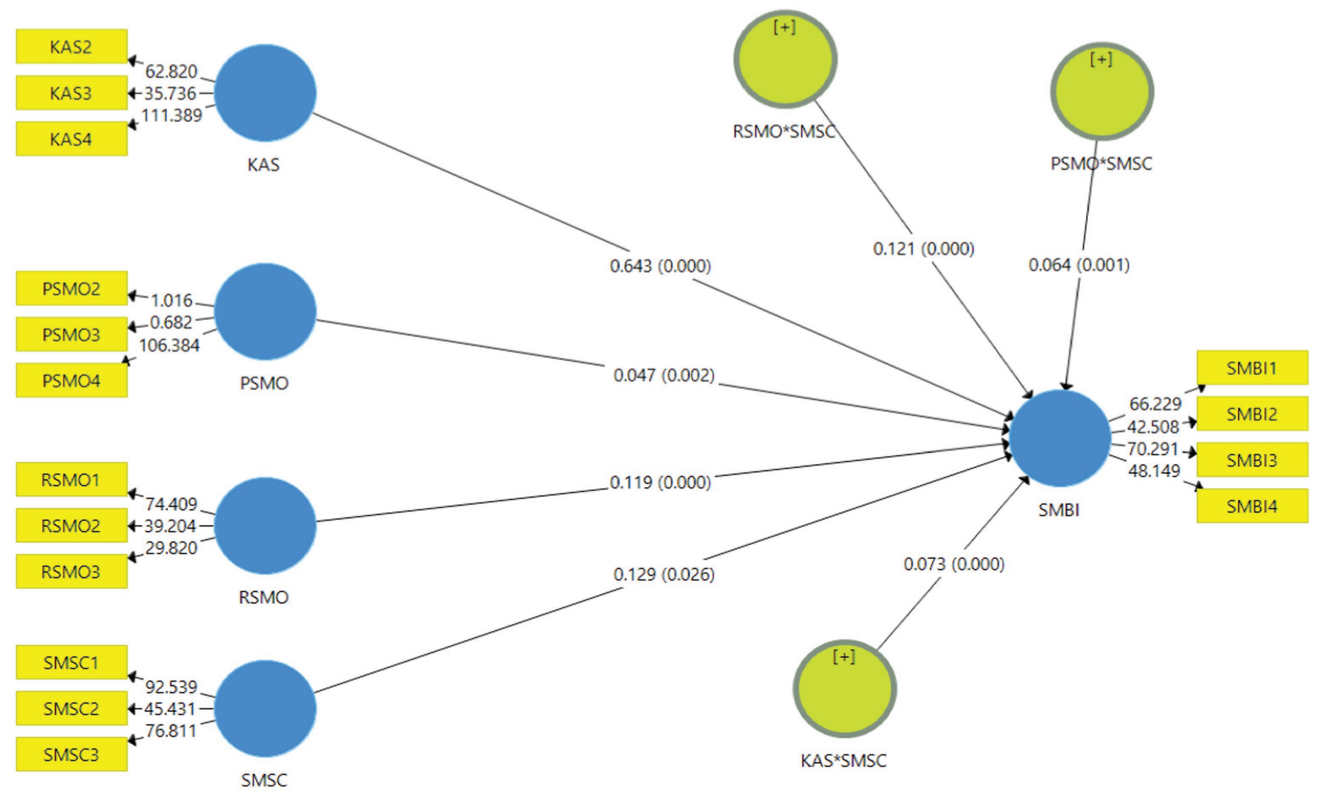

FIGURE 3 | PLS bootstrapping with values of *p*.

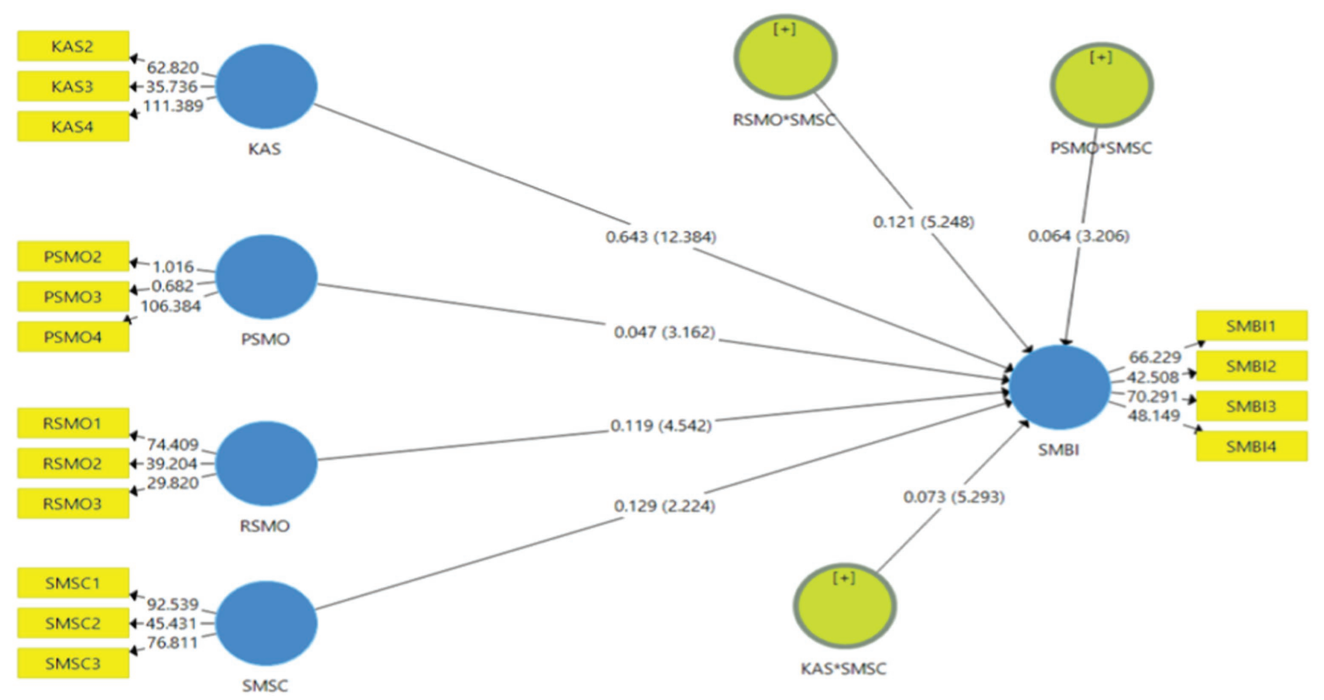

FIGURE 4 | PLS bootstrapping with values of *t*.

TABLE 5 | Hypothesis testing result moderating effects.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	Values of *p*
KAS*SMSC_ - > SMBI_	0.073	0.072	0.014	5.293	0.000
RSMO*SMSC_ - > SMBI_	0.121	0.122	0.023	5.248	0.000
PSMO*SMSC - > SMBI_	0.064	0.064	0.020	3.206	0.001

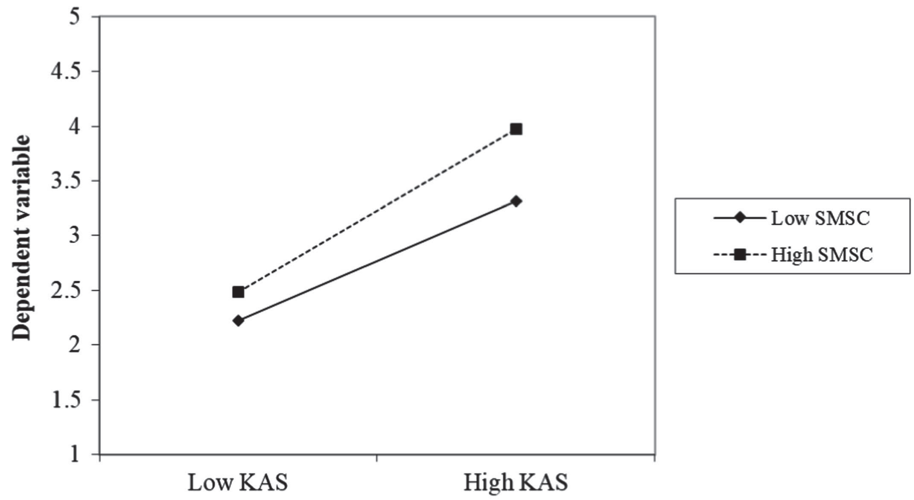

FIGURE 5 | Interaction effect of strategic capability on social media and knowledge acquisition from social media predicting brand innovation on social media.

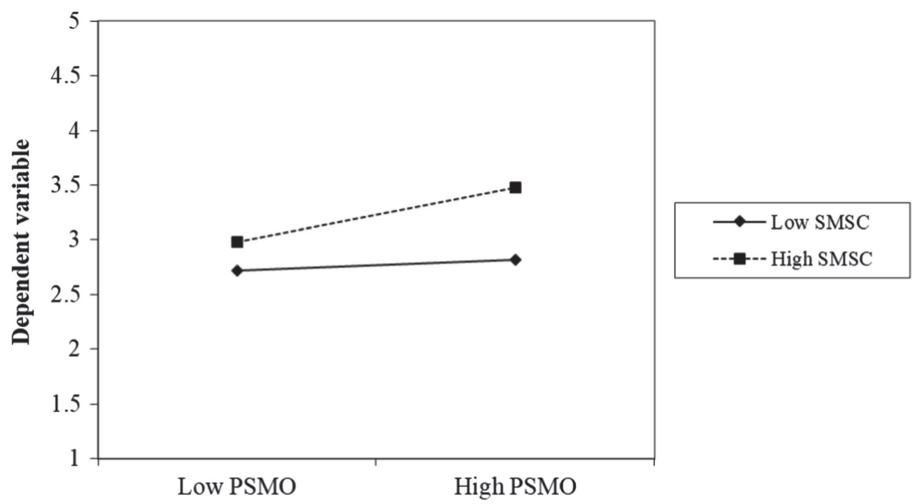

FIGURE 6 | Interaction effect of strategic capability on social media and proactive social media market orientation predicts brand innovation on social media.

the high-risk and resource-consuming nature of innovation (Hafez, 2021). These reciprocal relationships produce new opportunities and ideas based on information and knowledge shared by these businesses. A firm's brand innovation strategies can also be made less risky and resource-constrained by these strategies. Various types of information and resources are transformed by social media strategic capabilities to enhance the competitive advantage of online technology firms. Thus, firms have become more capable of managing dynamic resources, enabling them to leverage the skills and knowledge they have gained from social networks to augment their social capital, ultimately leading to better brand innovation performance.

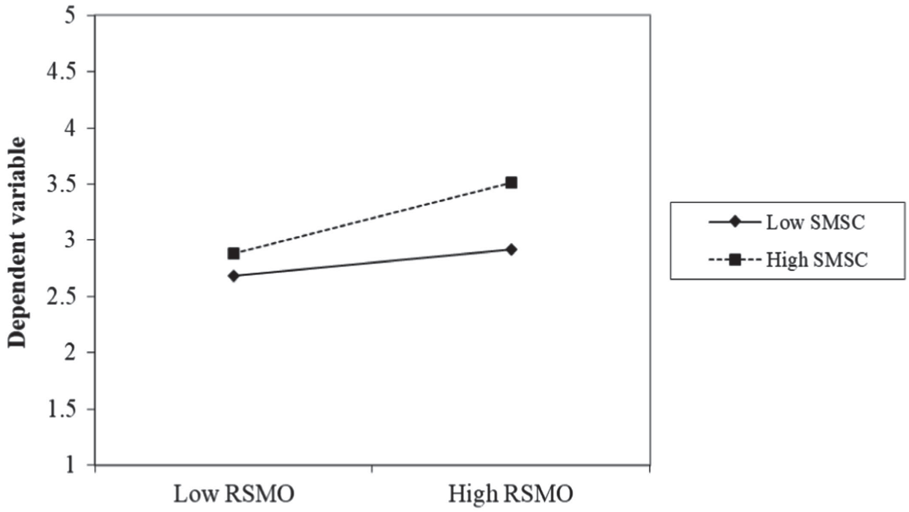

FIGURE 7 | Interaction effect of strategic capability on social media and responsive social media market orientation predicts brand innovation on social media.

Managerial Implications

The study finds that new online technology ventures will positively influence brand innovation through social media strategic capability. We believe that using social media knowledge in social media marketing and innovation management is a sensible approach for making changes and transforming an organization. Firms with a social media strategy capability may be better able to identify opportunities and adjust accordingly during the brand innovation process (Wang et al., 2017). The only way to achieve this is to use a market-focused approach and acquire continuous knowledge from social media. The company could achieve its goals through many methods, such as using a more viable brand innovation process, implementing new technology, or aiming for a new market after the changes are implemented. Businesses can disrupt markets and eliminate existing practices more effectively with social media. Marketers can stay on top of social media by following the framework and guidelines presented in our study.

Limitations and Future Research Directions

This study has a few limitations. First of all, an online setting was used to test our theoretical framework. Therefore, our results cannot be generalized to other settings. Time and financial concerns also limited our study, so we collected data from one location. A more in-depth understanding of our approach could also be gained by applying our results to other economies. Research in the future should examine these variables and different innovation types, including incremental innovation.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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Recover From Failure: Examining the Impact of Service Recovery Stages on Relationship Marketing Strategies

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Purpose: Given the digital transformation of service businesses by providing online food services and the influence of online reviews on consumers' purchasing decisions, this study examines how service recovery attributes in different stages influence relationship marketing strategies, i.e., relationship quality and customer loyalty after service failure. This study is built upon a revised service recovery cycle model by accounting for three stages and their corresponding attributes; whereon a conceptual stage model of service recovery is proposed. This conceptual stage model incorporates stages of service recovery, their respective attributes, and how they influence relationship marketing strategies.

Design/methodology/approach: An online marketing company was employed for data collection in 2019, which resulted in 301 valid responses. A Structural Equation Model (SEM) was conducted with all the data to test the relationships between the constructs. The individual measurement model was tested using the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). A structural model was estimated using AMOS to test all the hypotheses.

Findings: The findings demonstrate that the attributes (i.e., response speed, compensation) paired with the first two stages of service recovery can significantly influence consumer loyalty in a positive state. The findings also manifest the intermediary role that relationship quality has played in the association of service recovery and consumer loyalty, which implies that the food delivery businesses could attain a more comprehended relationship quality with consumers through active and timely compensatory service recovery consumer loyalty to the food businesses.

Originality/value: This study examines how these different stages of the service recovery cycle influence the decision-making of relationship marketing strategies (i.e., relationship quality, customer loyalty) on the prerequisite of service failure. This study aspires to expand the service recovery research by objectifying a conceptual stage model of service recovery, incorporating stages' recovery attributes and how these recovery attributes reciprocally influence relationship quality and customer loyalty.

Keywords: service failure, consumer loyalty, relationship quality, digital transformation, restaurant, small business, compensation

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INTRODUCTION

As part of business strategies tackling the challenge of COVID, more service businesses have sped up their real-life, real-time digital transformation, including online food services, meal delivery solutions, etc. In the transformation, loyal customers have been important for businesses to maintain growth and profitability; thus, business owners and executives consistently strive to develop and maintain positive customer relationships (Reichheld, 1996). In the service industry, however, it is impossible to receive perfect reviews. Thus, the post-service follow-up and recovery has become an essential job (Bilgihan et al., 2014). When customers encounter service failure, their dissatisfaction may lead to negative reviews that reduce their intention to return and future consumption (Alexandrov et al., 2013; Aguilar-Rojas, 2015). A majority of consumers have indicated a higher level of trust on online reviews (Nissen, 2012). They would particularly read more negative reviews that have a greater impact on their decision-making process (Zhang et al., 2018).

In the online service context, service problems and failures occur more often, compared with traditional service contexts (Harris et al., 2006). Given the fact that consumers are very likely to post their reviews and comments on review platforms as public references, businesses necessitate in following up with their customers and conducting service remediation if needed. A responsive business would take commitment and time, responding to positive customer interactions, and negative reviews and comments for multiple purposes of customer happiness and retention, page engagement on social media and online reputation management. Service recovery has been imperative for business to maintain positive customer relationships and reconstruct customer loyalty in the context of online service failure (Sparks et al., 2016). Existing evidence has primarily focused on the consequences of service failure; however, limited studies has ever looked at how to respond to online service failure by accounting for recovery stages and attributes (Di Pietro, 2012).

Given the challenges that business owners have in the online service context to turn unhappy customers into loyal fans, this study is built upon a revised service recovery cycle model by accounting for three stages and their corresponding attributes, and examines how service recovery attributes in different stages influence relationship marketing strategies, i.e., relationship quality and customer loyalty after service failure. This study aspires to expand the service recovery literature by proposing a conceptual stage model of service recovery, incorporating recovery attributes by stages, and understanding how they reciprocally influence relationship quality and customer loyalty.

LITERATURE REVIEW

Service Recovery Stages and Their Attributes

The concept of service recovery was first proposed by Etzel and Silverman (1981) and refers to the measures taken by service providers to compensate for the loss of consumers after the occurrence of service errors in response to negative evaluations by the consumers to change consumers' attitudes toward enterprises (Groonros, 1988). Service recovery is a management process. Companies need to know that service failures have occurred, identify the reasons for such losses, evaluate their impact, and carry out appropriate management activities to resolve these failures (Tax et al., 1998). Based on this perspective, service recovery is defined as the actions that organizations take in response to a service failure (Steyn et al., 2011) or the process of addressing mistakes (Hu et al., 2013). Implementing effective service recovery after service failures does not necessarily lead to negative results (Hu et al., 2013). Particularly in the restaurant business, service failure is difficult to avoid (Namkung and Jang, 2010; Byun and Jang, 2019), emphasizing the importance of practical service recovery efforts in a restaurant setting. Service failures are effectively managed in a restaurant setting also affects customers' behavioral intentions, including word-of-mouth (WOM) intention and revisit intention (Ok et al., 2006). During the recovery process, customers usually expect fairness to be involved in compensation for the loss during the service failure. Many researchers have indicated that organizations can use several strategies to recover from service failures, including communicating with customers to provide feedback, offering explanations for their losses (Boshoff and Staude, 2003; La Khanh, 2004). They also apologize for their losses (Mattila and Cranage, 2005; Mostert et al., 2009). Thus, service failures have a positive relationship with service recovery.

This manuscript provides insight into the dynamics of relationship repair by accounting for the impact of time-specific factors on the relationship repair process. Thus, we propose the revised service recovery cycle model (**Figure 1**), which includes the following three primary stages of service recovery and their attributes: (1) initiation at the early recovery stage; (2) response speed at the immediate recovery stage; and (3) compensation at the follow-up recovery stage.

First, service recovery encompasses a much broader set of activities than addressing complaints because it includes situations in which a service failure occurs the customer lodges but no complaint. Evidence shows that a majority of dissatisfied customers do not bother to complain (Harari, 1992). Prior research has focused solely on failure/recovery situations in which customers have filed a formal complaint with an organization (Tax et al., 1998). Several researchers have suggested that proactive recovery efforts enhance customers' evaluations of the service provider (Berry, 1995). When an organization initiates recovery during the early stage, the customer is likely to view the proactive effort as an act of courtesy, a demonstration of honesty and forthrightness, and a show of empathic understanding and respect.

Second, we argue that recovery speed is a critical factor during the immediate recovery stage. Recovery speed refers to service providers' promptness in responding to service failure, which influences consumer satisfaction (Crisafulli and Singh, 2017). Evidence suggests that longer recovery time would lead to additional negative consequences, such as negative WOM and lower levels of recovery satisfaction (Hogreve et al., 2017;

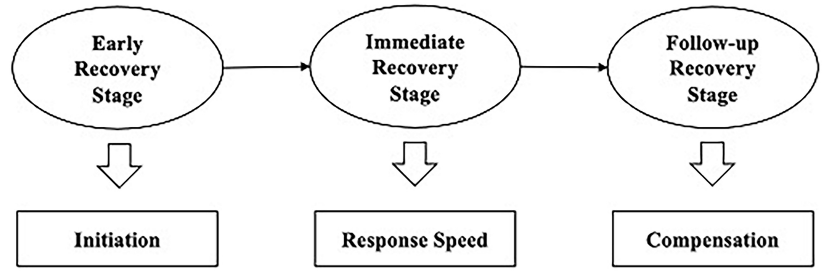

FIGURE 1 | The revised service recovery cycle model.

Babin et al., 2021). Service providers can reduce these negative impacts by quickly responding to consumers' complaints and/or negative reviews, and conducting service remediation.

Lastly, consumers perceive inequity following a service failure, and they might be appeased when provided with suitable compensation during the follow-up stage. According to social exchange theory, compensation (e.g., discounts, free merchandise, refunds, and coupons) by an organization could balance the costs and benefits of achieving an equitable exchange in relationship recovery. Walster et al. (1973) showed that compensation is used to restore equity in an exchange relationship when another party has harmed one party. Tax et al. (1998) performed a content analysis of qualitative evaluations of service complaint experiences and showed that compensation is the most essential recovery dimension. Therefore, compensation plays a vital role during the follow-up recovery stage after service failures.

It is essential to differentiate between service recovery and service failure. Service failure is defined as a "situation where a service provider does not meet customer expectations in terms of its service products or engages in service behaviors that customers evaluate as unsatisfactory" (Harrison-Walker, 2012). Service failures can be classified into the following three types: (1) core service failures, such as failures to fulfill basic service needs (Yang and Mattila, 2012); (2) interactional service failures, including the attitudes and behaviors of employees during face-to-face interactions with customers, such as a server treating a customer impassively or impolitely (Yang and Mattila, 2012); and (3) process service failures, which involve how the core service is delivered to the customer, such as slow service or incorrect delivery order (Mohr and Bitner, 1995). Service failure can result in dissatisfied customers and negative WOM. Thus, recovery efforts are critically needed in service failure situations, and service recovery is among the critical antecedents of customer satisfaction and loyalty (Craighead et al., 2004).

The service recovery paradox (SRP) has emerged in the marketing literature as an essential effect of service failures. The SRP is defined as a situation in which post-recovery satisfaction is greater than the satisfaction before the service failure when customers experience high recovery performance (Smith and Bolton, 1998; Maxham, 2001). Effective service recovery may lead to a higher level of satisfaction than the periods when the service was incorrectly performed; recovery encounters offer an opportunity for service providers to increase customer retention (Hart et al., 1990). Based on the disconfirmation framework (McCollough et al., 2000; Oliver, 2010), the SRP is related to secondary satisfaction following a service failure in which customers compare their expectations for recovery their perceptions of the service recovery performance. If positive disconfirmation occurs, i.e., if consumers' perceptions of the service recovery performance are greater than their expectations, a paradox might emerge (secondary satisfaction becomes more substantial than their pre-failure satisfaction). In contrast, there is a double negative effect in the case of negative disconfirmation as the service failure is followed by a flawed recovery (Smith and Bolton, 1998; McCollough et al., 2000). When customer satisfaction is negatively affected by a service failure, subsequent service recovery reactions may include negative WOM behavior (Hocutt et al., 2006). Positive evaluations occur when the recovery is understood as satisfactory (Matos et al., 2009). Satisfaction with service recovery is defined as positive customer evaluations of the service recovery experience (Bambauer-Sachse and Rabeson, 2015). The degree of success may depend on the type of service involved, the type of failure that occurred, and the type of recovery (Komunda and Osarenkhoe, 2012).

Depicting Relationship Marketing Strategies

Over the past 20 years, there has been growing interest in the concept of relationship marketing among practitioners and academics (Morgan and Hunt, 1994; Sheth and Parvatiyar, 2000, 2002; Gummesson, 2002). Establishing a long-term relationship with customers generates an outstanding level of customer satisfaction, which, in turn, helps companies gain customers' trust and loyalty and thus benefits the company overall (Valenzuela et al., 2010). Relationships help participants meet their objectives and depending on the stage of the connection (i.e., beginning stage, cultivating stage, or enhancing stage), the strategic implications might vary. As a result, firms must pay attention to different aspects at different stages, ranging from creating customer knowledge to shaping their perceptions. The relationship between an organization and its customers is strengthened by many marketing actions (Berry, 1983), which leads to further customer retention. Relationship marketing embodies tactical and strategic elements that can positively impact a firm (Lo and Campos, 2018). The implementation of relationship marketing endeavors to enhance the value of an enterprise to its customers and their long-term relationship (Bruhn, 2003). Relationship marketing further explores the marketing concept by focusing on the customer as an important representative figure and examining a promising way to acquire competitive advantages by exchanging information and becoming closer to the customer. This bond is genuinely advantageous to both parties. It allows both buyers and sellers to commit to achieving long-term benefits that offer greater chances for a successful relationship (Ganesan, 1994). Relationship marketing can be a challenging concept to implement, and the development of close bonds with customers is not always possible or alluring (Webster, 1992). Due to advances on the Internet and technology, sellers can utilize technology to process large amounts of data, derive specific information, and gain insight into customer preferences and behaviors. Therefore, companies can design more suitable solutions and products to meet their customers' needs.

Relationship marketing refers to a customer's perception of the extent to which the relationship fulfills his/her expectations, predictions, goals, and desires regarding the overall relationship (Wong and Sohal, 2002). A high degree of relationship marketing indicates that customers can rely on the service provider's integrity and develop confidence in the service provider's future performance because the past performance level has been consistently satisfactory (Tseng and Seidman, 2007). Kim et al. (2006) indicated that customers' level of relationship marketing depends on various elements rather than only on the interpersonal relationship between service providers and their customers. Commitment, trust, and relationship satisfaction were considered as focal dimensions of relationship quality (Ulaga and Eggert, 2006; Verma et al., 2016). This study proposes that relationship marketing is composed of satisfaction and trust, while commitment belongs to consumer loyalty. Loyalty refers to a commitment to repurchase a product and/or service, and can be reflected by purchasing behaviors (e.g., frequency, intensity, and proposition) and WOM recommendations (Cossío-Silva et al., 2016).

Therefore, although service failures occasionally occur, service recovery can substantially impact relationship marketing because, through such marketing, customers gain confidence that long-term service providers will provide benefits. In contrast, when a customer is not satisfied with the service recovery measures taken by the enterprise. The relationship between the customer and the enterprise could be terminated (Zeithaml, 2002). Service recovery belongs to quality management, and its goal is to maintain a good relationship between enterprises and customers (Schweikhart et al., 1993). Good service recovery can improve customer satisfaction and promote customer trust in businesses, and compensatory service recovery can improve the degree of customer satisfaction (Yan and Jia, 2003; Wen, 2004).

Many scholars have shown that relationship marketing plays an intermediary role in the relationship between service recovery and consumer loyalty; thus, service recovery affects relationship marketing and consumer loyalty (Huang, 2006). Crosby et al. (1990) studied the relationship between service recovery and consumer loyalty in the insurance industry and confirmed the intermediary effect of relationship marketing (Chen and Fu, 2015). Huang (2006) used the banking industry as the investigation background and found that relationship marketing between customers and banks is affected by the perception of service recovery and plays an intermediary role in the relationship between service recovery and consumer loyalty. Huang (2006) also investigated the relationship between audio-visual rental customers and companies and further confirmed the intermediary role of relationship marketing. Therefore, based on the above analysis, this paper proposes the following hypotheses.

Hypothesis 1: Initiation positively influences relationship marketing.
Hypothesis 2: Response speed positively influences relationship marketing.
Hypothesis 3: Compensation positively influences relationship marketing.

Consumer loyalty is a desirable marketing indicator, and has been associated with positive organizational outcomes, such as sustainable competition (Kandampully et al., 2015; Huang et al., 2017; Rather et al., 2018; Affran et al., 2019; Rather and Hollebeek, 2019). Thus, a good service provider believes that a growth process usually involves customers, i.e., attracting new customers, retaining existing customers, and motivating customers to spend more and recommend products and services to other people. When customers experience a higher degree of relationship marketing with enterprises or service personnel, customer identification increases, customers are easily satisfied with the services provided, and customers' willingness to find another service provider decreases (Crosby et al., 1990; Morgan and Hunt, 1994; Ruiz et al., 2008). Liu (2017) investigated the offline retail industry and found that adequately maintaining customer relationships promptly helps retail stores improve their customers' sense of identity and cultivates dependence on the business. Rahman and Ramli (2016) conducted research that investigated the customers of some banking systems in northern Malaysia and verified the role of customer relationship marketing in the formation of consumer loyalty. In the Internet context, relationship marketing positively impacts consumers' repeated purchase behavior (Jin et al., 2008; Zheng, 2008).

Relationship marketing includes customer satisfaction and customer trust, which have been shown to play a significant role in promoting consumer loyalty (Zhao, 2005). Specifically, Mayer et al. (2007) defined trust as the vulnerability of one party to the actions of another party based on expectations that the other party is performing in the desired way. The development of trust is considered a critical result of establishing long-term successful relationships among all parties involved. Moreover, many researchers have suggested that customers' trust plays a significant role in building long-term relationships and achieving consumer loyalty (Feng and Zhang, 2009). For instance, research has shown that when customers consistently receive competent service, their trust levels increase, which results in their maintenance of long-term relationships with the firm (Balaji, 2015).

Customer satisfaction is customers' overall attitudes toward a product, service or experience after their purchase (Leninkumar, 2017). Existing studies suggest that satisfaction positively affected consumer loyalty (Ruyter and Wetzels, 2000; Deng et al., 2010). Although satisfaction may not always be a reason that customers remain loyal (Gerpott et al., 2001), satisfied customers are more loyal than unsatisfied ones. This study thus proposes the following hypothesis:

Hypothesis 4: Relationship marketing positively influences consumer loyalty.

Impacts of Service Recovery on Consumer Loyalty

The evidence suggests that appropriate service remedies can reduce or even eliminate consumers' complaints and promote consumers' trust in enterprises, a common marketing strategy of enterprises (Hart et al., 1990). Like offline service recovery, online service recovery includes responsiveness to customer complaints, resolving the communication process, and economic compensation for service losses (Parasuraman et al., 2005). Online companies are increasingly focused on reducing service failures, enhancing online service quality, and increasing customer satisfaction to attract more customers to make purchases and earn more profit (Zhao et al., 2014). Kelley et al. (1993) identified the top seven recovery strategies used to retain customers: discounts, correction, management/employee intervention, correction plus, replacement, apology, and refund. Smith et al. (1999) concluded that customers prefer recovery in both the value and form of recovery that matches the failure they experienced. Based on research investigating service failure and recovery (Smith et al., 1999; Mattila and Cranage, 2005; Weber and Sparks, 2009), apology and compensation are two key strategies used in service recovery. Moreover, the four attributes of perceived justice proposed by the extant research are compensation, response speed, apology, and recovery initiation (Chou, 2015). Based on research conducted by Smith et al. (1999), service recovery includes the four dimensions of compensation, response speed, apology, and initiation. Compensation, response speed, and apology are often in the business press, are particularly salient to customers, can easily be acted on by managers, and can be manipulated through written scenarios in an experimental context (Hart et al., 1990). Recovery initiation has received much attention in the business literature but has not been addressed empirically. We also expect interaction effects between the failure context and recovery attributes as subsequently described. According to the context of online takeout services, we selected compensation, response speed, and initiation as the three attributes of service recovery. Service recovery denotes a series of activities performed by companies to respond to a customer complaint regarding a service failure (Zhao et al., 2014). These strategies and activities aim to remedy problems with services and products (Kelley et al., 1993).

The most common definition of consumer loyalty was provided by Oliver (2010), who states that such loyalty occurs consistently in the future, thereby causing repetitive same-brand or same-brand-set purchasing despite any situational factors. Various authors have found that an increase in consumer loyalty increases profits, reduces the costs of acquiring new customers, and decreases the costs of serving current customers (Reichheld and Sasser, 1990). Increasing competition, particularly in the service industry, has caused firms to become very concerned with attracting potential customers and maintaining long-term relationships with their current customers, which is the aim of consumer loyalty (Bojei and Alwie, 2010). The measurement of consumer loyalty includes the following two aspects: attitudinal loyalty and loyalty in behavioral intention (Su et al., 2010; Zhang et al., 2010). Attitudinal loyalty is reflected in the willingness of consumers to recommend a service provider to other consumers or the commitment to re-patronize a preferred service provider (Chou, 2015). Behavioral intention is reflected in the frequency with which a customer chooses the same product or service compared to the total frequency with which this specific product or service is consumed (Chou, 2015).

In the online service context, the quality-of-service remedy has a positive impact on loyalty as expressed through customer behavioral intention. Etzel and Silverman (1981) show that service remedy positively affects loyalty through both customer attitude and behavioral intention. Further studies have shown that the response speed of service remediation, tangible compensation, and the initiation of remediation can promote the occurrence of repurchasing behavior and good WOM publicity intentions after the occurrence of service failures (Wang, 2014).

Service recovery is positively related to consumer loyalty, while service failure negatively relates to customer loyalty (Wang et al., 2011; Balaji et al., 2017). When loyal customers face service failure, they are more likely to re-evaluate their experience and service quality and then modify their decisions when competition is high (Fox et al., 2018). Therefore, more service providers have used service recovery as a means to improve customer retention (Vázquez-Casielles et al., 2012). Buttle and Burton (2002) asserted that most customers whose problems are resolved would repurchase, when organizations use an appropriate service recovery strategy. Recovery strategies thus aim to offset the dissatisfaction caused by service failure and reinforce positive WOM (Spreng et al., 1995). For example, travelers would recommend their airlines to others with service recovery efforts and/or incentives (Steyn et al., 2011). Additional evidence indicates that well-executed service recovery efforts can enhance customer satisfaction and loyalty (Buttle and Burton, 2002; Mostert et al., 2009; Steyn et al., 2011; Hu et al., 2013). Effective service recovery can increase customers' trust, enhance consumer loyalty and increase customers' willingness to repurchase in the future (Hu et al., 2013). Moreover, suppose merchants take effective service remedy measures. In that case, customers' repurchase behavior increases, and customer satisfaction is significantly affected by the types of service remedy measures (oral apology, economic compensation, initiation, and response speed) (Zhang, 2013).

Based on the above reasoning, this study proposes the following hypotheses.

Hypothesis 5: Initiation has a positive impact on consumer loyalty.

Hypothesis 6: Response speed has a positive impact on consumer loyalty.

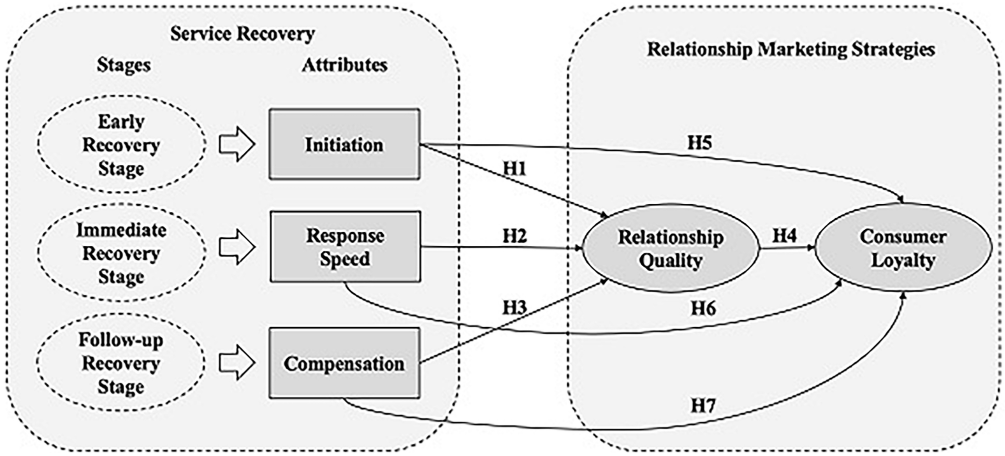

FIGURE 2 | The proposed conceptual stage model of service recovery. H, hypothesis.

Hypothesis 7: Compensation has a positive impact on consumer loyalty.

The revised service recovery cycle model elaborated in **Figure 1**, this study proposes the conceptual stage model of service recovery (**Figure 2**), which not only includes the three stages of service recovery and their recovery attributes in these stages. Notably, it examines how these recovery attributes influence relationship quality and customer loyalty.

RESEARCH METHODS

Data Collection

The online survey was launched in March 2019. Our sample was purchased from a contracted marketing agency, who emailed our survey link to their participants. The participants in our survey were individuals who (1) had purchased via online food delivery apps, and (2) had reviewed and commented on service providers in the past 3 months (**Table 1**). When participants clicked on the survey link, they first accessed a page that described the study purpose, confidentiality, and privacy protocols. According to our contract with the marketing agency, we eliminated nine incomplete questionnaires and led to our final sample size of 301. Our response rate was 97.1%.

All items in the online survey instrument used the five-point Likert scale measurement method (1 = strongly disagree to 5 = strongly agree). First, we modified and developed the service recovery scale based on Mattila (2001); Mattila and Cranage (2005), Fan and Du (2006), and Ma et al. (2009), including nine items in the three attributes of initiation, response speed, and compensation. In **Table 2**, our factor analysis results showed that the internal consistency coefficients of initiation, response speed and compensation are respectively 0.769, 0.896, and 0.790. The Kaiser–Meyer–Olkin (KMO) value is 0.877. Second, relationship marketing in our study had two dimensions of customer satisfaction and customer trust. We developed the customer satisfaction scale based on Oliver (1980) and Leuthesser et al. (2003), which included a total of four items. We used Morgan and Hunt (1994)'s scale of customer trust with a total of four items. As shown in **Table 3**, the internal consistency coefficients of the customer satisfaction and customer trust scales are respectively 0.888 and 0.887. The KMO value of the scale is 0.831. Third, we examined consumer loyalty from attitudinal loyalty and behavioral intention (**Table 4**), according to Zeithaml et al. (1996) and Zhou (2005) using four items. The internal consistency coefficients of the attitudinal loyalty and behavioral intention scales are respectively 0.814 and 0.778. The KMO value of the scale is 0.822. In **Table 5**, the correlation coefficients among the three factors ranged from 0.26 to 0.61 ($P < 0.01$). Our survey instrument overall has a good level of reliability and validity.

TABLE 1 | Participants' profile.

	N	%
Gender (*n* = 301)		
Male	149	49.50
Female	152	50.50
Age (*n* = 301)		
18–25 years old	100	33.22
26–35 years old	84	27.91
36–50 years old	93	30.90
50 years old and above	24	7.97
Mean (in years)	31.89	
Standard Deviation	7.89	
Education level (*n* = 329)		
High school and below	61	20.27
Bachelor's college or below	86	28.57
Master's degree	108	35.88
Ph.D. or doctorate degree	46	15.28
Annual income level (*n* = 301)		
50 thousand below	77	25.58
5–10 million	82	27.24
10–20 million	86	28.57
More than 200 thousand	56	18.60
Mean		11.48
Standard deviation		9.38

TABLE 2 | Results of the confirmatory factor analysis on service recovery attributes.

Items	Factor loading	Error variances	Ave	Cronbach's α	Bartlett sphericity test (Df)	KMO
Initiation			0.57	0.77	113.05***	.88
(1) After service failure, the takeout merchant actively contacted me.	0.80	0.41				
(2) The merchants offered compensation after service failure.	0.80	0.48				
(3) The takeout merchant apologized to me after the service failure.	0.73	0.45				
Response Speed			0.64	0.90		
(1) In the case of service failure, the takeout merchant provided a timely response.	0.77	0.44				
(2) After service failure, the takeout merchant addressed my problems on time.	0.61	0.38				
(3) The takeout merchants addressed my problems in a short time.	0.63	0.39				
Compensation			0.60	0.79		
(1) In response to service failure, the takeout merchant provided product or money compensation.	0.84	0.38				
(2) In response to service failure, the takeout merchant gave me a gift or discount.	0.85	0.48				
(3) In response to the service failure, the delivery merchant promised me that I could return and exchange the goods free of charge.	0.60	0.42				

All factor loadings were significant at the 0.001 levels.
****p < 0.001. Model fit indices: n = 301, χ^2 = 589.863, df = 329, CFI = 0.981, GFI = 0.884, NFI = 0.906, and RMSEA = 0.0452. AVE, average variance extracted.*

Data Analysis

The data analysis in this study was divided into five steps. First, the descriptive statistics were analyzed to determine the characteristics and distribution of the measured variables, and the reliability of the scale was examined. Second, a measurement model with all dimensions was established by using confirmatory factor analysis (CFA) to test the fit of the measures. In the next step, a baseline path model was developed with structural equation modeling (SEM) to test H1 to H5. SEM was used to test the relationship between the independent variable and the dependent variable. For mediation to occur, the following four criteria must be met: (1) the independent variable should be significantly associated with the dependent variable; (2) the independent variable should be related to the mediator; (3) the mediator should be related to the dependent variable; and (4) the association between the independent and dependent variables must be reduced when the mediator is partially omitted. All variables (initiation, response speed, and compensation) were included in the measurement model (**Figure 1**). Fourth, the goodness of fit was tested under SEM to explore paths of influence and the magnitude of explained dependent variable. Finally, a structural model was developed, and the regression weights were compared to test the hypotheses.

RESULTS

Respondents' Sociodemographic Profiles

Around half of the participants (49.5%) were female, and 50.5% were male (**Table 1**). The mean age of the respondents was 31.9 years (*SD* = 7.9). Most of the respondents (35.9%) had a Bachelor's degree or below, and the rest had a Master's degree (28.6), a doctoral degree (15.3%), or high school and below (20.3%). The mean annual income of the respondents was $11,480 (*SD* = 9.49). Approximately one-quarter (25.6%) of the respondents had an annual income of $7,200 or below, 27.2% had an income between $7,200 and $14,400, 28.6% had an income between $14,400 and $28,800, and 18.6% had an income above $28,800.

Descriptive Statistics and Correlation Analysis of the Variables

The results show that in service recovery, consumers have the highest positive perception of compensation (*M* = 3.86, *SD* = 0.88), followed by timeliness (*M* = 3.85, *SD* = 0.85) and loyalty (*M* = 3.83, *SD* = 0.83; **Table 4**). In general, consumers agree with service recovery overall. Regarding relationship marketing, consumers have the same perception of satisfaction and trust (*M* = 3.67, *SD* = 0.89); in consumer loyalty, consumers' attitudinal loyalty (*M* = 3.66, *SD* = 0.87) and behavioral intention loyalty (*M* = 3.66, *SD* = 0.85) are also similar. Here, 1 indicates initiation, 2 indicates response speed, 3 indicates compensation, 4 indicates satisfaction, 5 indicates trust, 6 indicates attitudinal loyalty, and 7 indicates behavioral intention.

Measurement Model

In the second step, the fits of the measures were assessed by using CFA. In this research, the model fits were evaluated through the comparative fit index (CFI), the goodness-of-fit index (GFI), the normed fit index (NFI), and the root mean square error of approximation (RMSEA). According to Bollen (1989) and Byrne (1998), a model is regarded as acceptable if the CFI exceeds 0.93, the NFI and the GFI exceed 0.90, and the RMSEA is less than 0.80.

TABLE 3 | Results of the confirmatory factor analysis on relationship quality and customer loyalty.

Items	Factor loading	Error variances	Ave	Cronbach's α	Bartlett sphericity test (Df)	KMO
Satisfaction			.61	.89	313.75***	.83
(1) I think it is the right decision to choose this takeout business.	0.77	0.38				
(2) It makes me happy to order from this takeout shop.	0.66	0.34				
(3) I like the service provided by the takeout merchant.	0.82	0.42				
(4) At work, I often hide my true emotional feelings.	0.82	0.41				
Trust			0.61	0.89		
(1) I believe the information provided by the takeout merchant.	0.62	0.42				
(2) I believe that the takeout business is concerned with the interests of its customers.	0.71	0.40				
(3) I believe that the takeout merchant is honest with its customers.	0.83	0.42				
(4) The takeout business makes me feel very relieved.	0.87	0.44				
Attitudinal loyalty			0.59	0.81	303.88***	.82
(1) I am willing to make positive comments about the takeout merchant and its products and services.	0.93	0.46				
(2) I would like to recommend the takeout merchant to my family and friends.	0.73	0.41				
Behavioral intention loyalty			0.59	0.78		
(1) I will continue to visit this takeout merchant.	0.79	0.38				
(2) If I need similar products in the future, I will choose this takeout merchant first.	0.88	0.42				

All factor loadings were significant at the 0.001 levels.
****$p < 0.001$. Model fit indices: $n = 301$, $\chi^2 = 589.863$, $df = 329$, CFI = 0.981, GFI = 0.884, NFI = 0.906, and RMSEA = 0.0452. AVE, average variance extracted.*

TABLE 4 | Descriptive statistics about respondents' perceived service recovery, relationship quality and customer loyalty.

Items	*M*	*SD*
Service recovery attributes		
Initiation (α = 0.77)	3.83	0.83
(1) After service failure, the takeout merchant actively contacted me.	3.88	0.80
(2) The merchants offered compensation after service failure.	3.83	0.86
(3) The takeout merchant apologized to me after the service failure.	3.78	0.83
Response speed (α = 0.90)	3.85	0.85
(1) In the case of service failure, the takeout merchant provided a timely response.	3.84	0.83
(2) After service failure, the takeout merchant addressed my problems on time.	3.83	0.78
(3) The takeout merchants addressed my problems in a short time.	3.88	0.85
Compensation (α = 0.79)	3.86	0.88
1. In response to service failure, the takeout merchant provided product or money compensation.	3.91	0.67
2. In response to service failure, the takeout merchant gave me a gift or discount.	3.88	0.70
3. In response to the service failure, the delivery merchant promised me that I could return and exchange the goods free of charge.	3.81	0.77
Relationship quality		
Satisfaction (α = 0.89)	3.67	0.89
(1) I think it is the right decision to choose this takeout business.	3.71	0.86
(2) It makes me happy to order from this takeout shop.	3.70	0.82
(3) I like the service provided by the takeout merchant.	3.67	0.90
(4) At work, I often hide my true emotional feelings.	3.65	0.91
Trust (α = 0.89)	3.67	0.89
(1) I believe the information provided by the takeout merchant.	3.71	0.86
(2) I believe that the takeout business is concerned with the interests of its customers.	3.70	0.82
(3) I believe that the takeout merchant is honest with its customers.	3.67	0.90
(4) The takeout business makes me feel very relieved.	3.65	0.91
Customer loyalty		
Attitudinal loyalty (α = 0.81)	3.66	0.88
(1) I am willing to make positive comments about the takeout merchant and its products and services.	3.70	0.87
(2) I would like to recommend the takeout merchant to my family and friends.	3.64	0.88
Behavioral intention loyalty (α = 0.78)	3.66	0.85
(1) I will continue to visit this takeout merchant.	3.67	0.91
(2) If I need similar products in the future, I will choose this takeout merchant first.	3.65	0.86

TABLE 5 | Correlations between variables.

	Initiation	Response speed	Compensation	Satisfaction	Trust	Attitudinal loyalty	Behavioral intention loyalty
Initiation	1.00						
Response speed	0.77**	1.00					
Compensation	0.69**	0.70**	1.00				
Satisfaction	0.76**	0.81**	0.78**	1.00			
Trust	0.67**	0.72**	0.80**	0.76**	1.00		
Attitudinal loyalty	0.32**	0.41**	0.35**	0.39**	0.56**	1.00	
Behavioral intention loyalty	0.64**	0.68**	0.77**	0.81**	0.77**	0.41**	1.00

All factor loadings were significant at the 0.001 levels.
$^{**}p < 0.01$.

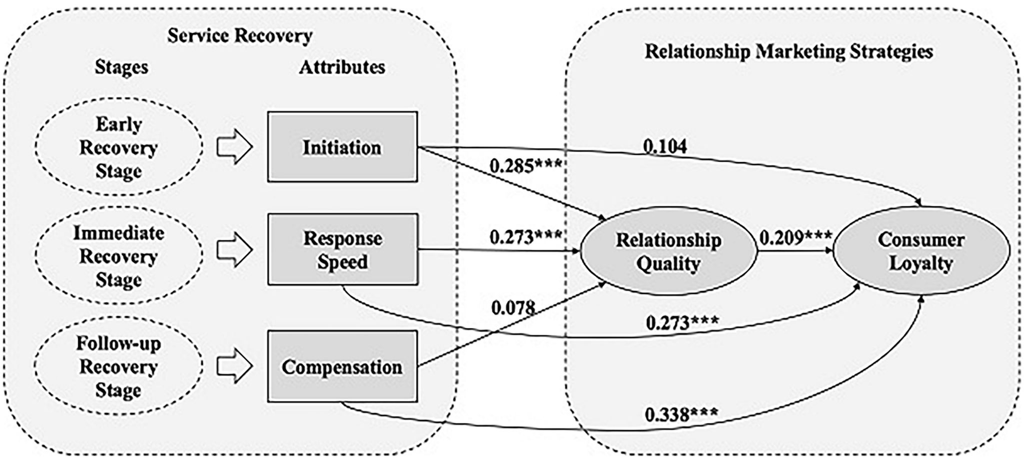

FIGURE 3 | Results of structural modeling. $^*p < 0.05$, $^{**}p < 0.01$, and $^{***}p < 0.001$. $n = 301$, $\chi^2 = 589.863$, df = 329, CFI = 0.981, GFI = 0.884, NFI = 0.096, and RMSEA = 0.0452.

TABLE 6 | Results of SEM.

Effects	Direct effects	Indirect effects	Total effects
H1: Initiation → Relationship Quality	0.285***		0.29
H2: Response Speed → Relationship Quality	0.273***		0.27
H3: Compensation → Relationship Quality	0.078		0.08
H4: Relationship Quality → Customer Loyalty	0.209***		0.21
H5: Initiation → Customer Loyalty	0.104	0.02	0.23
H6: Response Speed → Customer Loyalty	0.273***	0.09	0.32
H7: Compensation → Customer Loyalty	0.338***	0.10	0.44

$^{***}p < 0.001$.
Model fit indices: $n = 301$, $\chi2 = 589.863$, df = 329, CFI = 0.981, GFI = 0.884, NFI = 0.906, and RMSEA = 0.0452.

Our CFA results show that the initial measurement model, which consists of nine items for three factors (i.e., initiation, response speed, and compensation), eight items for one factor (i.e., relationship quality), and four items for one factor (i.e., consumer loyalty), had acceptable fit indices ($n = 301$, $\chi^2 = 594.995$, DF = 344, CFI = 0.968, GFI = 0.875, NFI = 0.927, RMSEA = 0.047).

As all regression weights were significant ($p < 0.01$), the measurement model was further refined, as standardized residuals greater than 2.57 are considered to be statistically significant (Bollen, 1989), and large modification indices (those greater than 3.84) are considered to be statistically significant (Hayes, 2018). Furthermore, the discriminant validity of the measures was assessed by comparing the squares of the correlations between each pair of factors with their average variance extracted values (AVEs). The correlation coefficients among the three factors ranged from 0.26 to 0.61. Since the AVEs for all seven latent factors were higher than the squares of all correlation coefficients, the discriminant validity was acceptable. As shown in **Tables 2**, **3**, the composite reliability values for initiation, response speed, compensation, satisfaction, trust, attitudinal loyalty and behavioral intention loyalty were 0.81, 0.90, 0.83, 0.90, 0.89, 0.89, 0.81, and 0.81, respectively. All values were higher than the suggested value of 0.80. The AVEs for all seven factors were equal to (for employee characteristics) or higher than the suggested value of 0.50. Thus, the convergent validity of the scale is acceptable.

Baseline Model

In the next step, H1–H5 were tested by establishing a baseline structural model (n = 301) that included the initiation, response speed and compensation of service recovery as an exogenous variable and relationship marketing and service loyalty as endogenous variables. As shown in **Table 6** and **Figure 3**, the baseline structural model has acceptable fit indices (n = 301, $\chi 2$ = 594.995, DF = 344, CFI = 0.968, GFI = 0.875, NFI = 0.927, RMSEA = 0.047). The SEM results reveal that response speed had a significant direct effect on relationship quality (β = 0.27; $p < 0.001$) and customer loyalty (β = 0.23; $p < 0.001$); therefore, H2 and H6 are supported. Compensation had a significant direct effect on customer loyalty (β = 0.34; $p < 0.001$), which supports H7, and initiation had a significant direct effect on relationship quality (β = 0.29; $p < 0.001$) and customer loyalty (β = 0.23; $p < 0.001$), which supports H6 and H2. Relationship quality had a significant direct effect on customer loyalty (β = 0.21; $p < 0.001$), which supports H4. However, compensation had no significant direct effect on relationship quality (β = 0.08). These findings thus support H1, H2, H4, H6 and H7.

CONCLUSION

Our study results showed that response speed and compensation can help service providers increase customer satisfaction, maintain positive customer relationships and thus enhance customer loyalty. Although our results suggested that initiating service recovery does not significantly influence relationship marketing, it is a good indicator that service providers have realized the importance of service remediation and recovery by accounting for online reviews. It is impossible to recover customer trust with one-time service remediation after service failure, but customers have indicated their willingness to accept reasonable compensations or incentives for the purpose of maintaining customer loyalty.

Given the significant impacts that response speed has on consumer loyalty, it is essential to take response speed into account for online service providers by communicating with their customers in a timely manner. A responsive service provider should respond to positive reviews that encourages customer interactions, as well address negative reviews and comments, including dealing with customer frustration that should be managed with care, tact and diplomacy (Michel and Stefan, 2001). It is particularly important for online service providers to maintain effective communication with their customers by responding to messages, comments, and reviews on social media and other platforms (Bozkurt and Gligor, 2021). It has become an advantage of increasing customer loyalty by successfully tackling service failure (Mahmoud et al., 2018). For example, angry customers who had negative reviews may require a higher level of service recovery efforts, such as sending gifts with an apology card, offering free service. These active strategies can help service providers establish positive relationships with their consumers and improve customer loyalty.

Our study results have the following theoretical contributions. Our study focuses on the internal mechanism of the relationship between service recovery and consumer loyalty in the online service context, but also reaffirms the rationality of the path from service recovery to relationship marketing to consumer loyalty by exploring the prominent role of service recovery as a key event in long-term relationships with customers. Our results have also verified the importance of relationship marketing in the online service context, showed the positive impact of good relationship marketing on consumer loyalty, and contributed to the literature of customer relationship management.

In addition, our study results provide valuable practical implications. First, our study shows that service providers can use appropriate service recovery strategies to improve customer relationship and their loyalty with their services and/or brands. Unhappy consumers may be turned into loyal fans that leads to long-term profits and positive WOM for the service and brand. Response speed and compensation have been shown significant impacts on consumer loyalty. The primary goal of consumer complaints to merchants is to recover their loss; thus, response speed and compensation are essential factors of service remedy and key to whether consumers will consider repurchasing the merchant's products.

Secondly, merchants should determine the deficiencies in their service system based on service errors and thoroughly conduct an overhaul on their service process to improve service quality and reduce the number of service errors. For instance, through ensuring smooth communication channels with consumers, effectively addressing customer complaints promptly while collecting information regarding service errors, and facilitating the rapid adjustment of their service process. There are specific differences between online customer service and offline business skill requirements. Therefore, it is better to establish professional online customer service processing specialists, clarify the service recovery implementation procedures, and grant customer service personnel specific authority to address unexpected situations promptly to reduce customer dissatisfaction.

This research has several limitations and recommendations for future research. First, this research examines the mediating effect of relationship quality on the relationship between service recovery and customer loyalty for online takeout in the context of China; thus, its findings may not be generalizable to other countries. Accordingly, future research could examine the same research question in other contexts, such as Western culture. Second, the measurements of relationship quality are satisfaction and trust, which most scholars accept, although some scholars view commitment as a third variable of relationship quality. Future research may commit to exploring more deeply the mechanism of action between service recovery and customer loyalty. Moreover, in future research, we could add more dimensions to the research model, such as the service failure type and remediation expectations, whose results would allow merchants to take targeted measures for service recovery. In addition, more detailed and in-depth research on different customer groups can be conducted to provide more targeted help for the practical management of takeout merchants.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Academic Committee of Zhejiang Gongshang University. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JG: conceptualization, methodology, and manuscript writing. LY: data collection, data analysis, and manuscript writing. XX and PL: manuscript editing. All authors have contributed to and approved the manuscript.

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Customer Engagement Around Cultural and Creative Products: The Role of Social Identity

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Along with the increasing trend of transactions occurring on social media, the consumption of Chinese cultural and creative products has increased even against the background of the COVID-19 pandemic. In this context, this article aims to analyze the relationships between virtual community-based social identity and cultural and creative product customer engagement (CE) behaviors. To this end, social identity theory and CE behavior theory were applied to previous research model. Structural equation modeling (SEM) was conducted using data from 520 self-administered questionnaires from online virtual community members. The results show that social identity has a significant effect on customer knowledge behavior, participation behavior, and influencer behavior. Moreover, influencer behavior mediates the effect of social identity on purchase intention. The study also identified gender differences in the mediation for influencer behaviors. Our results suggest that women are more sensitive to influencer behaviors than men, and thus generate more purchase behaviors.

Keywords: social identity, cultural and creative products, customer engagement behaviors, social media, purchase intention

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INTRODUCTION

According to the Chinese National Bureau of Statistics (2021), the business revenue of enterprises in China's cultural and related industries increased by 2.2% in 2020 compared to the previous year. The museum industry grew rapidly in China between 2011 and 2021 (Chinese National Bureau of Statistics, 2021). The last 2 years have presented many obstacles to museum visits due to the COVID-19 pandemic. However, the statistics mentioned above show that the museum industry still maintained a relatively high growth rate during the pandemic. A typical example of these successes is one of the cultural products developed by Henan Museum in 2020. This was in the form of a blind box with characteristics resembling those of museum artifacts, and by digging themselves, customers could find and open the blind box to reveal scaled-down versions of the artifacts, allowing them to experience the fun of digging for treasure. However, in 2020, people's enthusiasm for visiting the exhibition remained relatively low due to the social isolation measures brought about by the pandemic. So how did this museum creation generate such a buzz under such difficult circumstances? Through our investigation, we found that the popularity of the Henan Museum's product was due to enthusiasts sharing posts about it on social media, which triggered even more attention. The search term #henanmuseumarchaeologyblindbox was viewed more than 28 million times on Weibo—the largest social media platform in China—and discussed more than 12,000 times in less than a month.

Inspired by this phenomenon, we assumed that interest-based online communities must also contribute to brand growth in a subtle way; we wanted to find out how the sharing behavior of these enthusiasts on social media, which caused other enthusiasts to purchase the product, actually occurred. How can brands leverage interest-based communities to help their brands grow?

Interest-based communities are communication platforms created spontaneously and autonomously by certain users, while other users search and join these interest-based platforms on their own initiative. There are many communities of fans of cultural and creative products on Chinese Internet platforms, such as the "We All Love to Buy Cultural and Creative Products" group on Douban where a group of people who are interested in museum cultural products gather. These users actively exchange and share their purchase experiences and their knowledge about certain products, and also disseminate knowledge and perceptions of new products rapidly in these communities. In the community, the topics discussed inevitably include the attributes of certain products, which means that every discussion about cultural and creative products is, for a brand, an act of consumer participation in the brand. At this level, community members are co-creators of brand value. Through online interaction, people can get the information they need and buy the products they are interested in without having to leave home. As for minor culture, virtual communities help promote brand familiarity. Interest-based members are able to form social relationship nets more easily (Zhao et al., 2009), which also provides potential opportunities for increasing customer engagement (CE) behaviors. CE through social media generates positive impressions of the brand (Osei-Frimpong and McLean, 2018).

Previous studies have focused on the impact on consumer behavior of brand communities created by firms for the purpose of binary interactions with consumers (Zaglia, 2013; Elbedweihy et al., 2016). He et al. (2012) argued that identification with the company on the part of consumers causes engagement behaviors. Researchers have also explored various theories to explain community member behaviors and to examine the relationship between community identity and community participation behavior in online Internet communities. The engagement behaviors in these interest-based virtual communities imply differences in the social psychologies of their users. Social identity is considered to be a motivation to participate in online communities. Bagozzi and Dholakia (2002) study adopted a marketing viewpoint to identify how social influence and variable social identity impact virtual community participation. The focus of the present study is on how social identity influences engagement behaviors with brands among members of user-created interest-based communities. This is valuable for the study of brand communities, because the spontaneity of user-created community members differs from the passivity of members of brand communities: in user-created interest-based communities members' behavior is autonomous rather than passive. Another difference between user-created communities and brand communities is that the content exchanged by members of user-created communities may include experiences of a large number of different brands, rather than a single brand. It is also valuable for brands to gain insight into the psychology of consumers and trends in content production within the community from the perspective of consumer self-motivation, as a complement to the brand-consumer relationship, and this can provide a consumer perspective on the direction of product marketing.

This study will examine the relationship between community identity and the within-community behavior of members of a Chinese Internet community which is based on interest in cultural and creative products. To determine how social influences impact users' engagement, our model uses social identity theory framing. Once the role of social identity in user-created communities is established, subsequent studies can continue to further explore the motivation of social identity.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Social Identity Theory

Social identity has been defined by Tajfel (1978) as "that part of an individual's self-concept which derives from his knowledge of his membership of a group (or groups) together with the value and emotional significance attached to the membership." Tajfel (1978) research on categorization and the development of accentuation theory highlighted the cognitive consequences of (social) categorization processes, an important component of social identity theory and later of self-categorization theory. He proposed that classifying physical stimuli could lead people to perceive between-category differences as larger (Tajfel and Wilkes, 1963). Tajfel (1978) defined social identity (or group identity), in both cognitive and evaluative terms, as that part of the self-concept corresponding to the knowledge of group membership, together with the value and emotional significance of that membership. This has proven to further influence different fields such as organizational behavior (Ashforth and Mael, 1989) and fandom behavior study (He, 2005). This paper argues that social identity theory can be used to study the influence of individual psychological characteristics on the behavior of community members who share similar passions for cultural and creative products.

Tajfel's definition of social identity involved cognitive, affective, and evaluative components (Bergami and Bagozzi, 2000). In a cognitive sense, social identity is a self-categorization process whereby the individual forms a self-awareness of virtual community membership, which includes awareness of both similarities with other members and dissimilarities with non-members (Ashforth and Mael, 1989). In this case, the members of the community share a similar passion for cultural and creative products. Tajfel (1978) definition also implies that a virtual community has an emotional and evaluative impact on its members. In the emotional dimension, social identity represents a sense of emotional investment in the group, which researchers have defined as attachment or affective commitment (Bagozzi and Dholakia, 2002). Affective social identity strengthens members' bonds with each other and fosters their engagement behaviors in the group (Ellemers et al., 1999; Bergami and Bagozzi, 2000). Aside from affective social identity, evaluative components also play a crucial role in explaining users' coherence in a group (Bergami and Bagozzi, 2000). The evaluative component represents group self-esteem and is defined as the evaluation of self-worth based on community "belongingness" (Ellemers et al., 1999). Members of the cultural and creative community, the subject of this paper, develop their contributions to the community based on their perceptions of cultural and creative preferences. The emotion of investment also leads them to identify with, and emotionally link themselves to, the community.

Despite the discrepancies among these three dimensions, they have not been fully studied in the current literature; instead, social identity has generally been measured and treated as a unidimensional construct (Ellemers et al., 1999). In this study, we propose that each dimension exerts a positive effect on CE behaviors, and that the cognitive, affective, and evaluative dimensions are first-order construct components of a second-order social identity construct.

Customer Engagement Behavior

The concept of CE emerged in 2006 as a sub-set of the term "engagement" related to the study of customers' behaviors and emotions in terms of their interaction/participation with brands (Vivek et al., 2014). According to the literature, most CE-related studies have viewed CE from a behavioral perspective, considering that engagement behaviors—especially non-transactional behaviors—can affect a company's development (Verhoef et al., 2010). Non-transactional behaviors indirectly produce profits for a firm (Kahn, 1990). Furthermore, CE behavior has been examined beyond purchase behavior; this research was driven by the understanding that a consumer's motivation comes from the emotional bond between them and a company (Van Doorn et al., 2010). Prior literature has considered non-transactional behaviors to be comprised of various related behaviors such as word-of-mouth (WOM) information transmission, referrals, co-creations, and ratings (Van Doorn et al., 2010; Wei et al., 2013). In the online community, users' spontaneous exchanges of opinions and sharing of knowledge about a product represent the emotional ties between users and the product, which are related to CE behaviors. At the same time, the extensive discussions about products and brands generated by customers' engagement in the community stimulate the interest of other members within the community in these brands. As a result, when consumers instinctively identify with a brand, positive feedback is generated accordingly.

The creation of value by customers for firms occurs through a more elaborate mechanism than purchase alone (Kumar et al., 2010). In their study of customer engagement value (CEV), Kumar et al. (2010) proposed four components of CEV: customer life value, customer referral value, customer influencer value, and customer knowledge value. These four dimensions of CEV can be derived from four dimensions of customer behavior: (1) customer purchase behavior, (2) customer referral behavior, (3) customer influencer behavior, and (4) customer knowledge behavior. The four dimensions of customer behavior proposed by Kumar et al. (2010) are based on the combination of the concept of purchase behavior with the three other defined behaviors. Customer referral behavior is extrinsically motivated by, and related to, the acquisition of new customers. Almost all behavior that would be classified as contributing to consumer influencer behavior is based on the intrinsic motivation of the customer. Customer influencer behavior is mostly represented by WOM activity, such that a customer voluntarily generating WOM about the firm and its products is engaging in consumer influencer behavior. Customer knowledge behavior includes feedback behaviors, such as providing feedback to a community or firm. In the process of developing knowledge, customers assist a company by adding value (Joshi and Sharma, 2004).

Based on this CEV theory, we split CE behavior into four similar dimensions—in this case, four outcomes of social identity. Customer influencer behavior is the perceived behavior of community members as influenced by others. Customer participation behavior is an indicator of how active the community is for individual users. Knowledge behavior is the interaction and information sharing that occurs between customers about a product.

Research Model and Hypotheses

Zhou and Lu (2009) have proposed a model to explain the correlation between social identity, community members' sharing intentions, and their actual behavior. This model specifically considers members' knowledge-sharing behavior. We extracted part of this model and added other customer behaviors as outcomes to adapt the model to our research, using the social identity theory (Tajfel, 1978) and consumer engagement behavior theory as underlying frameworks (**Figure 1**).

The correlation between social identity and CE has been widely studied. Social factors have been commonly used as mediators or antecedents in various CE behavior studies (Shen, 2012; Sharma and Crossler, 2014; De Oliveira et al., 2016). A previous study has also verified the importance of social presence to the extent that it has been found to impact customers' sociable interactions in the social commerce (s-commerce) environment (Xiang et al., 2014). Other studies have examined the mediating effect of social factors on the behavior of online customers participating in s-commerce activities (Hajli et al., 2015; Kucharska, 2019). Prior research on the overall effect of these three dimensions on social identity has generally supported positive associations with CE behaviors, such as participation behaviors. As a minor cultural group, cultural and creative product consumers, and the degree to which their behavior is affected by their group identity, represent the starting point for this study. Prior literature about social media's role for firms has been more focused on researching brands' social media pages. Past studies have revealed how social interaction motives influence CE (de Silva, 2019). In particular, in an online community context, the ways in which customers' identification with their community might increase CE behavior have also been studied (Prentice et al., 2019). This study explores how interest-based virtual communities are also able to generate a positive impact on customers' engagement behaviors. Moreover, with the knowledge that existing consumer behavior studies have focused more on specific behaviors, such as participation

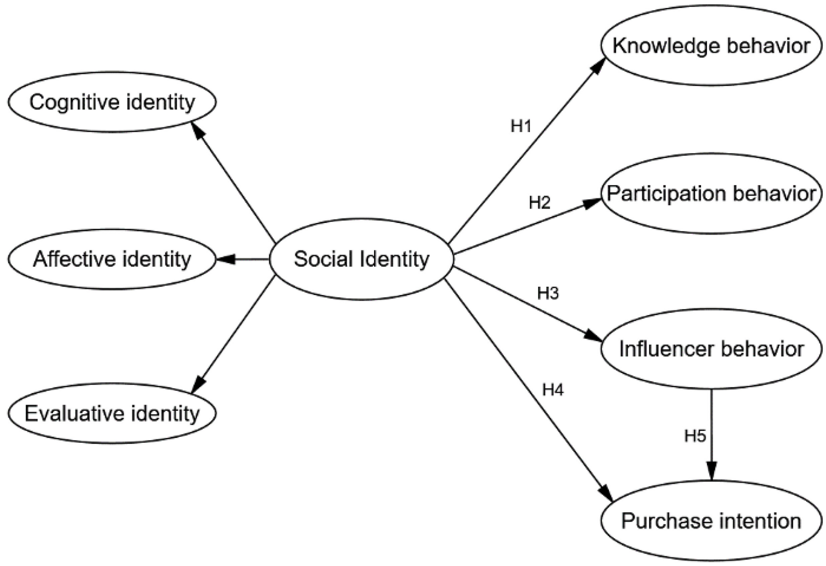

FIGURE 1 | The research model.

behavior (Dholakia et al., 2004) or knowledge behavior (Shi, 2010), this study examines four components of CE behavior to more generally identify the influence of social identity.

Past studies have supported the position that searching for information is the main form of gratification that consumers seek in online brand communities (Zaglia, 2013). When customers identify with companies, they are more likely to develop a psychological attachment to them and to voluntarily contribute to the company's goals (Bhattacharya and Sen, 2003). Posting and sharing information is one of the ways in which community members can actively develop a mental attachment to a company. Based on the above discussion, we have developed the following hypotheses:

> Hypothesis 1: Social identity positively influences knowledge behavior in cultural and creative product virtual communities.

Most studies use social motivations to explain active participation in virtual communities (Tsai and Bagozzi, 2014; Chih et al., 2017; Hsu et al., 2018). Social identity is one of the social motivations for virtual community participation (Bagozzi and Dholakia, 2002; Hsu et al., 2018), which develops through in-group ties prompting people to interact with other members (Wolter and Cronin, Jr., 2017). Researchers believe that a user's social identification with social media means that the user has a sense of belonging to that social media community and will willingly continue to engage with the social media platform (Yang et al., 2021). Members who are connected to the community are more likely to dedicate more time and energy to engaging in community activities (Choi, 2013). We assumed that social identity played a similar role in members' participation behavior in the user-created interest community. On the basis of the this discussion, we developed Hypothesis 2:

> Hypothesis 2: Social identity positively influences participation behavior in cultural and creative product virtual communities.

Prior research on social identity has revealed that identification with a group produces positive outcomes, in such a way that people who strongly identify themselves with organizations are more likely to support these organizations in various ways and to evaluate these organizations positively (Ahearne et al., 2005). Consumers who identify strongly with a company are more likely to actively engage in additional behaviors, such as passing on positive WOM information about the company and influencing other customers (Castro et al., 2022). On the basis of this discussion, we developed Hypothesis 3:

> Hypothesis 3: Social identity positively influences influencer behavior in cultural and creative product virtual communities.

Formerly, individuals tended to rely on social relationships and interactions with peers when exhibiting purchasing behaviors (Vivek et al., 2014). In modern market development conditions, many products are purchased by customers not because of their physical characteristics, but because the customers belong to a particular social group (Ivanova et al., 2022). In the context of online communities, social relationships are generated through the interaction of members in the community. On the basis of this discussion, we developed Hypothesis 4:

> Hypothesis 4: Social identity positively influences purchase behavior in cultural and creative product virtual communities.

Customer influencer behavior can influence customers' perceptions. This study views WOM in communities as the perceived behavior of community members having an influence on others, which represents influencer behavior in this paper. In many product categories, WOM, interaction, and assistance from other customers post-acquisition can significantly affect people's behavior through increased persuasion, the conversion of people into customers and the recipient customer's continued usage of a product (Katz and Shapiro, 1985). Several researchers have studied the role of individuals' influence on others in the diffusion and adoption of products (Van den Bulte and Wuyts, 2007). It is widely acknowledged that WOM can significantly influence a firm's sales and consumer behavioral intentions (Tseng and Hsu, 2010). The worldwide spread of the Internet has engendered a less personal but more ubiquitous form of WOM communication: online WOM (e-WOM) communication (Jalilvand and Samiei, 2012). The influencer behavior represented by WOM that is explored in this paper is e-WOM behavior in the community. This new type of WOM communication has become an important venue for consumer opinions (Chih et al., 2013) and is assumed to be even more effective than in-person WOM communication due to its greater accessibility and reach (Chatterjee, 2001). Reza Jalilvand et al. (2012) argued that e-WOM is one of the most effective factors influencing brand purchase intention in consumer markets. Investigations, have found that e-WOM information impacts purchase intention. Thus, we have defined connections between the constructs of influencer behavior and purchase intention, and have generated Hypothesis 5:

> Hypothesis 5: Influencer behavior mediates the influence of social identity on purchase intention in cultural and creative product virtual communities.

MATERIALS AND METHODS

Sample and Data Collection

Data were collected through an online self-reported survey supported by Sojump, a questionnaire website that is widely used in mainland China. The study used convenience sampling, which is a type of non-probability sampling. Because the research scope was limited to online communities, we choose to distribute our questionnaire in online virtual communities. In addition, because this study examines cultural and creative product users, the virtual communities in which we chose to distribute the questionnaire were related to cultural and creative products, where the users' interests were consistent with the nature of the communities. The questionnaires were distributed in virtual communities based in the Chinese mainland (e.g., Douban groups, Weibo communities, and WeChat groups). This questionnaire was developed on the basis of evidence from prior literature on social identity theory and CE. Of the questionnaires distributed, 661 were returned. After removing invalid questionnaires, we obtained 520 samples, yielding a 78.7% response rate from the participants.

According to Chinese investigative reports on Chinese cultural and creative products in 2019 (PR World, 2019), more than 1 billion online consumers of cultural and creative products were born during the period 1990–1999, which is consistent with our data. The generation born during this decade is known as Generation Z. Unlike previous generations, Generation Z are Internet natives, who are more reliant on digital media and more active within online communities. They are also savvy consumers who do not trust brands and prefer personalized services (Gutfreund, 2016). They trust information shared with their peers within spontaneously engaged online communities more than information that they receive through direct advertising. This is in line with the demographic profile of respondents as belonging to Generation Z. Furthermore, our gender data is also in line with the aforementioned investigative reports. The demographic information of the participants is presented in **Table 1**.

Measures

The scale of measurement for the constructs included in the research model was defined on the basis of the measures used in the sources, as shown in **Table 2**.

The research model employed in this study examines the effects of cognitive, affective, and evaluative identification on CE behaviors. The questionnaire was composed of two sections. In the first section, participants indicated their agreement or disagreement with 24 items using a 7-point Likert scale that ranged from "strongly disagree" (1) to "strongly agree" (7). The advantage of using an interval scale is that it permits the researchers to use a variety of statistical techniques that can be applied to nominal and ordinal scale data, in addition to the arithmetic mean, standard deviation, product-moment correlations, and other statistics commonly used in marketing research (Malhotra and Galletta, 1999).

The 24 items were grouped into the seven constructs considered in the model. According to Ellemers et al. (1999), social identity has been commonly measured and treated as a unidimensional construct. Therefore, social identity was set as a second-order construct, as mentioned above. Cognitive, affective, and evaluative social identities were used as first-order constructs and were measured by three items each, a format adapted from Bagozzi and Dholakia (2002). The cognitive dimension of social identity refers to a person's self-categorization as a group member (Dholakia et al., 2004). Affective identification refers to the emotional attachment of a person to the group (Ellemers et al., 1999). The evaluative aspect of social identity refers to the assessment of self-worth that results from group membership (Dholakia et al., 2004).

TABLE 1 | Demographic profile of the participants.

Variable	Characteristic	Frequency	Percentage
Gender	Male	210	40.38
	Female	310	59.62
	Total	520	100.0
Age	Born after 2000	47	9.04
	Born 1990–1999	403	77.50
	Born 1980–1989	47	9.04
	Born 1970–1979	23	4.42
	Total	520	100.0

TABLE 2 | Measurement items.

Constructs	Items	References
Cognitive social identity	csi1	Wang, 2017
	csi2	
	csi3	
Affective social identity	asi1	Wang, 2017
	asi2	
	asi3	
Evaluative social identity	esi1	Wang, 2017
	esi2	
	esi3	
Knowledge behavior	kbh1	Shi, 2010
	kbh2	
	kbh3	
	kbh4	
Influencer behavior	ibh1	Jalilvand and Samiei, 2012
	ibh2	
	ibh3	
	ibh4	
	ibh5	
	ibh6	
Participation behavior	pab1	Wang, 2017
	pab2	
	pab3	
Purchase intention	pb1	Jalilvand and Samiei, 2012
	pb2	
	pb3	
	pb4	

Three aspects of social identity were both measured with items adapted from Bagozzi and Dholakia (2002) and Dholakia et al. (2004). We refer to Wang's (2017) adaptation of the measurement items of cognitive, affective, and evaluative identification. Engagement behavior outcomes, including knowledge behavior, influencer behavior, participation behavior, and purchase intention, were operationalized by four items, six items, two items, and four items, respectively. Knowledge behavior measurement items are referenced in the Shi's study on ability of knowledge contribution (Shi, 2010). We chose e-WOM behavior to represent influencer behavior, following the definition of Kumar et al. (2010), and measured by the items adapted from Jalilvand and Samiei's (2012) research. We replaced referral behavior with participation behavior, which measured with items in Wang's (2017) research on usage of social networking site (Wang, 2017). Purchase intention measurement items are adapted from Jalilvand and Samiei's (2012) research. All measurement items and their sources are listed in **Table 2**.

Data Analysis

The quantitative data analysis included two processes: (1) an analysis of the descriptive statistics and the reliability of the measurement using SPSS 26.0 and Amos 24.0 software, and (2) structural equation modeling (SEM) testing. Amos 24.0 was used to evaluate the correlation coefficient between variables in the factor analysis and path analysis of the equation model. A detailed explanation of the application of both analytical procedures and their results is given below.

RESULTS

To test the validity and reliability of the measurement, confirmatory factor analysis (CFA) was conducted using AMOS 24.0. The results indicate an acceptable fit with the data ($\chi^2 = 557.836$, df = 163, normed $\chi^2 = 3.422$). The goodness of fit index (GFI = 0.899) and comparative fit index (CFI = 0.950) were also acceptable, and the standardized root mean square residual (SRMR = 0.0480) and root mean square error of approximation (RMSEA = 0.068) were less than 0.8 (HooperD and Mullen, 2008). All factor loadings were statistically significant at $p < 0.001$. The average variance extracted (AVE) for the seven constructs ranged from 0.662 to 0.826, exceeding 0.5 (Fornell and Larcker, 1981), and the composite reliability (CR) for the constructs was higher than 0.8 (Hair et al., 2009), indicating satisfactory convergent validity.

Confirmatory factor analysis revealed a standard factor loading of pab2, one of the measurements of participation behavior construct, below 0.6 (Hair et al., 2009). Thus, this measurement item was removed. To analyze one item, according to Schumacker and Lomax (2004), the CR of pab3 was set as 0.8 to modify the model, which required the use of SPSS 26.0 to calculate the covariance of item pab3 (2.734) and include it in our model. The other construct, Cronbach's alpha, exceeded the marginal value of 0.7 (Hair et al., 2009), indicating satisfactory internal consistency for all constructs, as presented in **Table 3**.

To test discriminant validity, the values of AVE and the squared correlation of constructs were compared for each pair of constructs. All squared correlations were acceptable; thus, the discriminant validity of the constructs was satisfactory (**Table 4**).

According to Marsh and Hocevar (1985), by calculating the target coefficient, this study compared CFA of the first order and second order to decide the fitness with the data. At-value closer to 1 implies that the second-order CFA can replace the first-order CFA, making the model more precise. In this case, the target coefficient was used to test for the existence of a higher-order social identity construct. A target coefficient of 1 provided satisfactory evidence of a second-order social identity construct. The fitness index of the second-order CFA of social identity implies that the fitness was good.

Structural equation modeling was conducted using AMOS 24.0 to test the hypotheses. To test the model, social identity as a second-order construct was used to test the model. As shown in **Figure 2**, the SEM analysis results showed that social identity had a significant influence on consumer knowledge behavior ($\beta = 0.91$, $p < 0.001$), consumer participation behavior ($\beta = 0.64$, $p < 0.001$), consumer influencer behavior ($\beta = 0.63$, $p < 0.001$), and consumer purchase intention ($\beta = 0.40$, $p < 0.001$). This result confirms that Hypotheses 1–4 were supported (**Table 5**).

To test Hypothesis 5, which explored whether influencer behavior has a mediating effect on the relationship between social identity and purchase behavior, we conducted bias-corrected percentile bootstrapping and percentile bootstrapping at a 95%

TABLE 3 | Convergent validity.

Construct	Unstd	SE	*t*-Value	*p*	Std	SMC	1-SMC	CR	AVE	Cronbach's α
Cognitive social identity										
CSI1	1.000				0.807	0.651	0.349	0.856	0.665	0.856
CSI2	1.076	0.057	18.843	***	0.848	0.719	0.281			
CSI3	0.966	0.053	18.260	***	0.791	0.626	0.374			
Affective social identity										
ASI1	1.000				0.814	0.663	0.337	0.854	0.662	0.853
ASI2	1.123	0.059	18.959	***	0.867	0.752	0.248			
ASI3	0.990	0.056	17.764	***	0.757	0.573	0.427			
Evaluative social identity										
ESI1	1.000				0.795	0.632	0.368	0.897	0.745	0.895
ESI2	1.090	0.050	21.886	***	0.851	0.724	0.276			
ESI3	1.217	0.053	22.981	***	0.937	0.878	0.122			
Influencer behavior										
IB2	1.000				0.693	0.480	0.520	0.871	0.631	0.868
IB4	1.442	0.081	17.741	***	0.886	0.785	0.215			
IB5	1.183	0.078	15.236	***	0.731	0.534	0.466			
IB6	1.254	0.072	17.364	***	0.852	0.726	0.274			
Knowledge behavior										
KB2	1.000				0.864	0.746	0.254	0.878	0.706	0.878
KB3	0.997	0.048	20.703	***	0.803	0.645	0.355			
KB4	1.027	0.047	21.775	***	0.853	0.728	0.272			
Purchase behavior										
PB1	1.000				0.825	0.681	0.319	0.854	0.662	0.853
PB2	0.940	0.053	17.832	***	0.761	0.579	0.421			
PB3	1.016	0.054	18.924	***	0.852	0.726	0.274			
Participation behavior										
PAB3	1.501	0.056	26.756	***	0.909	0.826	0.174	0.826	0.826	0.800

*Unstd, unstandardized factor loadings; Std, standardized factor loadings; SE, standard error; SMC, squared multiple correlation; CR, composite reliability; AVE, average variance extracted. ***p < 0.001.*

confidence interval with 1,000 bootstrap samples (Taylor et al., 2008). We also calculated the lower and upper bounds of the confidence interval to test for indirect effects. As presented in **Table 6**, the results for the test of indirect effects from social identity to purchase intentions, where it can be seen that effects exist (indirect effect $Z = 7.72 > 1.96$) (Sobel, 1982). The results confirm that Hypothesis 5 was supported.

According to the Chinese investigation reports of Chinese cultural and creative products in 2019 (PR World, 2019), women had stronger intentions to purchase the products. Based on this report, we aimed to examine whether differences existed between our model's samples of men and women. Thus, we conducted a multi-sample analysis. Multi-sample analysis with unconstrained model showed the model fit the data well [χ^2 (326) = 819.22, $p < 0.05$, NFI = 0.90, NNFI = 0.93, CFI = 0.94, RMSEA = 0.05].

TABLE 4 | Discriminant validity.

	AVE	pabh	pbh	kbh	ibh
pabh	0.826	0.909			
pbh	0.662	0.488	0.814		
kbh	0.706	0.661	0.719	0.840	
ibh	0.631	0.286	0.853	0.595	0.794

AVE, average variance extracted.

Then, to test the invariance of the factor loadings across gender, we constrained factor loadings to be equal across two groups. Data showed constrained model fit well [χ^2 (339) = 838.82, $p < 0.05$, NFI = 0.90, NNFI = 0.93, CFI = 0.94, RMSEA = 0.05]. Also, the χ^2 test between unconstrained and constrained model was not significant [χ^2 (13) = 19.607, $p = 0.11 > 0.05$], showing that factor loadings of both gender groups were invariant (Cheung and Rensvold, 1999). Due to participation behavior is measured by on item, according to Schumacker and Lomax (2004), the CR of pab3 was set as 0.8 to modify the model. Therefore, we measured the gender factor separately after. The results of the SEM analysis of the different genders are displayed in **Figures 3**, **4**.

According to **Figures 3**, **4**, Hypotheses 1–4 are still supported. However, in the model with the male sample, influencer behavior doesn't mediate the effect of social identity on purchase intention (indirect effect $Z = 1.122 < 1.96$, $p = 0.266$) (Sobel, 1982), as shown in **Table 7**.

DISCUSSION

In this study, we explore the direct impact of social identity generated from user-created interested community on CE to parse out the differences in effects between communities with different attributes, providing a novel perspective on the

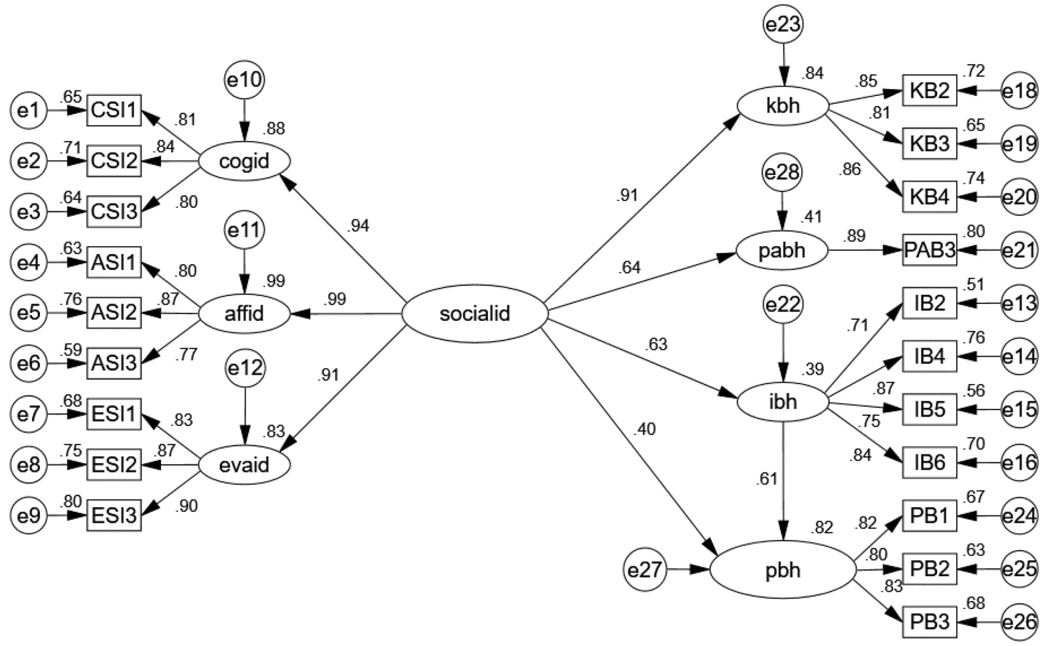

FIGURE 2 | Results of the structural equation model (*N* = 520). cogid, cognitive social identity; affid, affective social identity; evaid, evaluative social identity; socialid, social identity; kbh, knowledge behavior; ibh, influencer behavior; pabh, participation behavior; pbh, purchase intention.

TABLE 5 | Hypotheses testing.

	Hypothesis	Structural loading	SE	*t*-Value	*p*	Result
H1	Social identity → knowledge behavior	0.914	0.056	19.004	***	Supported
H2	Social identity → participation behavior	0.622	0.058	14.965	***	Supported
H3	Social identity → influencer behavior	0.625	0.045	12.936	***	Supported
H4	Social identity → purchase intention	0.395	0.044	8.291	***	Supported

****p* < 0.001.*

TABLE 6 | Unstandardized direct, indirect, and total effects of the hypothesized model.

		Point estimate	Product of coefficients		Bootstrapping				Two-tailed significance
					Bias-corrected 95% CI		Percentile 95% CI		
			SE	Z	Lower	Upper	Lower	Upper	
Total effects	SI → pb	0.788	0.059	13.356	0.680	0.906	0.683	0.912	0.00**
Indirect effects	SI → pb	0.386	0.050	7.720	0.303	0.502	0.299	0.499	0.00**
Direct effects	SI → pb	0.402	0.060	6.700	0.285	0.529	0.287	0.531	0.00**

*Unstandardized estimation of 1,000 bootstrap samples, **p < 0.01.*

relationship of community scope to CE for future researchers to build upon and insights on the self-driven proactive psychology of consumers that managers can use to improve brand value. In addition, we explore the different effects of gender, offering a novel influencing factor between the relation of social identity and CE behaviors for the research model. The discrepancy in the results implies that gender as a variable requires further study.

We aimed to apply social identity theory to the formation of an explanation of CE behaviors in virtual communities. The nature of cultural and creative products is to some degree uneconomic, according to Chinese common sense. Thus, it seems paradoxical that community members are willing to engage in contributing their knowledge and suggestions to such a community voluntarily. Social identity theory, from the perspective of individual-based psychology, offers insights into this practice. By going beyond Zhou and Lu (2009) model, we developed a further step for cultural and creative consumer behaviors which includes both transactional and non-transactional aspects and the relationship between them.

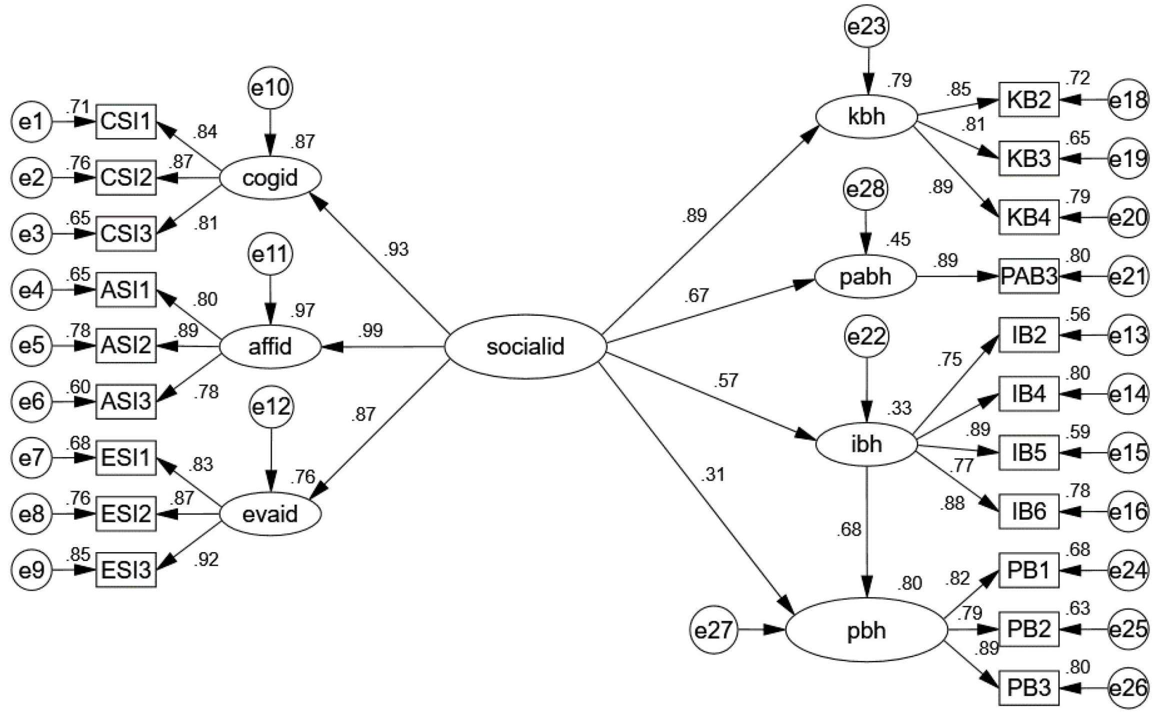

FIGURE 3 | Results of the structural equation model with the female sample. $\chi^2 = 487.649$, df = 163, normed $\chi^2 = 2.992$, goodness of fit index (GFI) = 0.860, AGFI = 0.819, comparative fit index (CFI) = 0.936, standardized root mean square residual (SRMR) = 0.058, root mean square error of approximation (RMSEA) = 0.08.

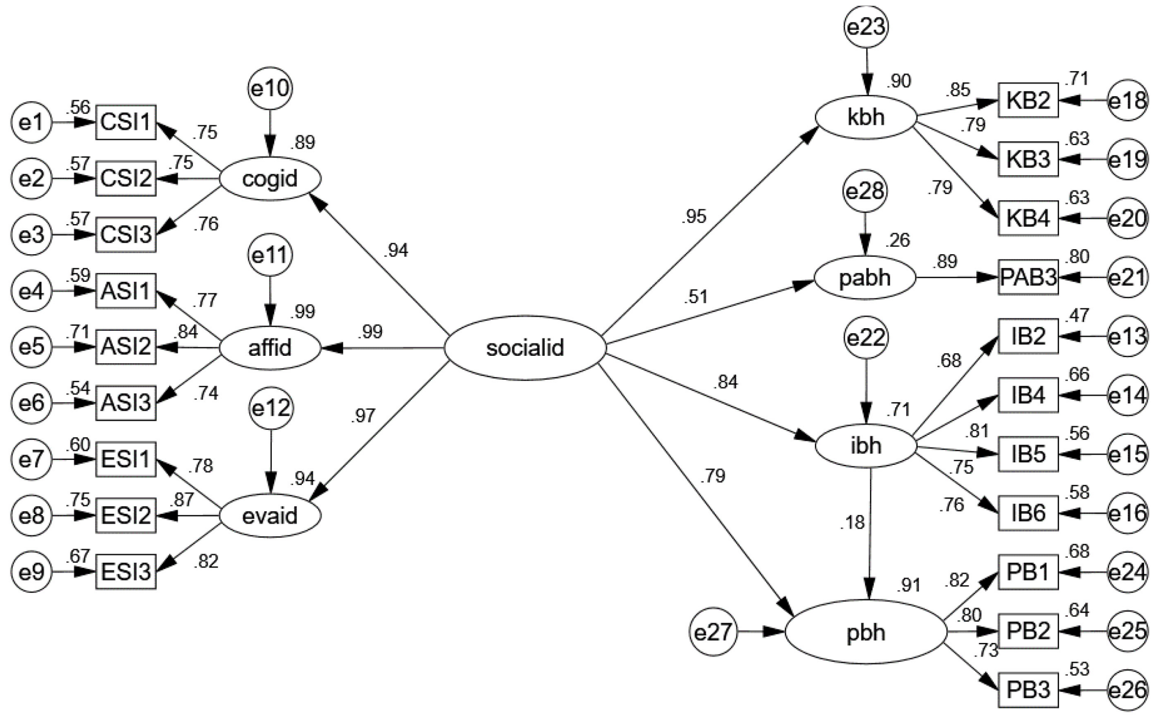

FIGURE 4 | Results of the structural equation model with the male sample. $\chi^2 = 331.564$, df = 163, normed $\chi 2 = 2.034$, goodness of fit index (GFI) = 0.864, AGFI = 0.825, comparative fit index (CFI) = 0.941, standardized root mean square residual (SRMR) = 0.0476, root mean square error of approximation (RMSEA) = 0.07.

TABLE 7 | Unstandardized direct, indirect, and total effects of the female and male model.

Model		Point estimate	Product of coefficients		Bootstrapping				Two-tailed significance
					Bias-corrected 95% CI		Percentile 95% CI		
			SE	*Z*	Lower	Upper	Lower	Upper	
Total effects									
Model 1	SI → pb	0.668	0.065	10.277	0.547	0.793	0.544	0.790	0.00**
Model 2	SI → pb	1.126	0.137	8.219	0.893	1.450	0.892	1.450	0.00**
Indirect effects									
Model 1	SI → pb	0.370	0.055	6.727	0.270	0.496	0.263	0.481	0.00**
Model 2	SI → pb	0.184	0.164	1.122	−0.110	0.493	−0.096	0.514	0.266
Direct effects									
Model 1	SI → pb	0.297	0.060	4.950	0.187	0.420	0.183	0.417	0.00**
Model 2	SI → pb	0.941	0.203	4.635	0.556	1.377	0.537	1.348	0.00**

*Unstandardized estimating of 1,000 bootstrap samples, **p < 0.01; Model 1: model with the female sample; Model 2: model with the male sample.*

Unlike previous cultural and creative product studies which have focused on product features, this research explored the significance of personal traits. Knowledge behavior consists of various knowledge interactions, including sharing feedback and suggestions in virtual communities. These spontaneous actions tend to be unprofitable for consumers and require self-motivation, which results from social identity in the community. In this process, cognitive, affective, and evaluative identities have almost equal impacts on social identity, as this research verifies. Interaction frequency in the cultural and creative online community, which is a measurement of participation behavior, represents the degree to which someone wants to invest time in that community even though they have multiple choices in the virtual world. The study broadens perspectives on cultural and creative products by incorporating social identity theory and CE behavior, not only considering personal traits as antecedents but also examining the interconnections between non-transactional behavior and purchasing behavior. Previous literature in the social network context has been more centered on brand fan pages (Kucharska, 2017; Chen and Tsai, 2020) rather than virtual communities. The target groups of this study were selected from several social network communities in the Chinese mainland. The concept of social identity was developed based on these virtual communities, further expanding the context of social networks.

The participants in our research came from both interest-based virtual communities (e.g., Douban and Weibo) and small-group-based virtual communities (WeChat). The interest-based community was comprised of people who shared the same interests in cultural and creative products and who shared content about their purchasing experiences. Long-term investment in the operation of brand pages while ignoring the value of virtual communities may no longer be a good strategy. The role of social identity in virtual communities must be taken into account by firms, and it is possible to do this by making only slight strategic changes. Firms can actively foster customer relationships in communities by posting content and interacting with consumers, allowing the firms to indirectly increase transactions and reduce transactional costs. The more that firms connect with influencers, the more WOM information transmission they can achieve. A previous study has proven that influencer behaviors play crucial roles in purchase behavior as well as in community activity (Wielki, 2020). Therefore, firms benefit from maintaining healthy relationships with influential supporters. A favorable community atmosphere is the result of the maintenance of a group, which provides a spirit of connection between people and enhances members' affective, cognitive, and evaluative experiences. Some studies have examined whether companies should strategically cultivate environments that encourage customers to assist other customers (Verhoef et al., 2010). In this case, a firm may need to balance its responsibilities as both organizer and participant. In addition, people like to contribute content and information in a positive community atmosphere, and therefore positive feedback is repeatedly activated. It is easy to understand that a positive atmosphere leads to customer recognition. Taking cultural and creative firms as an example, the more that attractive content is shared with in-group members, the more the members are likely to reply and share similar items in the community. At the same time, companies can use enthusiastic users as a tool to gain new customers and increase sales. Community value is reflected in the recognition of members on both cognitive and evaluative levels, which is based on rational judgment. On an affective level, people's need to belong can be met in a virtual community by engaging with others who have similar values. Firms and communities are not mutually exclusive, as the people that firms serve have double identities as consumers and community members. To achieve the common goal of creating people's social identity to stimulate CE behavior, it is crucial to consider how consumers think.

The effect of social identity on customer behavior can be explained by the standardized regression coefficient. After noticing that female customers are more prone to influencing purchasing behaviors, we split our sample into two groups to examine whether gender affects the relationships between model constructs and to explore how social identity affects female and male customers' behaviors separately. This analysis provided us with some interesting insights. Social identity is positively and significantly related to knowledge behavior for both male and female consumers. We found a positive impact of social identity on influencer behavior that was significantly stronger for men ($\beta = 0.84$, $p < 0.001$) than for women ($\beta = 0.57$, $p < 0.001$). Conversely, the effect of social identity on participation behavior was slightly greater for women ($\beta = 0.67$, $p < 0.001$) than for men ($\beta = 0.51$, $p < 0.001$). In addition, influencer behavior had a significant mediating effect on social identity and purchase behavior only in the female model. Not surprisingly, these results support prior studies. However, our study went a step further, to find that gender-based discrepancies could explain to some degree why female customers have higher purchasing intentions for cultural and creative products. The results further imply that the more that influencer behavior exists in virtual communities, the more women will participate in transaction behaviors. Previous studies have characterized men as agentic (assertive, self-centered) and women as communal (friendly, other-oriented) (Putrevu, 2001). Women can easily sympathize with others' opinions and interests when they connect with others (Putrevu, 2001), which may partially explain why influencer behavior mediates the effect of social identity on purchase behavior in the female model. In the process of online shopping, the identification of groups is somewhat significant for women and can prompt their interaction with products.

LIMITATIONS AND FUTURE RESEARCH

In their study of virtual community, Dholakia et al. (2004) categorized virtual community types as either network-based or small-group-based. In our research, we focused on the effects of social identity on customer behaviors. Future studies may be conducted on the features of different types of virtual communities. There are several types of Chinese mainland virtual communities, including network-based communities where public discussions are open to anyone, and small-group-based communities where discussions are private and for members only. Furthermore, the comment areas below online videos have gradually become a type of knowledge and information exchange community where followers gather. Moreover, the relationship between how firms get involved in virtual communities and customers' engagement behaviors has not yet been explored, and should be discussed in depth in the future.

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found in the article/**Supplementary Material**.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the University of Shanghai for Science and Technology Ethics Committee. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

ZZ and WL: drafting of the manuscript, acquisition of data, and statistical analysis. Both authors contributed to the article and approved the submitted version.

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Effect of Seeding Strategy on the Efficiency of Brand Spreading in Complex Social Networks

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In social networks, consumers gather to form brand communities, and the community structure significantly impacts the dissemination of brand information. Which communication strategy is more conducive to information dissemination in different structured brand communities? Considering the above factors, we propose the word-of-mouth (WOM) agent model based on the traditional rumor model and bass model, in which the brand WOM spreading is affected by the user's psychological mechanisms, the network structure, and other factors. Through simulation experiments, the results showed the following: (1) the conclusion of the traditional bass model is no longer applicable to social marketing in brand information diffusion, that is, the effect of external marketing stimulation on information dissemination is limited. (2) The communication effect and the efficiency of information in different structures of the learning-community network are very different. (3) The strategy of hub nodes is not suitable for all types of networks, and the impact of different seeding strategies on the efficiency and effect of brand information dissemination was verified. Finally, the conclusion was verified again using the social network data on Facebook.

Keywords: seeding strategy, brand community, community structure, complex social networks, brand spreading

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INTRODUCTION

Since its emergence, social media has attracted a large number of users to participate in it. The rapid development of big data and streaming media technology has made social media increasingly deep into all aspects of social life, where people communicate and interact, obtain information, or express opinions, and the gathering of users in social media has formed a virtual community (Christakis and Fowler, 2017). According to the 2020 China Social Media Marketing Analysis Report, in the first quarter of 2020, the number of digital users in China was 1.023 billion, and the average number of daily active users was 893 million. The per capita use was 7 h, which was enhanced by 17.8% in 1 year. Many enterprises realize the role of social media in brand spreading, and try to promote the brand through social media marketing, such as using virus marketing strategy and brand information or word of mouth (Bampo et al., 2018). When conducting marketing, such as *via* brand spreading, on social media, enterprises usually use seed strategies based on the consideration of marketing cost and performance. For example, after the enterprise identifies the opinion leaders of user groups, it pushes the brand and product information to these opinion leaders (Libai et al., 2017). Under the incentive mechanism, the opinion leaders have the willingness to spread the brand and share the brand and product information in their social network through word-of-mouth and other communication (Zheng et al., 2022). The advantages of the seed user strategy are mainly reflected in: (1) because of the high brand loyalty of seed users, when they find bugs in products and services, they will actively give feedback to the enterprise and even provide improvement opinions, which is conducive for the transformation and upgrading of the enterprise's products (Wang et al., 2022). (2) Seed users usually have a certain social influence, and the limited marketing cost of enterprises cannot cover all consumers in the whole area, so they can drive the spread of brand word-of-mouth by activating a small number of seed users to achieve better brand communication performance (Montaez et al., 2020). (3) The management of brand communities needs to maintain the activity of users while improving market penetration, and seed users have an active role in preventing user churn and attracting potential consumers (Zheng et al., 2022).

Ludwig et al. (2013) shows that the seed strategy is very effective for enterprise social marketing; therefore (Ludwig et al., 2013), many scholars are concerned about the influence of opinion leaders on word-of-mouth communication effects (such as choosing the hub node as the opinion leader), but there has been little research attention paid to opinion leaders under different network structures and how they can lead to different communication performances, i.e., the impact of the network structure on the social marketing performance (Garber and Goldenberg, 2018). With the rise of more diverse types of social media, such as TikTok, and differences in user relations among different social media platforms (for example, in China, friends on Weibo are more strangers; while friends on WeChat are more acquaintances), leading brand communities that use different types of social media may exhibit different network structure characteristics (Garcia, 2015; Sun et al., 2021). This means that enterprises may have different structures and different natures within the community. For instance, an enterprise with a douban user interest community may also have a fan community, so how to combine these network structures and many kinds of seed strategies to study the influence of social marketing stimuli on different communities is particularly important (Haenlein and Libai, 2017).

In recent years, many studies have focused on the mechanism of information and behavior dissemination using computer simulation technology. For instance, ABMS has been used to study the importance of customer lifetime value and seeding selection for the diffusion of new products/information (Montaez et al., 2020). Garber and Goldenberg (2018) studied the impact of seeding strategy on new product strategy by introducing a proxy model into the mechanisms of increasing the size and the speed of the affected product (Garber and Goldenberg, 2018). Moreover, many studies have been conducted on information and product diffusion based on the bass model and other macro-diffusion models (Garcia, 2015). However, models considering the multidimensional differences among nodes in social impact and social network structure have been rarely discussed (Sun et al., 2021). In other words, the nodes in the default network are homogeneous, thereby leading to a deviation between the research results and the real situation (Haenlein and Libai, 2017).

Given the above deficiencies, this study aimed to (1) describe the results of information diffusion based on different virtual community structures (random network, small-world network, and scale-free network) by ignoring the content of communication; (2) explain how the result of information diffusion is different from the previous research considering the heterogeneity of the network node, the social impact, and the effect of consumer persuasion (Garcia, 2015); (3) match different communication content with different network structures and seeding strategies to optimize the communication effect; and (4) use the ABMS model method to extend the epidemic transmission model and Bass model based on the random network, small-world network, and scale-free network, respectively, employing the social network on Facebook to verify the conclusion.

RELEVANT RESEARCH

The Effect of Opinion Leaders

Opinion leaders are a minority who form an important source of information and influence in the team and can influence the majority attitude tendencies (Wang et al., 2022). Although not necessarily a formal group leader, opinion leaders are often well-informed, proficient in current affairs; resourceful, talented in some way; or recognized as having become an opinion leader of the masses or the public (Montaez et al., 2020). In terms of consumer behavior, opinion leaders are people who filter, explain, or provide information to others, who have more knowledge and experience with a certain product or service because of their high level of continued concern (Ludwig et al., 2013). Family members, friends, or well-informed authority figures in the media and the virtual community often act as opinion leaders. Opinion leaders occupy an important role in two-level communication, providing more exposure to a larger crowd and spreading their own re-processed information to others. They intervene in mass communication, accelerating it and expanding its impact (Zheng et al., 2022).

In the study of public opinion leaders, it has been found that different mediums play different roles in the decision-making process, that interpersonal influence is more universal and effective than other types of influence, and can maintain internal opinion and action consistency within a basic group (Garber and Goldenberg, 2018). As a social phenomenon, the opinion leader exists not only in the Western society but also in the process of the neutralization and transmission of different societies, although their appearance may be somewhat different (Garcia, 2015). In the dissemination of information, the information output is not always directed to ordinary recipients, some information only passes to a particular section of recipients, who then pass on the message to the general audience around them (Sun et al., 2021). Even if some messages are passed directly to the general audience to change their attitude and behavior, opinion leaders should explain, evaluate, and guide the message to provide direction or guidance on the situation (Zhu and Zhang, 2010; Ding et al., 2016; Haenlein and Libai, 2017).

How to Choose Opinion Leaders in Viral Marketing: Seeding Strategy

Viral marketing involves the use of public enthusiasm and interpersonal networks to selectively stimulate users on the network, for instance, by pushing or sending messages to opinion leaders (Jian, 2017; Haijian, 2020). Brand information is spread among consumers through word-of-mouth communication and other behaviors (Na, 2015; Rand, 2018). Previous studies have shown that the success of viral marketing primarily depends on the following four factors: (1) the content of message, the different aspects (interesting, natural, effective, etc.) (Jian, 2017; Schwartz, 2019); (2) the structure of the social network (Yamir Moreno, 2018; Schwartz, 2019); (3) the mechanism of individual information dissemination and the motivation of sharing behavior in the network (Schwartz, 2019); and (4) the strategy of seeding selection (namely the enterprise initially selects which consumer will spread brand information) (Belli and Reyes, 2021). The selection j of the seeding strategy is critical, as the enterprise can achieve better communication with a lower cost using a few seeding users strategically (Tomazic, 2017).

The seeding strategy refers to a small number of consumers (seeding users) who were encouraged to start using the information/product in the early period of the release of information/product (Trusov et al., 2017). Interpersonal communication between consumers facilitates the product or information spread (Stanoevska-slabeva, 2019). Garber and Goldenberg (2018) has emphasized the importance of opinion leaders as seeding users, and researchers have studied many ways of selecting opinion leaders, such as hub nodes or nodes with strong connectivity, or nodes that can bring more profits and benefits to enterprises (Black and Veloutsou, 2017; Garber and Goldenberg, 2018; Tomazic and Udir Misic, 2019). To summarize, the following seeding strategies exist: hubs, or the nodes with the strongest connectivity, and nodes with special location structures (Faraj et al., 2016). For instance, studying those nodes with high proximity to the center, which means less distance from other nodes, makes it possible to better observe the flow of information. In physics, the node that describes the importance of the node also has the node with a high intermediary center, which means that the node is important to the information flow. The aggregation coefficient describes the level of interaction between a node neighbor node (Gittell et al., 2008). Moreover, more recent research has been conducted by Dodds et al., who proposed a node with a high k-kernel coefficient, that is, the node at the core of the network structure (Dodds, 2017). In this study, we synthesize these indices to evaluate the influence range and efficiency of each index on the information transmission in different network structures.

In recent years, many scholars have begun to study the diffusion of information and products by simulation. The existing communication models fall into two categories. The first category is the ordinary differential equation similar to epidemic spread (SIR and SIS) and rumor propagation (Yu and Hageman Blair, 2016; Zhang et al., 2016; Akram et al., 2017). This kind of model is widely used in the field of epidemic and complex network dynamic systems. The other is the generalization of the macroscopic diffusion model, which is dominated by the bass model (Garcia, 2016). **Table 1** summarizes the research related to epidemic, information, and product diffusion in recent years. These two models have a similar premise to the social marketing research: (1) ignore the heterogeneity of network nodes, that is, every consumer in the network has the same probability of changing the state, completely independent of network structure, and other factors (Duan et al., 2015; Kawamoto and Rosvall, 2015; Akram et al., 2018); (2) the research object is based on the individual, for instance, hub nodes, opinion leaders, etc. are more concerned with the effect of node-local network characteristics on diffusion behavior, and do not consider the impact of community network structure on the communication effect (Yang et al., 2014; Okamoto, 2016; Black and Veloutsou, 2017). In this study, based on the structural characteristics of the consumers in the network, the persuasion information theory and the social impact theory, we improve the homogeneity of system nodes in previous models (Tomazic and Udir Misic, 2019). To do this, we consider the probability that each consumer in the network is affected by word-of-mouth information because of their difference in position and the probability of external marketing stimulation persuasion (Berger, 2014; Goel, 2018; Timothy, 2018; Akram et al., 2020).

Statistical Features of Virtual Community Network Structure

Virtual communities are also known as online communities. From the user's perspective, virtual communities are divided by sociological domains into the following types according to their function and nature: (1) relationship communities, (2) transactional communities, (3) interest communities, and (4) fantasy communities (Okamoto, 2016; Yang et al., 2016a,b; Akram et al., 2021). Based on the functional division of the community, some studies have classified it into a discussion community, task-based community, mixed community, etc (Beckett, 2016; Tomazic and Udir Misic, 2019). Our research primarily studies the information diffusion mechanism in the first three kinds of communities (relational community, transactional community, interest community) based on the user's perspective. In addition, in the field of complex network science, there are several related studies on the statistical structure characteristics of virtual communities. Zhang and Newman (2015) analyzed the statistical characteristics of user friendships on the Sina blog and the school net, and also verified the universality of small-world and scale-free characteristics and the heterogeneity of virtual community networks (Zhang and Newman, 2015). The research results of Faraj et al. (2016) show that the nodes of online social networks are distributed by the power rate, while Okamoto (2016) suggest that the degree of nodes in online social networks is composed of power distribution and exponential distribution (Faraj et al., 2016; Okamoto, 2016). Accordingly, there is no consistent conclusion on the virtual community network structure. Therefore, this study chooses three kinds of network structures as the representatives of the community structure to study social marketing strategy. These three networks are random networks, small-world networks, and scale-free networks (Xiao and Huang, 2015). In small-world networks, most of the nodes are not

TABLE 1 | Research on the impact of product or information dissemination based on the complex network.

Related studies	Keywords	Data source	Network structures	Criteria for seeding users	Research results	Criteria for subject investigate
Chakravorti (2014)	Networks; technology policy diffusion; strategy	Facebook	Small-world networks	–	Propagation ranges	Individuals
Dodds (2017)	WOM; Opinion Leadership; Diffusion Innovation	Laboratory experiment	Stochastic networks	Hub	Outbreak range	Individuals
Garcia (2016)	Community Detection; BoCluSt;Computer simulation	NCBI database	Reality network	Opinion Leader: hub	Usage	Individuals
Guidi et al. (2015)	Distributed Online; Social Networks; Data availability	Facebook'14 data set	Experiment: without consideration of structure	Interested user	Propagation ranges	Individuals
He et al. (2014)	Community Networks; Models; Theoretical	Palla's website	Reality network	Hub/Intermediate Center/K-nuclear coefficient	Propagation ranges	Individuals
Kheirk et al. (2016)	Community detection;bipartite networks;Markov times	Flows on a citation network.	Small-world networks (undirected)	Hub/Intermediate Center	Diffusion range	Individuals
Bampo et al. (2018)	Viral marketing, information diffusion, social networks	Artificially generated networks	Reality network	Hub/Intermediate Center	Application amount	Individuals
Okamoto (2016)	Complex network; Community; Local detection; Short-term memory	Artificially generated networks	Small-world networks (undirected)	Hub	Application amount	Individuals
Ourresearch	Seeding strategy; brand community; community structure; complex social networks	Simulation experiment;Facebook	Random networks/small-world networks/scale-free network	Hub/proximity/ aggregation coefficient/K-nuclear coefficient	Diffusion range;time cost;communication efficiency	Groups

To be arranged by the author.

TABLE 2 | Characteristics of network structure.

	Networks	Size	Average degree	Closeness centrality	Betweenness centrality	Clustering coefficient
1	ER	1,000	9.814	0.306	0.00228	0.0090
2	WS	1,000	10	0.2976	0.00237	0.0959
3	SA	1,000	9.95	0.3373	0.00199	0.0394
4	Facebook	4,039	43.69	0.2761	0.00067	0.6055

All networks in the table are undirected networks.

adjacent to one another, but most can be accessible in a few steps from any other nodes. In scale-free networks, most "normal" nodes have very few connections, while a few "hot" nodes have a large number of connections. In random networks, the nodes, arrows, and traffic all have a degree of uncertainty, and the activities composing the network graph can also be random. Furthermore, network data from Facebook were selected to verify these networks. The information on the network data collected from Facebook is as follows: nodes, 4,039; edges, 176,464; closeness centrality, 0.2761; average degree, 43.69; betweenness centrality, 0.00067; clustering coefficient, 0.6055.

By constructing the ABMs model of information diffusion (Xia et al., 2015), which is closer to the real situation, and considering the impact of the selection of multiple seeding strategies on the time, scope, and efficiency of information transmission under different network structures, this study provides theoretical guidance close to reality based on the scope and efficiency of viral marketing strategy (Yoldemir et al., 2016).

MATERIALS AND METHODS

One of the obvious advantages of using the proxy model is that it is possible to observe the emerging macro results of groups based solely on the interaction mechanism between individual users without knowing the macro dynamic mechanism (Yamir Moreno, 2018). Moreover, in many situations of market research, users have complex interactions, which are difficult to describe using a traditional mathematical model (Stanoevska-slabeva, 2019). Thus, an increasing number of studies in the field of marketing and communication have begun to use the agent model to study the diffusion of information. In addition, Garber and Goldenberg (2018) provided strict guidance and specifications for using the agent model in information diffusion research (Garber et al., 2019). Next, the selection of the network structure and the building of the model are introduced (Schulke and Ricci Tersenghi, 2015; Zhang and Siddhartha, 2016).

Selection of Network Structure

Previous studies have shown that online communities are scale-free and small-world (Tomazic, 2017; Garber and Goldenberg, 2018). Accordingly, to study the impact of different network structures on the diffusion of information, under the premise of controlling network size and network density, the network structure of the random network (ER), small-world network (WS), scale-free network (SA), and real online social network Facebook (snap.stanford.com) were selected. **Table 2** shows the structure information of this research network.

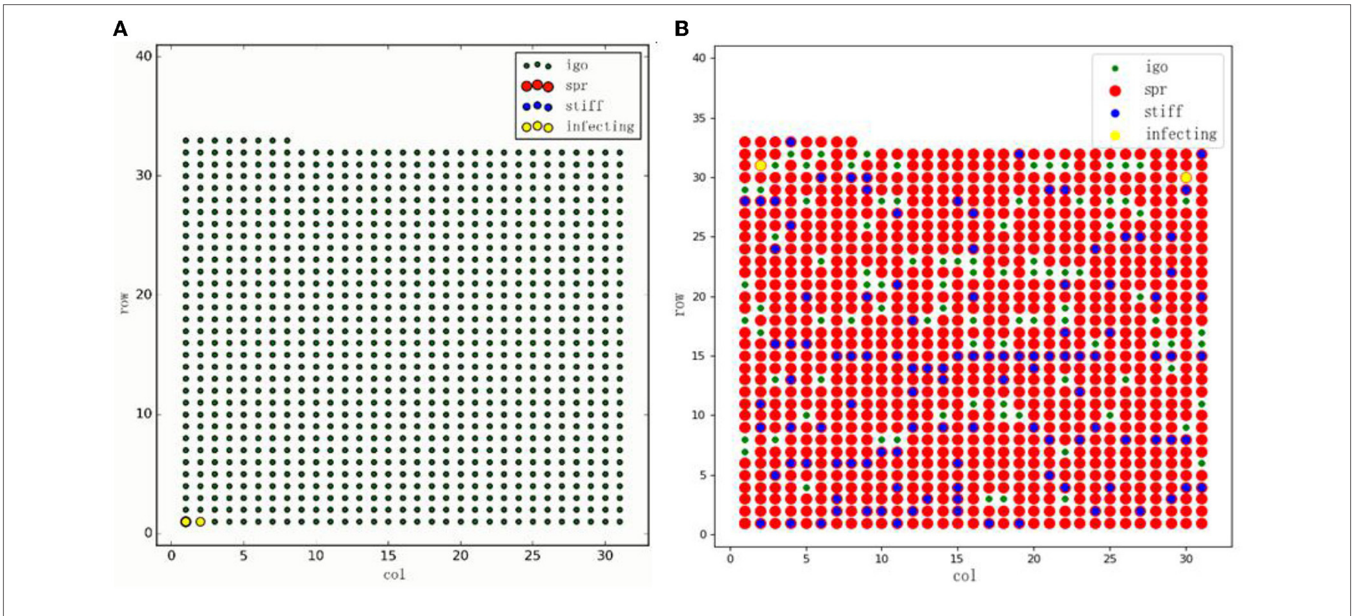

FIGURE 1 | Diffusion simulation process.

Model Destruction

This study focuses on the dynamic evolution of discrete-time systems. The proposed model assumes that there are only three kinds of nodes in each stage: (spreader) value: 1, (ignorance) value: 0, and (silence) value: −1. Spreader refers to users who know the brand information and are willing to spread the information in the network, ignorance refers to the users in the network who do not know the information; and silence refers to the users who know the information but do not want to spread it again. In each phase, users interact only with their associated learners (van der Lans et al., 2018).

In each stage, there are only two types of state changes: (1) spreader changes to silence, and (2) ignorance changes to a spreader. The communication process terminates when there is no longer a spreader in the system. The initial state and the mid-diffusion period are shown in **Figures 1A,B**, respectively. The red node suggests that the seeding user (spreader) value is 1, the green node means that the susceptible user (ignorance) value is 0, the blue node indicates that the silent user value is −1, and the yellow node indicates that the spreader is spreading.

Based on the bass model, the transition from the ignorance to the spreader is affected by two factors (Haenlein and Libai, 2017; Jian, 2017; Trusov et al., 2017):

(1) The external information stimulation δ. Based on the bass model, this study considers the consumer persuasion theory. Since the hub node has more information, it has a stronger judgment ability and information screening ability. Thus, nodes with high degrees of centrality are more likely to use persuasive information, so it is assumed that the same external stimulus has less influence on nodes with a high degree of centrality. Selecting

$$(1-\frac{k}{\max\left(k\right)+\xi})\in(0,1)$$

as the attenuation coefficient of the information stimulation to different nodes, $\xi(>0)\to 0$, the impact of external information stimulus on ignorance nodes is inversely proportional to its degree of centrality, namely

$$(1-\frac{k}{\max\left(k\right)+\xi})\delta$$

and max(k) is the maximum degree of nodes in the network.

(2) The internal influence is q_i, i.e., the probability that users will be affected over a period of time by interacting with the spreader. Given the herd behavior of social impact, it is assumed that the ignorance is in contact with the spreader. The probability of transforming into a propagator refers to the proportion of the propagator node in its neighbor node, which is recorded as q_i.

We aimed to study the impact of different seeding selections on the effect of network marketing with different structures. At the beginning of the spread, the number of nodes is N, and only one spreader is present. This means the number of ignorance is N-1. Then, the communication process is as follows:

(1) At the time t, the proportion of spreader, ignorance, and silence are $s(t)$, $i(t)$, and s(t). Thus, $s(t)+i(t)+r(t)=1$,$s(0)=\frac{1}{N}$, $i(0)=(1-N)/N$.

(2) At each stage, the spreader interacts with all neighbor nodes. The probability λ_i that the ignorance i receives information and becomes a spreader is associated with two factors: (i) external factors, such as external stimulus intensity $\delta\epsilon(0,\ 1]$, namely the probability that an ignorant person will be transformed into a spreader because of the information stimulus of the enterprise; (ii) given the conformity of individual, the probability of ignorance herd behavior is considered proportional to the spreader in the neighbor node, so the parameter q_i might be set as the proportion of the spreader

TABLE 3 | Information dissemination effect.

Results variables	Meaning
Scope of transmission S (scope)	Proportion of silence at the end of transmission
Transmission time T (time)	The time to spread brand information throughout the network
Transmission efficiency E (efficiency)	At the end of spread, S/T can represent the average range of infection per transmission.

All networks in the table are undirected networks.

TABLE 4 | Parameter settings.

Parameters	Range
δ	0.1,0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9,1
α	0.1,0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9,1
Seeding type	Degree centrality, intermediary centrality, proximity centrality, aggregation coefficient, k-kernel coefficient
Network type	ER, SA, WS, Facebook

in the neighbor node. In other words, the probability of the ignorance occurrence of herd behavior is proportional to that of the spreader in the neighbor node.

$$q_i = \frac{K_{is}}{K_i} \tag{1}$$

where q_i is the following parameter of node i, K_{is} is the propagator in the neighbor node of node i, and K_i is the center of the degree of node i.

According to the bass model, the probability λ_i of ignorance interaction with the spreader to become a spreader is 1 minus the probability that all external and internal factors have no effect on it, that is:

$$\lambda_i = 1 - (1 - \delta_i)\left(1 - q_i\right)^{K_{is}} = 1 - (1 - \left(1 - \frac{k}{\max\left(k\right) + \xi}\right)\delta)\left(1 - \frac{K_{is}}{K_i}\right)^{K_{is}} \tag{2}$$

(3) The spreader changes to silence after interacting with the spreader or the silent person with probability α (α can be understood as the sensitivity coefficient of the spreader to information).

(4) When there is no longer a spreader in the network, the communication process terminates.

The results of the brand information transmission primarily consider the following three aspects: (1) the scope of information transmission, that is, the proportion of silence in the network node when the communication is terminated; (2) the time cost of information transmission, that is, the number of iterations at the end of the communication; (3) the efficiency of communication, that is, the average E for each stage, as defined in **Table 3**.

RESULTS

For the simulation, a seeding input model was selected for the simulation analysis each time (Lehmann and Esteban-Bravo, 2016). The sensitivity of parameters α and δ to the system was first analyzed. Then, we discussed the effects of seeding selection on propagation results in different network structures based on the sensitivity test results and the fixed parameters α and δ. Python is a typical object-oriented, interpretive program computing language and it is effective to simulate ABMS. Thus, Python was used to execute the whole simulation process.

Parametric Sensitivity Test: Effects of Marketing Stimuli and Spreader Immune Coefficient on the System

The following is a study of the effects of brand information stimulus δ and spreader immune coefficient α on the spread range S and propagation time T, where 100 seeds were randomly selected in three different types of networks. One seeding node was selected for each propagation experiment, and each seeding node was repeated 20 times. After the input from different parameter groups (**Table 4**), the average transmission range and efficiency were calculated, and **Figure 2**. was obtained. For instance, when δ was fixed in **Figure 2A**, the propagation range decreased with the increase in α in all three networks. In general, the small-world network had a wider range than the scale-free network. As shown in **Figure 2B**, the scale-free network had the shortest time (the fastest) among the three types of networks, and with the increase in α, the propagation time of the three networks was close to stable.

As shown in **Figure 2C**, the marketing stimulus δ has a limited effect on the range of communication to some extent when α is fixed (except for α = 1), but it will affect the time of dissemination of information, as shown in **Figure 2D**. Accordingly, when enterprises focus on the scope of marketing information, the importance of interpersonal communication should be noted (e.g., word-of-mouth communication).

Impact of Different Seeding Strategies on the Effect and Scope of Information Diffusion

Next, to study the impact of seeding selection on the propagation effect in different network structures (Na, 2015), 100 seeds were randomly selected from each of the 3 networks, and one seeding, i1, was selected to propagate in each experiment. The propagation range S and time T at the end of propagation were obtained, and the experiment was repeated 20 times on the same seed. The average propagation range and time of each seeding were yielded by $SE_\infty(i1)$. The propagation effect vector of each seeding can be obtained by repeating 20 experiments on each seed, namely $\left\langle SE_\infty(i1), SE_\infty\,(i2)\,,\ldots SE_\infty(i100)\right\rangle$ (average obtained after 20 operations), to examine the value of each seeding attribute X (i) and propagation results of each node, see: the Pearson correlation coefficient of $\left\langle SE_\infty(i1), SE_\infty\,(i2)\,,\ldots SE_\infty(i100)\right\rangle \rho(SE_\infty\,(i)\,, X(i)$, where X (i) denotes a five-dimensional vector:

X(i)= $\left\langle Degree_i, Betweenness\ C_i, Closeness\ C_i, Kernal_i, Clustering_i\right\rangle$. In random networks, small-world networks,

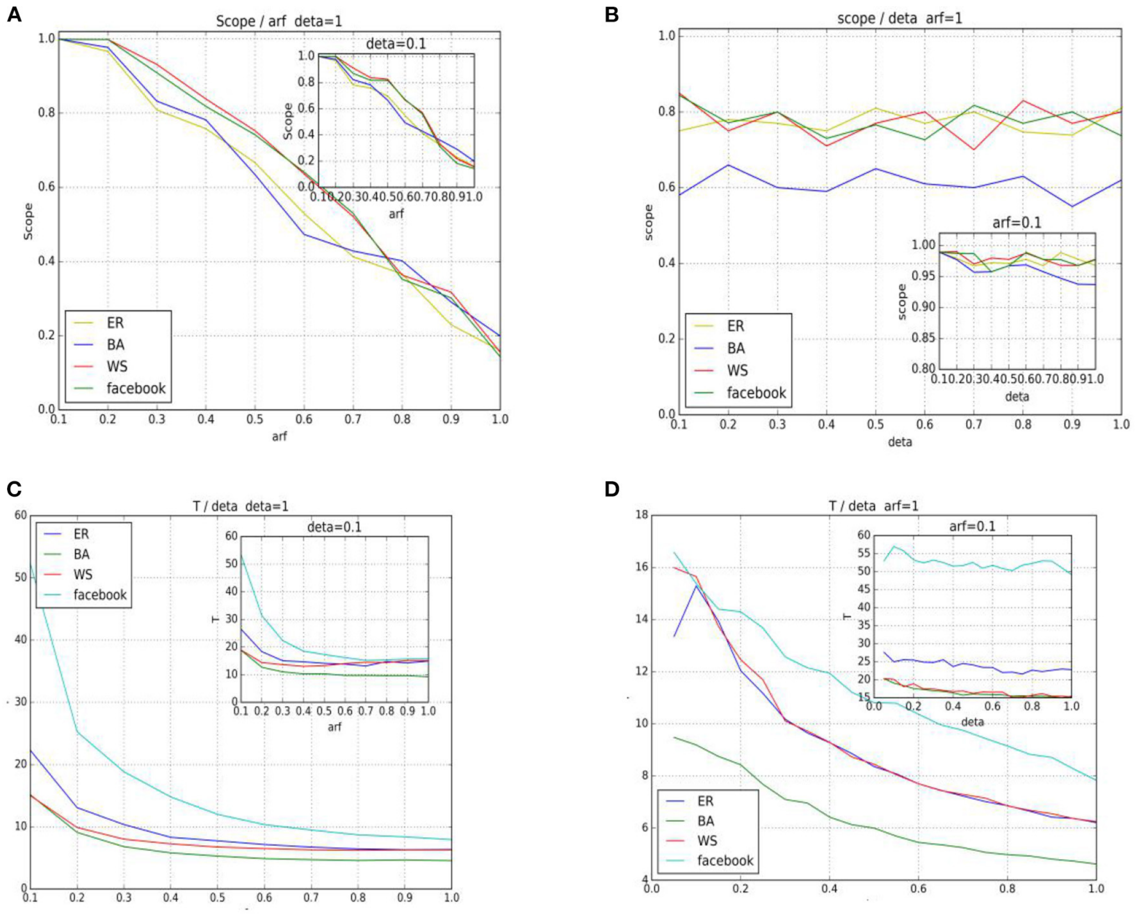

FIGURE 2 | Simulation results. **(A,C)** Represents the fixed δ, the effect of the α change on the information diffusion range, and the time required for the whole diffusion process. **(B,D)** Is the fixed α, the time of the variation of the information diffusion range, and the whole diffusion process.

and scale-free networks, correlation coefficient matrices were developed, as shown in **Table 5**.

As shown in **Table 5**, the seeding aggregation coefficients in the three different networks are not significant for the spread of word-of-mouth information and several other types of central indicators. Overall, the degree, proximity to centrality, intermediary centrality, and the number of audits are associated with the spread of information. It is also suggested that in the small-world network and scale-free network, the scope of information dissemination and dissemination efficiency are negatively correlated. In other words, the scope of enterprise brand information dissemination comes at the cost of communication efficiency.

In many cases, enterprises should consider the scope and efficiency of information dissemination, which depends on the enterprises' reliance on the scope of information dissemination and the efficiency return when they conduct a socialized marketing strategy. Here, we standardize the propagation range S and the efficiency E and obtain $\langle S\rangle$,$\langle E\rangle$. Then, we let the enterprise distribute the weight between them to be η and (1- η), where $\eta \in [0, 1]$, assuming the cost corresponding to the external marketing stimulus is c * δ, where c is a non-negative constant. It can be assumed that the enterprise faces a profit function in each socialized marketing strategy:

$$\pi = \eta \langle S\rangle + (1 - \eta) \langle E\rangle - c\delta, \eta \in [0, 1]$$

For instance, when enterprises think that the range of transmission is as important as the efficiency of transmission, the value $\eta = 0.5$ is taken. Then, to study how to select the right seeds for transmission, $\pi = \langle S\rangle + \langle E\rangle$ is calculated to reach its largest value. At this time, we use π to make a regression analysis of seeding indexes. The results are shown in **Table 6**.

It is suggested that when the enterprises think that the transmission efficiency and spread range are equally important, the hub node remains important in the scale-free network. However, in the small-world network, the hub node is no longer the best seeding node, and the center of the node is more valuable for the overall effect of communication. Considering that the real online social network is both small-world and scale-free, this

TABLE 5 | Correlation coefficient table.

WS	**Degree**	**Clustering**	**Closeness**	**Betweenness**	**Core**	**S**	**E**
Degree	1	−0.38	0.93	0.92	0.62	0.57	0.06
Clustering	−0.38	1	−0.5	−0.46	−0.22	−0.1	−0.15
Closeness	0.93	−0.5	1	0.88	0.67	0.57	0.05
Betweenness	0.92	−0.46	0.88	1	0.41	0.45	0.05
Core	0.62	−0.22	0.67	0.41	1	0.47	−0.03
S	0.57	−0.1	0.57	0.45	0.47	1	−0.53
E	−0.06	0.15	−0.05	−0.05	0.03	−0.53	1
ER network	Degree	Clustering	Closeness	Betweenness	Core	S	E
Degree	1	0.12	0.92	0.96	0.75	0.56	−0.16
Clustering	0.12	1	0.1	0.04	0.22	0.14	−0.16
Closeness	0.92	0.1	1	0.88	0.81	0.56	−0.16
Betweenness	0.96	0.04	0.88	1	0.63	0.5	−0.1
Core	0.75	0.22	0.81	0.63	1	0.44	−0.16
S	0.56	0.14	0.56	0.5	0.44	1	−0.77
E	0.16	0.16	0.16	0.1	0.16	−0.77	1
SA network	Degree	Clustering	Closeness	Betweenness	Core	S	E
Degree	1	−0.3	0.87	0.94	0.6	0.6	−0.19
Clustering	−0.3	1	−0.46	−0.44	−0.29	−0.04	−0.04
Closeness	0.87	−0.46	1	0.9	0.6	0.56	−0.23
Betweenness	0.94	−0.44	0.9	1	0.47	0.51	−0.15
Core	0.6	−0.29	0.6	0.47	1	0.46	−0.13
S	0.6	−0.04	0.56	0.51	0.46	1	−0.69
E	0.19	0.04	0.23	0.15	0.13	−0.69	1

S means the range of information diffusion. E refers to the efficiency of information diffusion, as defined in ***Table 2****. Core is the number of k kernel layers, and the coefficient is the value after standardization (Red font means statistically significant).*

TABLE 6 | Regression of Π for the values of various seeding attributes.

DV= $\pi(\eta = 0.5)$	**ER**		**SA**		**WS**	
Indexes	**Coefficients**	**Pr(>|t|)**	**Coefficients**	**Pr(>|t|)**	**Coefficients**	**Pr(>|t)**
Intercept	−0.43604	0.3338	0.249035	0.29678	−0.23524	0.4315
Degree	0.014627	0.1586	0.010196	6.6e-05***	0.016627	0.1387
Clustering	0.207787	0.0578	−0.04741	0.51501	1.407259	0.6524
Closeness	4.155813	0.0259*	0.486681	0.16363	1.125012	0.0259*
Betweenness	−0.26904	0.1219	−1.26226	0.00103**	−0.31050	0.04219
Core	−0.00167	0.9201	–	-	0.0219	0.0239*

*The dependent variable is the weighted average of the range of propagation and the propagation efficiency. *Denotes* $p < 0.05$*; **denotes* $p < 0.01$*, ***denotes* $p < 0.00$*.*

study uses Facebook social network data as an example to study the effect of seeding strategy on the spread range and efficiency.

According to the definition of a small-world network, **Table 7** suggests that the average aggregation coefficient of Facebook is 0.6055 and the length of the characteristic path is 0.2761 with obvious small-world properties. When only considering the scope or equilibrium scope and efficiency, the degree of centrality does not significantly impact the communication effect, proximity is the better seeding index, and the intermediary centrality can inhibit the transmission effect. When only considering the propagation benefit, the hub node contributes to the propagation, and the proximity to the center significantly impacts the comprehensive effect of communication. Moreover, since Facebook has more obvious small-world properties, the k-kernel number can also positively impact the propagation efficiency.

From this perspective, whether hub nodes or other central indicators of word-of-mouth transmission are the best, they must be combined with the network structure and the focus of the enterprises. For the other values of η, the same method can be applied to select the appropriate seeds.

TABLE 7 | Regression of Facebook network transmission effect to seeding attributes.

DV=π	DV= $\pi(\eta = 1)$/DV=S		DV=$\pi(\eta = 0.5)$/DV=S+E		DV=$\pi(\eta = 0)$/DV=E	
Indexes	**Coefficients**	**Pr(>|t|)**	**Coefficients**	**Pr(>|t|)**	**Coefficients**	**Pr(>|t|)**
Intercept	−0.67664	2.68e-10***	−0.71074	1.6e-10***	−3.41E-02	3.50e-14***
Degree	0.00055	0.1312	0.000579	0.12523	2.89E-05	0.05409
Clustering	0.031686	0.631	0.032072	0.6389	3.86E-04	0.88655
Closeness	4.615281	<2e-16***	4.823653	<2e-16***	2.08E-01	< 2e-16***
Betweenness	−4.14439	0.0037**	−4.33699	0.00337**	−1.93E-01	0.00104**
Core	0.000828	0.3432	0.000994	0.27274	1.65E-04	7.11e-06***

*The first row in the table is a dependent variable. *Denotes $p < 0.05$; **denotes $p < 0.01$; ***denotes $p < 0.001$. Coefficient is the standardized value.*

DISCUSSION

Based on the mentioned results and discussion, with the development of the Internet, the high interactivity of enterprise users forms different brand communities with different structures. Thus, it is difficult for enterprises to capture the fragmentation of behavior data. On that basis, this study can help enterprises simplify their information diffusion strategy and conduct marketing within the community formed by users. Based on the results, enterprises should consider factors, such as social learning among users (application of persuasive information), conformity, and impact of network structure on the communication mechanism in the process of information dissemination. These factors have major implications in theoretically guiding enterprises to empower users of the brand community with marketing.

By building an online community information diffusion agent model, this study analyzed the selection of different seeding strategies under different structure networks and set the heterogeneous parameters of agents and their information attributes. In other words, considering the node herd behavior, persuasion effect, and other factors, to modify the user interaction behavior, the multiagent simulation model was built under the framework of the random network, scale-free network, and small-world network, and the simulation analysis was conducted. This study analyzed the impact of different seeding strategies on the scope and efficiency of online community socialization marketing. Combined with the abovementioned results, the main conclusions of this study are as follows:

(1) Previous search on the socialized marketing seeding strategy has only considered the new product or the brand information diffusion of the existing embedded network of the enterprise (Wang et al., 2022). The effect of the network structure on the propagation effect was ignored (Faraj et al., 2016; Garcia, 2016; Libai et al., 2017; Haijian, 2020; Montaez et al., 2020; Wang et al., 2022; Zheng et al., 2022). This study considers the effect of different network structures, such as random networks, scale-free networks, and small-world networks, as well as the effects of the three typical different network structures on the seeding strategy selection. It was found that after controlling the network density and network size, the diffusion range of information in the small-world networks was wider than that in the scale-free networks. In terms of the diffusion time, the information spreading was faster in the scale-free networks than in the small-world networks.

(2) Based on the sensitivity test of marketing stimulus δ and communicator to information value perception parameter α, external effects (e.g., enterprise marketing stimulation) limited the impact on the scope of marketing information dissemination. The diffusion effect of information was primarily caused by the interpersonal influence inside the network. In the case of a fixed marketing stimulus, the scope of information diffusion decreased with the increase of the communicator's perception of the value of information. These findings suggest that the higher the probability that the communicator becomes silent, the lower the level of acceptance of information, the smaller the spread, and the more time it will take.

Based on the social network theory, the greater the degree of a node, the greater its influence. Therefore, in current studies of seed strategies, large users are usually selected as seeds, such as hub nodes. Related studies are summarized in **Table 1**. Without considering the content of propagation, this study considers the impact of the selection of five kinds of seeds on the efficiency and effect of information diffusion in networks with different structures, which is an extension and supplement to the previous seeding strategies.

First, this study considers an index based on local statistical properties: (1) the most connected indicator, including the degree of centrality and the hubs that have traditionally been the most studied, and (2) the index of clustering degree, including the aggregation coefficient.

Second, the index is based on global network characteristics: (1) the local importance index, including the intermediary centrality. This index means that the node controls the information transmission between the nonadjacent participants. The higher the value, the better the control of information flow. (2) The proximity to the central indicator, indicating how difficult it is for a node to interact with all other nodes. (3) The k-kernel layer coefficient, which includes both the quantitative and qualitative information of the neighbor nodes.

Based on the above seeding strategy, this study also considered the scope of the virus marketing strategy and the tradeoff of the transmission efficiency, which can theoretically highlight the cooperation between the expected target, the seeding strategy, and the existing network structure of the enterprise. For instance, in SA networks, traditional research conclusions are still used. In particular, the choice of opinion leader hub node contributes the most to communication. However, for the WS network, when only considering the scope of communication, the hub node is not the most ideal seeding node. The closer the central index, the higher the level of interaction between the node and the neighbor node will be, and the more effective the propagation range will be. However, the k-kernel coefficient is also vital when synthetically considering the effect and efficiency of propagation. This suggests that the quality of the seeding user's "friend" is also the information that the seeding user should consider. Finally, this study selected the data from Facebook, the world's most popular data platform, and verified the corresponding seeding selection strategy in the typical social community network's social marketing strategy.

RESEARCH CONTRIBUTIONS

Theoretical Contributions

(1) This study expands the research related to seed user selection strategies in online marketing. Previous studies that only considered the proliferation of new products or information embedded in a company's existing network (Haenlein and Libai, 2017), mainly based on user influence as the basis for seed user selection, usually treat social media as social networks with the same structural characteristics, ignoring the heterogeneity of network nodes, i.e., assuming that each consumer in the network has the same probability of state change and is completely unaffected by network structural factors; however, the network structure of social media is changing due to the differences in user relationships and network evolution stages. Therefore, in the process of brand communication, the seeding strategy should be selected based on the network structure.

(2) This study deepens the research related to brand communication as well as word-of-mouth extension. Previous studies on word-of-mouth communication have been based on individuals (Faraj et al., 2016), for example, hub nodes, opinion leaders, etc., and have more often considered the role of individual consumers' local network characteristics on word-of-mouth communication behavior, ignoring the impact of the overall social network structure on the effectiveness of word-of-mouth communication. In this study, based on the structural characteristics of consumers in the overall social network, we use persuasion knowledge theory and social influence theory to improve on the homogeneity of system nodes in previous model studies, i.e., (Garcia, 2016), we consider that each consumer in the network has different probabilities of being influenced by word-of-mouth messages and of being persuaded by external marketing stimuli due to their different locations.

(3) This study explores the application of social influence theory and value perception theory in the field of brand communication. This study finds that users' states are influenced by the states of neighboring nodes, which is consistent with the findings of previous studies (Wang et al., 2022), and users' willingness to participate in brand communication (word-of-mouth communication) is also influenced by the value of information. After the information redundancy is high and all surrounding users already have the same brand information, consumers' perceived value of the brand information decreases, and consumers' willingness to forward it weakens. Therefore, it is important to pay attention to the role of consumer groups and the attractiveness of brand information to consumers.

Management Significance

With the development of the mobile Internet, brand communication in social media has received attention from many companies. This study on brand communication in social networks helps companies correctly recognize the role of seed users and selection strategies in different scenarios and provides references for marketing activities, such as brand communication.

(1) It helps companies correctly recognize the role of seed users. This study finds that the selection of seed users has a great impact on the efficiency of brand communication. However, a seed user is not effective in all network structures. That is, the performance of a seed user depends largely on the network environment he is in. Therefore, companies need to fully consider the influence of the network environment when implementing seeding strategies. For example, when a company creates a brand community, the brand community at the initial stage of creation is a random network, and as users continue to join, the community network becomes a small-world network. When the community grows to maturity, the community network becomes a scale-free network. Then at different stages, to get better brand communication performance, companies should go for different seed selection strategies.

(2) It helps companies manage the brand communication performance. When we do not consider the marketing cost and only pursue the brand communication range, we can choose the most influential users as seed nodes to achieve the brand information coverage in the whole area through a longer communication time. However, the more influential seed users means the brand managers need to pay higher marketing costs, for example, when hiring celebrity endorsement, the more influential stars, the higher the cost; however, not all influential stars means a better brand communication effect. Therefore, for enterprises, if we are pursuing the cost performance of brand communication, we can consider the influence of individual seed users, marketing costs, and the efficiency of brand communication.

(3) It helps companies plan effective brand content. This study finds that consumers' perception of the value of brand content affects their willingness to spread it. If friends around them have already acquired the brand information, it will reduce consumers' willingness to spread the brand. This means that companies should frequently construct novel brand advertisements and update brand messages to keep them attractive to consumers as a way to increase their willingness to communicate.

CONCLUSION

This study used the ABMS model to study the effect of seeding strategy selection on the effectiveness and efficiency of social marketing strategy in virtual communities. This study has the following limitations and shortcomings. First, by selecting the group concept "online community" as the research object and considering the impacts of different network structures on the behavior of information diffusion, we studied the random network, SA scale-free network, and WS small-world network under the controlled network density. However, some studies have pointed out that the aggregation of users in social networks can form communities, community internal nodes are closely related, nodes between communities are sparse, and the division of communities also affects the dissemination of information messages (Zheng et al., 2019). Combined with the conclusions of this study, the propagation efficiency of the selected seed nodes is located in the same and different communities. Therefore, in future studies, we can analyze the transmission efficiency under different community division rules. Second, this study considered the heterogeneity of nodes in the network structure but did not explore the difference in the results in different situations from the psychological mechanism of consumer behavior. Third, we studied the diffusion mechanism of information in the virtual community. A deviation remains between the model setting and the real communication mechanism, which can be further improved according to the psychological mechanism of consumer behavior. Fourth, the data source of this study is a simulation experiment, which is a relatively singular source. At present, research in the field of consumer behavior mostly adopts questionnaires and secondary data (Zheng and SuPing, 2019; Zhu et al., 2019). Therefore, if the results of this experiment could be verified through primary or secondary data in the future, the research conclusions may be strengthened. Finally, when the community is studied as an object, different types of community relations can also be considered, including the transaction community, interest community, and interactive community. All of these topics should be further studied.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

ZS conceived, designed the study, and wrote the manuscript. LJ and WL collected the data. UA analyzed and interpreted the data. WH provided funding support. LB and WW contributed to the revise of the manuscript. All authors contributed to the article and approved the submitted version.

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The Impact of Nostalgia Proneness on Online Donation Willingness: The Mediating Effect of Consumer-Brand Relationship

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The rapid outbreak of COVID-19 wreaked havoc and brought a pause to the normal lives, and the labor market and human livelihoods were strongly negatively affected because of it. The emergence of groups that were unable to withstand various pressures has increased the appeal of donation behavior to a certain extent. Therefore, under the impetus of COVID-19 and digital background, online donation represented by Waterdrop financing has become popular. In the common difficult period, how to improve an individual's willingness to donate online has become an urgent problem to be solved. To address this issue, on the basis of previous literature, we proposed a research hypothesis and a theoretical model of "nostalgia-relationship variables-donation". After that, we determined the measurement scale, conducted a large sample survey, and finally conducted hypothesis testing through confirmatory factor analysis and structural equation modeling analysis. Through the above analyses, the study reached the following conclusions: the main influence factors of personal nostalgic proneness are insecurity, past experience, loneliness, and recovery from grief, among others. There is a positive causal link between nostalgia proneness and familial utility intensity and emotional utility intensity. The greater the degree of the nostalgia intensity of the donor, the more the trust placed in charitable organizations. The donors' relationship commitment to charitable organizations significantly influences their online donation willingness. The main source of relationship commitment consists of emotional intensity, followed by trust, and finally, familial intensity.

Keywords: nostalgic feelings, familial utility, emotional utility, trust, relationship commitment, online donation willingness

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INTRODUCTION

The rapid outbreak of COVID-19 in 2019 caused serious destructive consequences to the labor market and human livelihoods. In contrast, it accelerated the pace of social digital transformation and enhanced consumers' sympathy and nostalgia.

Foreign studies have shown that, on the background of COVID-19, donation activities have increased and that donations are mainly aimed at the unemployed and the poor

(Bin-Nashwan et al., 2020). In the era of digital consumption, the donation channel of charitable organizations has gradually shifted from traditional online donation to donation network platforms (such as Waterdrop financing), and the status of the consumer–brand relationship is still important. However, nonprofit organizations themselves face some social challenges, and online donation may be more challenging. First, it is difficult for the public to trust charitable organizations. Second, the current national law lacks a perfect supervision system of online donation institutions. Finally, there are still imperfections behind the rapid development of small- and medium-sized charitable organizations. This will weaken the willingness of donors to continue to contribute to charitable organizations. Therefore, during difficult times around the world, how to encourage more people to participate in philanthropy has become a major issue of concern to Chinese and foreign scholars. Scholars at home and abroad have conducted more research on the brand relationship of for-profit organizations, but the exploration of donor–brand relationships of nonprofit organizations in the digital age needs to be deepened.

With the help of the research paradigm of consumer behavior, this article attempts to analyze the nostalgia from "customers" to "donors" from the micro perspective of charitable organizations and tries to prove that the nostalgia of donors can affect the donor's willingness to donate through the relationship between donors and charitable organizations (especially in the dimensions of trust and relationship commitment). Based on the psychological analysis of charity customers, this study designs nostalgic marketing operation strategies for charity managers to attract more new donors, stimulate existing donors to increase the number and frequency of charitable donations, improve repeated donations and donor loyalty, and improve the overall performance and competitiveness of charity organizations.

THEORETICAL FOUNDATIONS

Donation and Donor Motivation

Domestic and foreign scholars regard individual donation as an individual public consumption behavior and consider individual donors as consumers of nonprofit organizations. Its consumption behaviors are classified as consumer behavior research fields (Sargeant et al., 2006; Degasperi and Mainardes, 2017). Factors of charitable donations are related to age, gender, occupation, income, religion, and so on (Sargeant et al., 2006; Gao et al., 2022). Sargeant et al. (2006) and Liu et al. (2018) summarize three potential determinants of donation behavior: kin utility (benefit for living or remembered relatives and friends), affective utility (such as warmth and happiness from donation) and dominant utility (meaning direct financial benefit to donors).

Nostalgic Feeling and Its Marketing Application

Consumer nostalgia is often favored by young people (Holbrook and Schindler, 1991; Shields and Johnson, 2016). As for measuring nostalgic feelings, the scales of nostalgic feeling made by Holbrook (1993); Batcho (1995), and Smeekes et al. (2021) were widely cited, and some Chinese scholars including Lu (2008), Liu et al. (2009), He (2010), and Wen and Qin (2019) also dedicated to the development of nostalgia scales. Nostalgia proneness was mainly related to the living environment, personality, life accident, insecurity, past experience, and loneliness (Ford and Merchant, 2010; Wang et al., 2011; Juhl et al., 2020). Regarding consumer nostalgia in marketing, it was mainly reflected in the decision-making of consumers, brand building, product design, and advertising development (He, 2010; Ju et al., 2016; Fan et al., 2020). The studies by Wang (2010) and Kittikorn and Phanom Klee (2019) showed that stylish nostalgia, technology nostalgia, and nostalgic stories had a regulation effect on consumers' nostalgia proneness and purchasing desire. The empirical studies by Marchegiani and Phau (2010) and Putra and Fariz (2020) illustrated that personal nostalgia intensity has a positive influence on brand awareness, attitudes, and purchase intention. Loveland et al. (2010) and Hajlaoui and Gharbi (2020) indicated the relationship between brand preference and nostalgic feelings through empirical studies. On the basis of nostalgic proneness, Reisenwitz et al. (2004) and Özhan and Akkaya (2020) depicted that consumers would produce senses of nostalgia by stimulation of nostalgia advertising, which would produce further nostalgic consumption.

Nostalgic Feeling and Donation Behavior

Sargeant et al. (2006); Bekkers and Wiepking (2007), and Juhl et al. (2020) had shown that the psychological variation of donors as an important factor influencing donor behaviors and nostalgic feelings is one of the common emotional factors. Sargeant (1999) and Sargeant and Woodliffe (2007) thought that individual donations affect both internal and external factors and that donors need to assess their past experiences before they donate. Thus, donors are more willing to donate to charitable organizations that embody their past experiences. Sargeant et al. (2006) and Liu et al. (2018) summed up the internal and external factors for the three categories, friend and relative utility, emotional utility, and dominant utility, and assumed trust and commitment as key variables that decide donation behaviors. On the basis of the studies of Sargeant (1999), Sargeant et al. (2006), Sargeant and Woodliffe (2007), Merchant and Ford (2008) and Ford and Merchant (2010), through an empirical study, demonstrated how nostalgic feelings that are related to past experiences of donors influence friend and relative utility, donation motives, and emotional utilities, thereby ultimately affecting the donation willingness of donors.

The donate model of Sargeant (1999) and Sargeant and Woodliffe (2007) involved evaluations of past experiences of individuals, but it is only a theoretical model. The empirical demonstration of Ford and Merchant (2010) showed nostalgic proneness of donation willingness. However, the model just involved nostalgia proneness but not nostalgia intensity. On the one hand, many other influencing factors of nostalgic proneness need to be explored on the generalization that nostalgia variances in the model are still small. On the other, donation behaviors are simply replaced by online donation willingness in this model and the frequency, quantity, and loyalty of donation among donation behaviors are not involved. Furthermore, trust factors influencing donation proposed by Sargeant et al. (2006) and Degasperi and Mainardes (2017) were not taken into consideration in this model. Kim and Childs (2020) also suggested that willingness to donate may increase when nostalgia for past experiences in charity appeals matches other benefits.

Future Research Trends

Many existing bodies of literature have studied the relationship between demographic variables and donation behaviors, most of which deeply discussed donation motivation, but the psychological and emotional motivations of donors are rarely involved. Research studies based on marketing perspectives of customer relationships are even less. As for studies on how nostalgic feelings of donation affect the decision-making of donation (consumption), nostalgic feelings are horizontally divided into individual nostalgia and collective nostalgia in the existing literature, whereas discussion from a longitudinal perspective is unusual. Meanwhile, the generation mechanism of nostalgic feelings and influencing factors are often confused and lack hierarchical discussions. Therefore, it is widely accepted that nostalgic feelings are directly related to donation decision-making and that the tiny minority of discussions is related to specific conversion mechanism and intermediary utility in nostalgia.

RESEARCH HYPOTHESIS AND CONCEPTUAL MODEL

Research Hypothesis

Antecedents of Nostalgia Proneness

Antecedents of nostalgic feelings involve two aspects, indirect factors and direct trigger factors. The indirect factor refers to factors that affect individual nostalgia proneness, including both external factors, such as society and culture, and personal factors such as individual experience, personality, age, and so on; the direct trigger factor refers to the nostalgic stimulation developed by charitable organizations.

Sense of insecurity is related to nostalgia proneness to some extent. It means that consumers, driven by insecurity, would like to choose the products or brands they trust and know well and form affection or attachment to them, thereby providing an incentive for nostalgic consumers. During a period of crisis or social unrest, nostalgia allows people to seek comfort, gives people a comfortable and friendly emotion, and even becomes the hearted sanctuary (Liu and Zhou, 2009; Martin, 2021). Nostalgia can generate a lot of positive emotions, such as warmth, joy, gratitude, friendship, satisfaction, and sweetness, that could repair negative emotions, filter out unpleasant factors, and strengthen the self-identity of an individual. These positive emotions will comfort those who are uneasy and disgusted with the status quo. For one thing, the more the individuals feel senseless, the more they feel insecure. Then, individuals are more likely to expect to return to the past and live in meaningful conditions with nostalgia. For another, without an identity in the society, individuals tend to achieve self-esteem and self-identity and fulfill self-affirmation *via* nostalgia, thereby helping to reduce the sense of insecurity.

Therefore, we postulate hypothesis 1 (H1): Sense of insecurity in real life has a significant positive impact on personal nostalgia proneness.

Nostalgia is affected by past experiences. The more intense the past experience, the deeper the memory of it (Baumgartner et al., 1992; Holbrook, 1993; Del Líbano et al., 2021). In addition, the more important the things and objects, the more profound the memories stay. Consequently, individuals would be more likely to recall the past, and then more sense of nostalgia for these events is recalled.

Thus, we postulate H2: Past experiences related to charitable organizations have a significant positive impact on personal nostalgia proneness.

Nostalgia is affected by loneliness. In the past, people spent more time with their families and were closely related to social organizations. However, because of the rapid pace of life at present, people are prone to feeling less sense of belonging and sense of security than ever before. When people could not achieve their desire that is expected to enhance their relationship with family and social organizations in real life, people would feel frustrated, depressed, meaningless, and lonely. Naturally, nostalgia, as the sanctuary, could help individuals recall their past memory with family and friends and rebuild memories of happiness when people feel lonely.

In conclusion, we postulate H3: Loneliness has a significant positive impact on personal nostalgia proneness.

Recovery from the sadness of the death of friends and relatives is related to nostalgia. On the one hand, people become quite nostalgic because of past memories and things when their lost loved ones cross their mind. On the other hand, people who felt sad when nostalgic would tend to donate to charity in honor of relatives and in order to recover from their grief.

To this end, we postulate H4: Recovery from grief has a significant positive impact on personal nostalgia proneness.

Nostalgia Proneness and Nostalgia Intensity

Nostalgia proneness refers to individual views and attitudes toward the past, and is implicit and stable; nostalgia intensity represents the degree of nostalgia toward nostalgic objects (such as the past and remembrance of things of past times) under external stimulation and is explicit, mutable, and transient.

The degree of nostalgia intensity in the donation scene is shown by emotional utility and friend and relative utility in donation motivation: nostalgic emotional intensity is performed by the size of emotional utility in donation motivation of donors; the intensity of memorizing relatives and friends is reflected through the size of relatives and familial utility.

Influenced by environmental changes brought about by COVID-19 and annual growth, people would increasingly expect to return to the past (Baker and Kennedy, 1994) to cherish the memory of past experiences and people (Goulding, 2001) than ever before (Del Líbano et al., 2021). Once people think of the past, they are often accompanied by feelings of sweetness and sourness: on the one hand, they feel happy when they recall a sweet memory; on the other hand, they would be sad because they could not go back the past by contrasting the reality. However, such feelings tend to be sweet, warm, and comfortable. With charitable donations, people would feel quite a close relationship between themselves and the people they miss when someone thinks of their lover. This kind of intimate relationship would lead to their donations (Sargeant et al., 2006). Under this circumstance, they are likely to obtain a connection with the past lovers when donating in their own names (Fischer et al., 1996; Stuhler, 2017; Myrick and Willoughby, 2019). Therefore, donations act as a platform for an individual to experience nostalgia and, thereby, to bridge the distance with their loved ones. For instance, someone's relative died of cancer, so he donated to a cancer charity on behalf of the dead, which would make him feel more intimate with the deceased (relatives or friends). This is the relative utility described by Sargeant et al. (2006).

Therefore, we hypothesize H5: Individual nostalgia proneness has a significant positive impact on relative and friend intensity.

Individual nostalgic experience is reflected not only by the memory of people and goods but also in the remembrance of the past. For example, universities stimulate the memory of school graduates through various ways to appeal to their senses of nostalgia, consequently donating to their universities (Appleton-Knapp et al., 2004; Del Líbano et al., 2021). In terms of students, their donations to their old schools would enable them to rebuild yesterday and produce a nostalgic experience that would bring about pleasantness, happiness, and a sense of wellbeing to them (Holak and Havlena, 1998). Overall, individual nostalgia will produce emotional utility, which is the very emotional utility described by Sargeant et al. (2006).

Overall, we hypothesize H6: Individual nostalgia proneness has a significant positive impact on emotional intensity.

Nostalgia Intensity and Brand Relationships

Nostalgia Intensity and Brand Trust

Trust is one of the important factors that decide the level of donation (Sargeant et al., 2006; Bilgin and Kethüda, 2022). The level of individual nostalgia has a certain impact on trust as well. Lu (2008), in her study on the relationship between individual nostalgia and trust of Chinese time-honored brands, indicated that there is a certain positive correlation between trust level and individual nostalgia according to her own nostalgia scale. Hidayati (2021) also mentioned it. Li (2007), in an article about the restoration of Chinese time-honored brands, concluded that nostalgia has a negative correlation with trust using the nostalgia scale made by Holbrook (1993). He (2010), using his CHINOS scale, measured the relationship between nostalgia proneness and brand trust and showed that domestic brands have a good predictive validity to nostalgic proneness through empirical research. Wen et al. (2019) conducted a study on nostalgic restaurants. The results show that nostalgia has a significant positive impact on brand trust. To this end, we hypothesize the following:H7: Relative and friend intensity of individual donors has a significant positive impact on their trust level in charitable organizations. H8: Emotional intensity of individual donors has a significant positive impact on their trust levels for charitable organizations.

Nostalgia Intensity and Relationship Commitment

Commitment is a continued desire to maintain a valuable relationship (Morgan and Hunt, 1994; Rather and Sharma, 2017). The depth of the relationship between donors and charities would affect the level of their commitment to charities (Sargeant and Lee, 2004; Akrout and Nagy, 2018). That is to say, the higher the emotional intensity and relative memorization, the higher the commitment levels of donors to charitable organizations. Individuals produce emotional intensity and relative intensity through nostalgic experiences, thereby enhancing commitment levels of origination (Sargeant et al., 2006). In this sense, donation has become a platform where donors could relive the past and become closer to their departed relatives. To this end, we hypothesize the following: H9: Friend and relative intensity has a significant positive impact on the commitment of individual donors to charitable organizations, and that: H10: Emotional intensity has a significant positive impact on the commitment of individual donors to charitable organizations.

Brand Trust and Relationship Commitment

Chaudhuri and Holbrook (2001) and Hidayanti and Nuryakin (2018) found that there is a positive relationship between brand trust and brand promise. It means that brand trust is the core pilot of the brand promise, which could be shown in many studies. It is trust that drives the form of commitment. In general, commitment would always involve self-sacrifice to some extent, and it is unlikely to occur without trust (Morgan and Hunt, 1994). Wong and Sohal (2002) made a further explanation of the relationship between trust and commitment; thus, it can be seen that trust is a of prerequisite for commitment. Sargeant et al. (2006) also pointed out that commitment is a function of trust. Additionally, Sargeant and Lee (2004) and Sargeant et al. (2006), in two articles on influencing factors of donation, regarded trust as the important factor determining the donation level and showed that the trust level of donors to charities would affect the level of commitment, thereby affecting donation behaviors. Ko et al. (2014) pointed out by empirical research that trust and commitment have a significant positive impact on donation behavior.

In China, the crisis of confidence is one of the major obstacles to the development of charitable donations. With the development of charities in China, trust problem has continuously emerged in the charitable field. Netease, one of most famous Internet companies, ended up with the Netease online donation platform of China Red Cross Society on 14 May 2008, while Netease began to cooperate with the Liao Bingxiong Humane Fund Management Committee. In addition, an increasing number of netizens give rise to questions about the amount and channels of donation of some celebrities such as Yu Qiuyu and Chen Guangbiao. What is worse, the development of charity career, which is particular in the development of individual charity level, has undergone its bottom because of Guo MeimeiEvent in 2011 and ten thousand-yuan catering invoice events in Shanghai Luwan District Red Cross. Based on the above, trust is a necessary condition for the public to donate to charitable organizations in China, since trust would affect the degree of relationship commitment between individual donors and charitable organizations, thereby affecting online donation willingness and donation level.

Therefore, we postulate H11: The degree of trust of individual donations on nonprofit organizations has a significantly positive correlation with commitment level.

Relationship Commitment and Online Donation Willingness

The impact of commitment on purchase intention and brand loyalty had already been found in the marketing research field previously. Morgan and Hunt (1994), Bansal et al. (2004), and other scholars believed that it is customer commitment that is the core concept to maintaining and developing brand relationships, since it is the key psychological driving force that contacts customers and sales organizations. Many existing empirical studies have proved that there is a positive correlation between customer commitment and purchase intention and brand loyalty (e.g., Anderson and Weitz, 1992; Morgan and Hunt, 1994; Garbarino and Johnson, 1999; Wang et al., 2019; Khodabandeh and Lindh, 2021). In terms of donors, donors, according to their own past experiences and other factors, measured whether the public welfare of nonprofit organizations enables donors to generate a sense of trust and develop further relationship commitment, accordingly deciding whether or not to donate to charitable organization or continue to donate (Sargeant et al., 2006).

To this end, we hypothesize H12: The commitment level of donors to charitable organizations has a significant positive correlation with online donation willingness.

Conceptual Model

The donation model of Sargeant et al. (2006) is an important reference for this study. As for the discussion about emotional influencing factors, past experience, loneliness, and recovery from grief involved in the nostalgia proneness of influencing factors by the donation model of Merchant and Ford (2008) and Ford and Merchant (2010), are among those mentioned in this study for reference. Based on the abovementioned factors, the theoretical model is proposed and consists of four parts (shown in **Figure 1**). First, nostalgia proneness influencing factors are composed of insecurity, past experience, loneliness, and grief recovery. Second, nostalgia proneness and nostalgia intensity (emotion intensity and relative and friend intensity) are considered as two levels of nostalgic feelings, and nostalgic proneness would be performed as nostalgia intensity when charitable organizations' irritants are evoked. Third, nostalgia intensity is characterized by donation motivation of donors, that is, the degree of donation motivation (emotional utility intensity and relative and familial utility intensity) affected by nostalgic irritants of charitable organizations represents nostalgia intensity. Fourth, nostalgia intensity affects donation behaviors (represent donate willingness) through an intermediary played by the quality of donor-charitable organization relationship (trust and relationship commitment).

METHODS AND FINDINGS

Construct Scales

The measurement scale is the basis of the empirical research because the credibility and validity of the measurement scale would directly affect the meaning and value of the entire study. The main part of the test item in this article includes ten parts. The online donation willingness adopts the scale designed by Sargeant et al. (2006); Hou (2009), and Ye et al. (2015), with a total of three items. The measurement of commitment relationship adopts the scale modified and used in the article by Sargeant et al. (2006) and Hou (2009), with a total of five items. Trust refers to and modifies the scale proposed by Sargeant et al. (2006); Hou (2009), and Bauer and Freitag (2018), with a total of four items. The emotional intensity adopts the scale designed by Sargeant et al. (2006) and Goto and Schaefer (2020), with three items in total. The scale modified and used by Sargeant et al. (2006) was used to measure the intensity of relations and friends, with three items in total. Nostalgia proneness adopts the scale designed by Batcho (1995), Lu (2008); He (2010), Merchant and Ford (2008), Ford and Merchant (2010), and Cheung et al. (2017), with 12 items in total. The measurement of insecurity adopts the scale modified and used in the article by Collins and Read (1990) and Wang (2010), with a total of four items. Loneliness refers to and modifies the scale proposed by Russell et al. (1980) and Auné et al. (2019), with a total of nine items. Recovery from grief refers to and modifies the scale proposed by Carnelley et al. (2006), Merchant and Ford (2008), Ford and Merchant (2010), and Nolan and Hallam (2019), with a total of three items. Past experience refers to the scale proposed by Baumgartner et al. (1992); Schulkind et al. (1999), Merchant and Ford (2008), Ford and Merchant (2010), and Afaq et al. (2020), with two items in total.

Date Collection

A large sample survey was conducted from February to April 2022. Since we studied the donation behavior of respondents, we considered the donors of online donation platforms as the survey object. To this end, we used the following methods to conduct a questionnaire survey: first, 750 individual donors were randomly selected to conduct a questionnaire survey through the donor information from nonprofit organizations such as Waterdrop financing, easy financing, and worry-free financing; therefore, 440 questionnaires were withdrawn within the specified time limit; after eliminating invalid questionnaires, there were 394 valid questionnaires, and the effective rate was 52%.

The analysis of large sample survey included descriptive statistics, variable data description, CITC, reliability, one dimensionality, and validity. Project descriptive statistics is mainly conducted for preliminary testing of variable projects. CITC (total correlation of correction items) and Cronbach's α reliability coefficient are used for the reliability coefficient of purification measurement items and test measurement items,

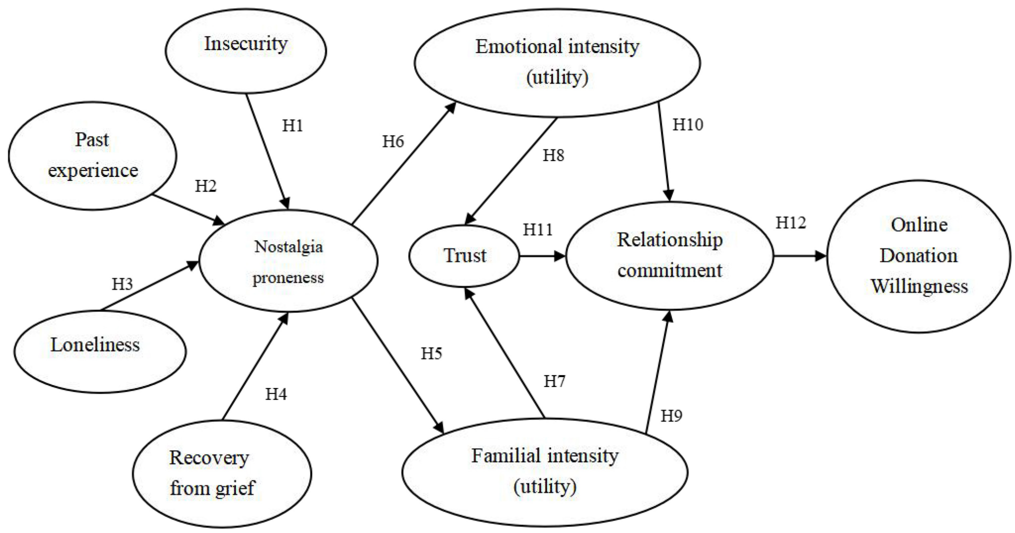

FIGURE 1 | Online donation intention model.

TABLE 1 | Descriptive statistics of variables.

Variable	Item	Minimum	Maximum	Average	Standard deviation
Online donation willingness	ID1, ID2, and ID3	1.00	7.00	4.64	1.02
Relationship commitment	C1, C2, C3, and C4	1.00	7.00	4.09	1.23
Trust	T1, T2, and T3	1.00	7.00	4.43	1.11
Emotional intensity	EI1, EI2, and EI3	1.00	7.00	4.73	1.31
Relatives and friends intensity	FI1, FI2, and FI3	1.00	7.00	4.04	0.99
Nostalgia proneness	PN1, PN2, PN3, PN4, PN5, PN6, PN7, PN9, PN10, PN11, and PN12	1.00	7.00	4.13	1.04
Insecurity	IS1, IS4, and IS4	1.00	7.00	4.59	1.05
Loneliness	L1, L2, L3, L4, L6, L7, L8, and L9	1.00	7.00	4.76	1.03
Recovery from grief	R1 and R2	1.00	7.00	3.99	1.28
Past experience	PE1 and PE2	1.00	7.00	4.28	0.98

respectively. The factor analysis, at the structural level, was conducted to verify the single-dimensional variables. In addition, we tested the fitting of large sample data and theoretical hypothesis model with the AMOS26.0.

Descriptive Statistical Analysis

First, the descriptive statistics were conducted to measure the measured values of variables and analysis results, which include the mean of each variable, standard deviation, and so on. As it can be seen from the **Table 1**, the average of each variable could basically reflect the degree of concentration since it should tend to the middle values and not have extreme averages. From variance evolution, each variable has a relatively large variation quantity, and the senses in which interviewees complete the questionnaires have some differences, so the identification degree of subject is relatively high.

Reliability and Validity Analysis of Large Sample Survey Data

By CITC, reliability, and validity analysis of the large sample, we found that C3 and C5 in relationship commitment, T4 in trust, PN8 and PN11 in nostalgia proneness, L5 and L6 in loneliness, R3 in recovery from grief, and IS2 in insecurity should be deleted. From the item analysis of both the large sample and the small sample, the measurement items of all variables were optimized, after which 39 optimized measurement items in total are shown in the table below. Then, a statistical analysis was conducted according to the optimized measurement items in the following text.

Confirmatory Factor Analysis

The factor standardized loading, Cronbach's α, and fitting index of measurement model are shown in **Table 2**. The measurement model and data are satisfactory because they passed the AMOS test and the adaptation standard or critical value.

Correlation Analysis

Before the structural equation modeling test, a pairwise correlation analysis is conducted to each latent variable first, which is the preliminary test of the hypothesis. In general, the two variables in the assumptions should have a high correlation. Meanwhile, correlation coefficient is statistically

TABLE 2 | Confirmatory factor analysis of constructs.

Construct	Item code	Item	Standardized loading	*P*-value
Online donation willingness α = 0.903	ID1	(1) I would continuously donate to this charity organization	0.907	0.000
	ID2	(2) I would like to donate to this charity organization	0.885	0.000
	ID3	(3) I would donate to this charity organization again next time	0.915	0.000
Relationship commitment α = 0.887	C1	(1) I think that I have sense of belongingness to this charity organization	0.799	0.000
	C2	(2) I think I am a loyal supporters of this charity organization	0.875	0.000
	C4	(4) I would recommend others donors to donate to this charity organization	0.895	0.000
Trust α = 0.893	T1	(1) I believe that this charity organization could effectively use contribution money (or object)	0.765	0.000
	T2	(2) I believe that this organization is a righteous charity organization	0.845	0.000
	T3	(3) I do not think this charity organization would cheat us	0.874	0.000
Emotion intensity α = 0.738	EI1	(1) I would feel upset without donation, when this charity organization raise donation	0.809	0.000
	EI2	(2) I would be comfort after donating	0.811	0.000
	EI3	(3) I would feel wellbeing after donating to this charity organization	0.712	0.000
Relatives and Friends intensity α = 0.715	FI1	(1) I donate to this charity organization in honor of somebody	0.821	0.000
	FI2	(2) I think the person I know (including the donation targets in my imagination) would benefit from my donation	0.734	0.000
	FI3	(3) I think that my relatives and friends (including the donation targets in my imagination) have certain relation with this organization	0.835	0.000
Nostalgia proneness α = 0.901	PN1	(1) I miss old songs	0.853	0.000
	PN2	(2) I often recall the past experience	0.743	0.000
	PN3	(3) I still like watching the movies and TV plays I used to love	0.863	0.000
	PN4	(4) I could not forget the flavor of food I tasted in my childhood	0.777	0.000
	PN5	(5) I miss the place I used to live	0.784	0.000
	PN6	(6) I miss used schools	0.834	0.000
	PN7	(7) I miss carefree old time	0.763	0.000
	PN9	(9) I miss the old time together with relatives and friends	0.743	0.000
	PN10	(10) I often think of concern and love of relatives and friends in my childhood	0.823	0.000
	PN12	(12) I miss the lifestyle of past people	0.832	0.000
Insecurity α = 0.726	IS1	(1) I do not think my life is stable	0.786	0.000
	IS3	(3) I usually worried that I would be abandoned	0.723	0.000
	IS4	(4) I am lack of confidence in my ability	0.737	0.000
Loneliness α = 0.838	L1	(1) I have few companion	0.838	0.000
	L2	(2) there is no one I could pour out	0.769	0.000
	L3	(3) I feel that I am part of some circle	0.835	0.000
	L4	(4) I am not close to others	0.787	0.000
	L7	(7) No one really understand me	0.843	0.000
	L8	(8) I feel unhappy due to loneliness	0.867	0.000
	L9	(9) The people by my side do not support me	0.842	0.000
Recovery from grief α = 0.823	R1	(1) I often think of departed relatives and friends who used to bring happiness to me	0.712	0.000
	R2	(2) I feel warm when I think of my departed relatives and friends	0.756	0.000
Past experience α = 0.819	PE1	(1) This charity organization clearly recalls my memory	0.820	0.000
	PE2	(2) This organization trigger my memory and make my emotion ups and downs	0.735	0.000

Goodness of fit of the model:
x^2 (690) = 1,469.7, x^2/df = 2.13, CFI = 0.92, IFI = 0.91, TLI = 0.92, GFI = 0.86, and RMSEA = 0.046

significant. The correlation between each latent variable is analyzed with SPSS26.0, and the correlation coefficient between each latent variable is shown in **Table 3**. It can be seen from the table that each latent variable is significantly correlated; it is basically a significant positive correlation as the assumption we presented above. Therefore, the original assumption is basically verified.

Hypothesis Test

The theoretical assumptions above are preliminarily demonstrated by a correlation analysis testing. In order to verify the causal relationship between self-variables and dependent variables, AMOS26.0 is used to study the hypothesis testing of the model.

A summary of the hypothesis test is provided in **Table 4**, and all the assumptions are tested with the path coefficient.

H1: Realistic insecurity has a significant positive impact on personal nostalgia proneness. The path coefficient is 0.258 and the T value is equal to 5.967, which are significant at a confidence level of 0.001. Therefore, the hypothesis is supported. According to this hypothesis, when individuals feel insecurity in real life, they would be likely to be nostalgic and seek comfort. Wang (2010) and Areni et al. (2022) studied the relationship between the two variables. Their research results have been further demonstrated in this study.

H2: Past experiences related to charitable organizations have a significant positive impact on personal nostalgia proneness. The path coefficient is 0.167 and the T value is equal to 3.4227, which are significant at a confidence level of 0.001. Therefore, the hypothesis is supported. According to this hypothesis, the more important the past experience of donors is, the deeply they remember. Memories of past experiences in real life have a more remarkable impact. Belk (1991) and Del Líbano et al. (2021) studied the relationship between the two variables, and further research is conducted in this study to demonstrate their research results. From practices of management, if managers of charitable organizations want to stimulate the nostalgic feelings of donors, they need to ensure that donors have past experiences related to their organizations or their organization appeal.

H3: Loneliness has a significant positive impact on personal nostalgia proneness. The path coefficient is 0.158 and the T value is equal to 3.31, which are significant at a confidence level of 0.001. Therefore, the hypothesis is supported. It means that individuals would become nostalgic and always remember past good times when they feel lonely in real life. Merchant and Ford (2008), Ford and Merchant (2010), and Juhl et al. (2020) studied

TABLE 3 | Correlations among latent constructs.

Variable	1	2	3	4	5	6	7	8	9	10
Online donation willingness	1									
Relationship commitment	0.797**	1								
Trust	0.632**	0.638**	1							
Emotion intensity	0.521**	0.563**	0.583**	1						
Relatives and friends intensity	0.327**	0.421**	0.457**	0.307**	1					
Nostalgia proneness	0.019	0.057	0.112*	0.193**	0.187**	1				
Loneliness	−0.168**	−0.174**	−0.147**	−0.086	0.051	0.197**	1			
Past experience	0.142**	0.151**	0.163**	0.193**	0.287**	0.184**	0.081	1		
Insecurity	0.146**	0.169**	0.167**	0.183**	0.187**	0.207**	0.204**	0.173**	1	
Recovery from grief	0.168**	0.142**	0.137**	0.194**	0.141**	0.201**	−0.169*	0.144**	0.189**	1

***Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.*

TABLE 4 | Structural model results and hypothesis tests.

Path in the model	Standardized estimate	standard error	T-values	Support or not
Past experience–> Nostalgia proneness	0.167	0.049	3.422*	support
Recovery from grief–> Nostalgia proneness	0.199	0.053	3.739**	support
Loneliness –> Nostalgia proneness	0.158	0.048	3.310*	Support
Insecurity –> Nostalgia proneness	0.258	0.043	5.967**	Support
Nostalgia proneness – > Relatives and friends intensity	0.227	0.059	3.827**	Support
Nostalgia proneness –> Relatives and friends intensity	0.189	0.052	3.609**	Support
Relatives and friends intensity –> Trust	0.194	0.052	3.74**	Support
Emotional intensity –> Trust	0.247	0.054	4.584**	Support
Relatives and friends intensity –> Relationship commitment	0.302	0.060	5.007**	Support
Emotional intensity–> Relationship commitment	0.591	0.058	10.228**	Support
Trust–> Relationship commitment	0.434	0.059	7.247**	Support
Relationship commitment –> online donation willingness	0.894	0.061	14.709**	Support

***Significant at $P < 0.001$, *Significant at $P < 0.01$.*

the relationship between the two variables, and their research results have been further demonstrated in this study.

H4: Recovery from grief has a significant positive impact on personal nostalgia proneness. The path coefficient is 0.199 and the T value is equal to 3.739, which are significant at a confidence level of 0.001. Therefore, the hypothesis is supported. Accordingly, individuals would think of old times spent with their relatives and friends when they recalled them. Nostalgia is considered an important means to overcome grief. The relationship above was rarely mentioned in the previous literature, except Merchant and Ford (2008) and Ford and Merchant (2010). Their research results have been further demonstrated in this study.

H5: Personal nostalgia proneness has a significant positive impact on relative and friend intensity. The path coefficient is 0.227 and the T value is equal to 3.827, which are significant at a confidence level of 0.001. Therefore, the hypothesis is supported. According to the hypothesis, when someone thinks of relatives and spouse, individuals often feel a very close relationship with the people they miss. This intimate relationship would lead to his or her donation (Sargeant et al., 2006) and gets a connection between their past relatives and friends and themselves (Fischer et al., 1996; Stuhler, 2017; Myrick and Willoughby, 2019).

H6: Personal nostalgia proneness has a significant positive impact on emotional intensity. The path coefficient is 0.189 and the T value is equal to 3.609, which are significant at a confidence level of 0.001. Therefore, the hypothesis is supported. Under the hypothesis, the nostalgic proneness of donors would produce a sense of "yesterday once more," thereby appreciating pleasantness, happiness, and warmth (Holak and Havlena, 1998). Sargeant et al. (2006), Merchant and Ford (2008), Ford and Merchant (2010), and Batcho (2020) conducted such research. Their research results have been further demonstrated in this study.

H7: Relative and friend intensity of individual donations has a significant positive impact on the level of trust on charitable organizations.

H8: The emotional intensity of individual donors has a significant positive impact on the trust level for charitable organizations. The path coefficient of "relative and friend intensity to trust" is 0.194 and the T value is equal to 3.74, which are significant at a confidence level of 0.001. The path coefficient "emotional intensity to trust" is 0.247 and the T value is equal to 4.584, which are significant at a confidence level of 0.001. Therefore, the two hypotheses are supported. According to the two hypotheses, individuals would have more confidence in charitable organizations when a certain nostalgia intensity is aroused and produced by the organizations. It is unusual to find literature on the relationship between nostalgia intensity and trust at present, but the relationship above provides a way for charitable organizations to improve their trust.

H9: Relative and friend intensity has a significant positive impact on the relationship commitment of individual donors to charitable organizations.

H10: Emotional intensity has a significant positive impact on the relationship commitment of individual donors to charitable organizations. The path coefficient between relative and friend intensity and relationship commitment is 0.302 and the T value is equal to 5.007, which are significant at a confidence level of 0.001. The path coefficient between emotional intensity and relationship commitment is 0.591 and the T value is equal to 10.22, which are significant at a confidence level of 0.001. Therefore, the two hypotheses are supported. Under the two hypotheses, donors would have a greater relationship commitment to charitable organizations when nostalgic intensity is aroused and produced by the organizations. Sargeant et al. (2006), Merchant and Ford (2008), Ford and Merchant (2010), and Stuhler (2017) conducted such research in previous years. Their research results have been further demonstrated in this study.

H11: The trust level of individual donors on nonprofit organizations presents a significant positive correlation on donation commitment level. The path coefficient is 0.434 and the T value is equal to 7.247, which are significant at a confidence level of 0.001. Therefore, the hypothesis is supported. According to the hypothesis, donors would produce a greater relationship commitment to charitable organizations because of their increasing trust to the organizations. This relationship had been studied by Sargeant et al. (2006). However, according to Sargeant et al., trust is mainly derived from the behavior of charitable organizations itself, such as organizational performance, organizational feedback, organizational communication and so on; the results of Sargeant et al. (2006) and Kim and Childs (2020) from the perspective of the psychological feelings of donors such as nostalgic feelings are demonstrated in this study.

H12: The level of commitment of donors to charitable organizations presents a significant positive correlation with online donation willingness. The path coefficient is 0.894 and the T value is equal to 14.709, which are significant at a confidence level of 0.001. Therefore, the assumption is supported. According to this hypothesis, the online donation willingness of donors would improve as donors produce a growing relationship commitment to charitable organizations. Based on the context of donation above, we demonstrated the relationship between the commitment and the purchase intention again, which has been researched by many marketing researchers (such as Anderson and Weitz, 1992; Morgan and Hunt, 1994; Garbarino and Johnson, 1999; Wang et al., 2019; Peng et al., 2021).

CONCLUSION AND RECOMMENDATIONS

Summary of Findings

As shown in **Table 5**, the square of path coefficients to assess the variance explained by degrees of endogenous variables is calculated in the model. Cohen (1992) showed that when the model uses multiple independent variables (exogenous variables), approximately 2% of the variance explained that the degrees are relatively small, approximately 15% is moderate, and over approximately 35% is rather bigger. We can draw the following conclusions shown in **Table 5**:

(1) Insecurity, past experience, loneliness, and recovery from grief have a certain impact on individual nostalgia proneness. Influenced by the outbreak of COVID-19, these factors are the

TABLE 5 | Variance explained by endogenous constructs.

Endogenous construct		Variance explained degrees	
Nostalgia proneness		15.90%	
Relatives and friends intensity		5.15%	
Emotional intensity		3.57%	
Trust	Emotional intensity-trust	9.86%	6.10%
	Relatives and friends intensity-trust		3.76%
Relationship commitment	Emotional intensity-commitment	62.88%	34.92%
	Trust -commitment		18.84%
	Relatives and friends intensity-trust		9.12%
Online donation willingness		79.92%	

most representative, but there are other factors that are yet to be excavated.

As it can be seen in **Table 5**, the empirical results in this study show that the structural equation model has explained 15.9% of the variance of individual nostalgia proneness. It means that the exogenous variables (such as insecurity, past experience, loneliness, and recovery from grief) together explain 15.9% of the individual nostalgia proneness variance. The purpose of our study is not to explain all the influencing factors of individual nostalgia proneness. The variance explained that the degree also reached the middle according to Cohen (1992). Therefore, we think that the model is acceptable. From another perspective, it can be inferred that we also need to explore more influencing factors of individual nostalgia in future studies since the variance that explained the degree of individual nostalgia is not big enough.

(2) In donation scenarios, given nostalgia intensity includes two dimensions, relative and friend intensity and emotional intensity, which have a positive impact on nostalgia proneness. On the one hand, there may be other dimensions of nostalgia intensity; on the other hand, there may be other regulatory variables besides the influencing factors of nostalgia proneness.

As shown in **Table 5**, the results of this empirical study indicate that the structural equation model explains 5.15% of relative and friend intensity variance and 3.57% of emotional intensity variance. According to the standards of Cohen (1992), the variance explained that the degrees of nostalgic intensity exceed the smaller standard (2%), while there is a little gap (15%) from the medium. Therefore, this study is barely acceptable from the nostalgic intensity of this variable.

However, because the research on nostalgia intensity in the nostalgia study field is still at the exploratory stage, this article tends to separate nostalgia proneness from nostalgia intensity. It is considered an innovation itself to measure the nostalgia intensity with the intensity of relatives and friends and emotional intensity. In future research, first, there may also be other dimensions in the structure of nostalgia intensity besides relative and friend intensity and emotional intensity. Second, the two variables, relative and friend intensity and emotional intensity, are more complex, and they may also be influenced by many other psychological variables.

Based on the background of COVID-19, we found that, in addition to improving the performance of charity organizations, timely feedback, and effective communication, the donor's individual psychological variables mentioned in this article are important factors in the source of trust of charitable organization donors (Sargeant et al., 2006). The more nostalgic the donors are, the stronger their trust on charities. We suggest that trust has a great influence on donation, and that trust will affect online donation willingness by affecting the relationship commitment of "donor–organization". First of all, this is because COVID-19 and its corresponding avoidance measures make online donation the main force of donation channel, and the uncertainty of donor's information is more ambiguous. The individual emotion plays an important role at this time. Nostalgia is the most prominent emotion in COVID-19.

As can been seen in **Table 5**, the empirical results of this study have shown that the structural equation model has explained 9.86% of the trust variance. The variance explained that the degree of emotional intensity to trust is 6.1% and that of relative and friend intensity is 3.76%. In other words, for the trust of donors on charitable organizations, stimulating the nostalgic feelings of donors is another way to improve the trust degree of the charitable organizations besides enhancing their own performance and effectively communicating. This study has demonstrated that the donors show more trust on charitable organization when their nostalgia proneness performs as missing relatives and friends under the stimulation of the charitable organizations and showing a strong sense of warmth after giving the donation. In order words, donors would reduce the sensitivity on trust variable in their donation decision-making behaviors.

(3) The change of donation channels highlights the role of relationship commitment. From the perspective of relationship marketing, relationship commitment is the most critical variable in determining consumer purchasing behavior. In the scene of the charitable donations, the relationship commitment of donors on charitable organizations has a remarkable impact on online donation willingness and donation behaviors of donors. The source of relationship commitment in donation context involves emotional intensity, followed by trust, and comes up with relative and friend intensity. Although trust has a great influence on relationship commitment and online donation willingness, the stimulation of nostalgic feelings (including other feelings that have not been researched) of the donors should be subject to the attention of managers of charitable organizations, especially in the COVID-19 era with nostalgia.

As shown in **Table 5**, the empirical results show that the structural equation model explains 62.88% of the relationship commitment variance, of which 34.92% comes from emotional intensity, 18.84% comes from trust, and 9.12% comes from friend and relative intensity, while 79.92% of the online donation willingness variance has been explained by the relationship commitment. According to the standards of Cohen (1992), the variance that explained the degree of relationship commitment and online donation willingness is more than 35%, which far outnumbers the standard (35%). Therefore, these two variables can be accepted in this study.

In the context of relationship marketing, the relationship between consumers and companies determines purchase intention and even brand loyalty. It means that the commitment of consumers to brand is considered an important channel promise such that enterprises launch brand management and enhance brand equity. In terms of this study, relationship commitment is a decisive factor in online donation willingness of donors. The relationship commitment level directly determines whether donors would like to donate money (goods) to charitable organizations and even to be willing to do long-term and ongoing donation. Therefore, the relationship commitment level directly determines the development of charitable organizations. Therefore, charitable organizations during the process of management should attach great importance to this variable.

Where is the source of relationship commitment? This study has demonstrated that nostalgia intensity has explained 34.04% of the variance of relationship commitment and that trust has explained 18.84% of the variance of commitment relationship. According to the data above, two conclusions can be inferred as follows:

First, trust has a great impact on relationship commitment. The level of trust directly affects the relationship commitment level of "donors to organization". In the current donation environment in China, the public has shown the decreasing trust on charitable organizations because of their opaque information and corruption of their managers. Since the event of Guo Meimei, the number of donations that the Red Cross has received has witnessed a drastic reduction, which showed that the level of trust of donors on charitable organizations has a significant impact on the development of philanthropy in China.

Second, the nostalgic feelings of donors make greater contribution to relationship commitment. If charitable organizations feel like improving the level of donation, they should focus more on mental communication with donors and inspire their nostalgic feelings (including other feelings that have not been researched). In research on donation motivation, donation behaviors of donors are dominated by many psychological factors (such as nostalgia, pity, and guilt.), and studies on these emotional factors have an important influence on improving the level of charitable organizations as a whole.

Managerial Implications

Charitable organizations can develop various strategies to provide a platform for making donors experience nostalgia, which will allow institutions and existing donors to establish stronger links and attract new donors, thereby benefiting the whole organization. Concretely speaking, charitable organizations, such as charity organizations of medical care and education, should take the nostalgic feelings of donors into consideration and effectively use them in marketing communication strategy development, market segmentation, target market selection, and positioning.

(1) Marketing managers of charitable organizations could design nostalgic communication demands, develop nostalgic platform, and evoke the nostalgic feelings of donors to increase online donation levels and willingness.

Marketing managers of charitable organizations must identify the important personal experiences of online donors and create a reasonable design in marketing communications (such as public service advertising), which develops a platform for online donors to allow them to re-experience the past and appeal to their personal nostalgic feelings. This kind of nostalgic communication strategy design is extremely effective in university alumni associations, hospitals, schools, poverty alleviation educational foundations, and any health-related charitable organizations.

Take the University Celebration Committee for example, in order to improve the online donation willingness and donation levels of schoolfellows, if the celebration preparatory groups mail the same paper and audio and video products to the schoolfellows that span decades or even centuries, it is impossible to produce a communication effect and make the school fellows produce nostalgic feelings or era resonance. For universities, they must segment schoolfellows according to the standard of admission age to raise the number of donations, since schoolfellows experienced different events during their school lives. Alumni associations should design different communication elements in various media (letters, email, audio and video products, photos, etc.), tell about dramatic events during their school age, give an account of their campus anecdotes, and record the characters and trivia of the faculty of donors and photos of canteens, dormitories, school buildings, libraries and campus, and other important landmark attractions. Although alumni associations cannot guarantee that each schoolfellow would receive a different media package (including the communication materials of different media), the alumni associations at least should be in accordance with the enrollment year and use 4 years as a unit so that the schoolfellows of different times could receive the unique materials related to their college lives and (cannot make it can be relaxed to 10 years). On the one hand, schoolfellows would feel valued; on the other hand, precisely because these materials (such as photos and audio and video products) are closely related to their college campus lives, they can effectively recall their college life and produce nostalgic feelings, which are accompanied by pleasantness and warmth, thereby enhancing the trust of schoolfellows, the relationship commitment degree, increasing online donation willingness, and even extending the loyalty on long-term donation.

(2) Managers of online charitable organizations should carry out effective market segmentation and positioning through nostalgic feelings.

Different people have different nostalgia proneness. Would nostalgic appeal have a negative impact on online donors who have low nostalgic feelings? Holbrook and Schindler (1991) suggested that consumers with high nostalgia proneness are more open and more easily accept nostalgic appeals (such as nostalgic advertising) rather than those with low nostalgic proneness. Holbrook and Schindler (2003) suggested that more progressive nostalgic appeals should be used in corporate marketing because the appeals could both evoke the traditional sense of the product or brand and display their modernity.

Therefore, if nostalgic appeal could stimulate nostalgic feelings of online donors, managers of charitable organizations must assess the nostalgia proneness of donors. This study has shown that online donors who are lonely and experiencing more significant past time, insecurity, and recovery from grief tend to easily become nostalgic. Managers of charitable organizations need to comprehensively assess these factors, which would enable to help them select the target market and identify real relevant online donors more easily by producing nostalgic feelings. However, in the management practice of charitable organizations, there is a difficult problem: how do charitable organizations obtain the personality of online donors, scenes of past life, and other factors? Gielens and Steenkamp (2007) provided an effective way to solve this problem. In the scenario used by new products, they require a certain brand community club of consumers to fill in the innovative scale and distinguish consumers into a noble new club and a low new club through the innovation scale. With companies designing different promotional packages, appeals of the new products would be served to the noble new groups. In the scenario of online donations, managers of charitable organizations enable to take advantage of a variety of scales (such as loneliness, insecurity, and past experience) in this study to measure the nostalgic feelings of donors, thereby distinguishing the high nostalgia proneness and low nostalgia proneness of online donors by target market selection, identifying target market selection, and finding out more relevant nostalgic appeal of donors. According to results of market segmentation and target market selection, charitable organizations could conduct more effective market position and set up a unique image bearing in the mind of online donors, thus to enhance their competitiveness in the competition.

(3) Managers of charitable organization should expand their impact on marketing and enhance online donation willingness and levels by nostalgia clubs (brand clubs). The greater the nostalgia intensity of online donors, the greater their relationship commitment to charitable organizations. Online donors with similar commitment gather in a virtual or real community in many ways, such as Wechat groups, forums, and so on, and could share past experiences with each other. Managers of charitable organizations need to build such community, organize recurrent activities or initiate discussions and communication, form a social organization, and inspire the nostalgic feelings of online donors, which would enhance the emotional contract and relationship commitment of the entire community to the charitable organizations. In the management practice of charitable organization, there are many small charitable organizations through the network platform, such as websites, forums, micro blogs, Wechat groups, and full discussions and communication, that stimulate nostalgic feelings of whole community, thereby improving the online donation willingness and donation levels of the entire organization.

LIMITATIONS AND FURTHER RESEARCH

Limitations

(1) The variance that explained the degree of nostalgic proneness and nostalgia intensity is limited. In the empirical model, exogenous variables (such as insecurity, past experiences, loneliness, and recovery from grief) together only explain 15.9% of the individual nostalgia proneness variance. Nostalgia proneness only explains 5.15% of the variance of friend and relative intensity and 3.57% of emotional intensity. According to the standard of Cohen (1992), the explained degree is small or just reached medium.

(2) It is possible that there exist other variables between nostalgia intensity and relationship commitment. Charitable organizations may take some actions, including writing response cards and letters of thanks to increase the emotional contract and relationship commitment of donors on charitable organizations, which requires further research to explore.

(3) It is possible that there exists other structure dimensions in nostalgia intensity. It is difficult to distinguish emotional intensity from relative and friend intensity in nostalgia intensity. However, emotional intensity is only related to positive emotions, so future studies may also need to focus on other dimensions of nostalgia intensity as well as negative nostalgic feelings.

(4) Limitations of the data and scales. Although some of the scales meet the requirements, their reliability is not high, such as insecurity in nostalgia proneness, relative and friend intensity, and emotional intensity in nostalgia intensity, which indicates that there is room for improvement in the scales themselves. The process of the small sample investigation and formal investigation and the geographical scope of sample survey is relatively narrow, which may affect the universality of the data. The number of valid questionnaires is also limited. Although they meet the statistical requirements, the proportion of valid questionnaires in the course of the investigation is not high, which has some impact on this study.

Further Research

(1) Further exploration on influencing factors of nostalgic proneness is needed. Since the exogenous variables only explain 15.9% of the variance of individual nostalgia proneness, it can be inferred that more influencing factors of individual nostalgia should be explored in future studies. Moreover, further exploration of collective (substitution) nostalgia should be discussed on donation behavior.

(2) Further exploration on dimensionalities and influencing factors of nostalgia intensity is needed. The variance that explained the degree of nostalgia intensity is lower. For future research, first, the structure of nostalgia intensity may also show other dimensions that need to be explored besides the intensity of relatives and friends and emotional intensity. Second, because the two variables, relative and friend intensity and emotional intensity, are more complex, they may also be influenced by many other psychological variables.

(3) Improvements of the empirical survey data on quantity and quality is required. First of all, due to insecurity in nostalgia proneness and relative and friend intensity and the emotional intensity in nostalgia intensity, there are problems on the scales themselves and that they need further improvements. Second, the number of the survey questionnaires and the proportion of valid questionnaires are limited. Under the conditions of human, material, and financial resources in the future, improvement of

survey data could be enhanced from quantity and quality. In the empirical study, cross-sectional data are used, and there would be great differences between different charitable organizations, so it is not appropriate to study and infer that nostalgic feelings have a significant effect on all donation behaviors. In future studies, we can demonstrate the relationship between nostalgic feelings and donation behavior of different organizations (such as alumni associations and various disease foundations).

(4) There exist many other influencing factors that need to be developed about online donation willingness. For example, what roles do response cards and letters of thanks that donors receive play in the model of donation decision-making? Does receiving letters of thanks have a significant impact on future donations? Is there any difference in the attitude on letters of thanks between donors with low frequency and high frequency? In addition, is it possible that donation behaviors stem from religious beliefs or donation habits? Would they last? Would the habit be interrupted by indifferent attitudes charity organizations hold? Would the relationship commitment of donors be improved if charitable organizations promise them in advance? Further research is needed to demonstrate the abovementioned issues.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

YZ was responsible for determining the theme and completed most of the writing. WT was responsible for issuing and collecting the data and completed data analysis. Both authors contributed to the article and approved the submitted version.

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Research on the Impact of the Strength of Channel Conflict on Cross-Channel Integration: The Mediating Effect of Channel Fluency and Stability

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Based on event system theory, we explore the effect of the strength of channel conflict on cross-channel integration from the perspective of manufacturers, and then analyzes the mediating effect of channel fluency and channel stability. Taking manufactures who implement cross-channel integration as research samples, and basing the data collected from 229 respondents, the study uses multiple regression analysis and Bootstrap method to test the research hypotheses. The empirical research findings show that: the strength of channel conflict plays a negative role on channel fluency and channel stability; the strength of channel conflict has a double-edged sword effect on cross-channel integration: it can reduce cross-channel integration by destroying channel fluency, and at the same time can improve cross-channel integration by destroying and reducing channel stability.

Keywords: the strength of channel conflict, channel fluency, channel stability, cross-channel integration, mediating effect

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INTRODUCTION

With the acceleration of technological advancement and the continuous promotion of digital trends, the integration and interaction between traditional channels and e-commerce channels have gradually become the norm of enterprise operation (Zhang et al., 2017), making cross-channel integration an important factor for enterprises to maximize their overall profits (Berger et al., 2006; Yan et al., 2010). However, some enterprises have encountered many difficulties in channel transformation, and even the operation of their original marketing channels is also affected. For instance, the main reason for Mecox Lane delisting in 2014, the first enterprise of B2C e-commerce in China, can be attributed to the weak linkage and mutual restraint in its multi-channel sales model of "network + store + telephone mail order", resulting in frequent channel conflicts and eventually hindering effective integration, which undoubtedly has a great impact on the development of enterprises. Therefore, the research on the relationship between channel conflict events and cross-channel integration provides a theoretical basis for improving the degree of cross-channel integration and promoting the development of enterprises.

At present, most domestic and foreign studies focus on the subsequent effects of cross-channel integration, mainly from the two aspects of consumers and enterprises. For enterprises, cross-channel integration plays a significant role in enterprise financial performance and enterprise ability. Specifically, cross-channel integration can promote profits and improve sales revenue through the consistency of advertising information in different channels (Berger et al., 2006; Pentina and Hasty, 2009; Cao and Li, 2015) and also stimulate the growth of enterprise performance by strengthening the exploitation and exploration ability of enterprises (Oh et al., 2012). For consumers, cross-channel integration exerts certain impacts on their cognition, attitude, and behavior of consumers. Specifically, the integration of online and offline channels can reduce the perceived psychological risk brought by a single channel to consumers, improve the perceived trust and perceived control level (Bendoly et al., 2005), then further promote the cross-channel purchase intention, arouse a good perception of online channel marketing (Tang et al., 2018), and finally promote cross-channel customer retention and actual purchase (Sha and Liang, 2015). Currently, few scholars pay attention to the antecedents of cross-channel integration. The existing literature mainly discusses the internal factors and external environmental factors of enterprises. In terms of the internal factors of enterprises, the relevant researches mainly focus on the promoting effects of e-commerce strategy, IT capability, and relationship governance capability on cross-channel integration. Specifically, the online and offline channel internalization strategy of enterprises can improve cross-channel integration in multiple stages of commodity sales (Wu and Wu, 2015), while the diversification strategy has an inverted U-shaped impact on cross-channel integration (Cao and Li, 2018). Meanwhile, IT hardware equipment and software capability in the channel system promote the docking of data and business and then improve the processes of cross-channel integration (Luo et al., 2016). In terms of the external environment of enterprises, institutional pressure and industry concentration have a complex impact on cross-channel integration (Zhang et al., 2020). Imitation pressure, mandatory pressure, and normative pressure all positively affect the degree of cross-channel integration, while industry concentration weakens the positive impact of financial resources on cross-channel integration.

Through literature review, it is found that domestic and foreign scholars pay more attention to the subsequent results of cross-channel integration, forming a rich theoretical system from the perspective of enterprises and consumers. However, relatively little is known about antecedents of cross-channel integration. The complex economic relations brought by channel marketing will naturally lead to frequent channel conflicts (Liu et al., 2020). Especially in the context of multi-channel operation, the level of channel conflict is higher (Webb and Lambe, 2007). Hence, the impact of channel conflict on cross-channel integration should be highlighted. Academic scholars have certain attention regarding the impact of channel conflict on channel development in the context of cross-channel integration. For example, it has been reported that channel conflict exerts an inhibitory effect on channel performance (Zhang and Fan, 2020), and channel segmentation and differentiation can reduce channel conflict to a certain extent (Fürst et al., 2017). Nevertheless, with the increasingly complex channel relationship, the cross-channel integration of most enterprises demands gradual promotion and progressive development (Zhang et al., 2010; Cao and Li, 2015; Cui and Shi, 2020). The impact of channel conflict on cross-channel integration and its process mechanism lacks extensive attention. In particular, the fluency and stability of channel operation play an important role in the cooperation, coordination, and enthusiasm of channel members (Bu, 2001), so it is necessary to pay attention to the dynamic and complex role of the above channel operation status. In addition, since most scholars analyze cross-channel integration from the perspective of consumers or retailers, the research on cross-channel integration from manufacturers is insufficient. In the face of increasingly diversified marketing channels in the manufacturing industry, there is an urgent need for the relevant analysis of cross-channel integration from the perspective of manufacturers.

Thus, this study explores the effect and mechanism of channel conflict events of manufacturer enterprises on cross-channel integration in the Chinese context. Moreover, this study investigates the mediating role of channel fluency and channel stability based on the dynamic perspective and event system theory, with the aim to open the black box between channel conflict and cross-channel integration and also theoretically refine and deepen the cognition of cross-channel integration process of manufacturer enterprises. The main contributions of this study are as follows: firstly, this study introduces the event system theory to explore the complex impact of channel conflict on cross-channel integration, which expands the research on the antecedents of cross-channel integration and further enriches the content of channel integration marketing; secondly, this study explores the mechanism of channel fluency and channel stability in channel conflict and cross-channel integration, which provides enlightenment for manufacturers' practice of cross-channel integration in China.

THEORETICAL BASIS AND RESEARCH HYPOTHESIS

Related Theories and Concepts

Event System Theory

Event system theory holds that the interaction between entities in an organization can produce a large number of events. Events are the dynamic experience of entities, which occur on a specific occasion and time. Specifically, the event system theory highlights the dynamic impact of the essential attributes of events on the organization and explains the subsequent impact of events on the organization from the strength attribute of events (Morgeson et al., 2015). Besides, cross-channel integration is a process of progressive development of multiple channel governance in enterprises. The strength of an event mainly includes novelty, disruption, and criticality (Liu and Liu, 2017). According to the applicable conditions of event system theory, channel conflict, as the key frequent event of a specific time period in the initial stage of cross-channel integration, has the identifiability of time period, reflecting the cross-time characteristics; channel conflict also affects entities inside and outside the organization (consumers, marketing channels, and employees), reflecting the cross-spatial characteristics. Therefore, the event system theory contributes to explaining how channel conflict events affect entities under the trend of digitization, which provides a proactive perspective for us to explore the impact of channel conflict events on cross-channel integration.

Event system theory confers a theoretical framework composed of event attributes, which not only advocates the study of the characteristic attributes of events but also emphasizes that events are the external dynamic experience of entities (Morgeson et al., 2015), thereby providing a novel perspective for the study of the effect and mechanism of channel conflict on cross-channel integration. According to the definition of event strength attribute in event system theory, the strength attribute of channel conflict event mainly includes the following three aspects: (1) novelty reflects the degree of difference between an event and past behavior and characteristics, representing a new phenomenon. Different from the conflict event in a vertical channel of "supplier-dealer", the channel conflict in the context of cross-channel integration represents a multi-channel conflict, which has been widely concerned by manufacturers; (2) criticality reflects the importance, necessity, or priority of an event. In cross-channel integration, the complex economic relations brought by several channels of the enterprise are bound to form the objective fact of frequent channel conflicts (Webb and Lambe, 2007; Liu et al., 2020), which further affects the coordination between different channels and eventually destroys the development of channels. Therefore, enterprises must invest more resources and energy to deal with channel conflicts; (3) disruption refers to the extent to which events disrupt and subvert the regular activities of entities. After experiencing channel conflict events, the organization will change and adjust the existing channel mode or characteristics. This paper takes the event system theory as the main theoretical basis for establishing the model to analyze the impact of the strength of channel conflict events on cross-channel integration.

Cross-Channel Integration, Channel Fluency, and Channel Stability

Cross-Channel Integration

The evolution process of enterprise channel has experienced the stages of a single channel, double channel, and multi-channel. More and more scholars begin to pay attention to the role of cross-channel integration in channel development. Most domestic and foreign scholars define cross-channel integration based on the consumer shopping experience and satisfaction (Goersch, 2002; Berman and Thelen, 2004; Zhou et al., 2017; Ren, 2018). A small number of scholars who have developed research on cross-channel integration from the firm's perspective. Lee and Kim (2010) argue that the core of cross-channel integration includes enhancement, synergy, reciprocity and complementarity between the firm's channels; Cao and Li (2015) argue that cross-channel integration describes the extent to which a firm designs and deploys multiple channels to create synergies for the firm and provide special benefits to consumers by coordinating channel objectives the extent to which it provides specific benefits to consumers. Zhuang et al. (2019) provides a broader and more comprehensive explanation for cross-channel integration from the perspective of enterprises and emphasizes that cross-channel integration is reflected in the effective cohesion and mutual empowerment of channel functions through the management and coordination of different channels and media to improve enterprise performance and meet the needs of consumers.

Channel Fluency and Channel Stability

The operation status of the channel represents a series of performances of channel members in cooperation, coordination, and enthusiasm (Bu, 2001). In the cross-channel situation, the channel operation status can be reflected by channel fluency and channel stability, mainly due to:

Channel fluency refers to the continuity and smoothness of cross-platform transformation and task migration (Tian et al., 2014), which is closely related to the fluency of task migration, the continuity of content exploration, and the continuity of interaction, and can effectively measure the degree of channel function cohesion and mutual empowerment. SHEN Shen et al. (2018) and Liu (2020) analyzed the positive role of fluency in promoting omni-channel services from the perspective of consumers and expanded the application of fluency in cross-channel integration. However, channel fluency is not only an important experience for consumers in cross-channel shopping but also a crucial reference for the operation status of internal channels of enterprises (Bu, 2001). The existing research on channel fluency from the perspective of enterprise is still insufficient, so it is necessary to stimulate the research on channel fluency based on a broader perspective of enterprise management.

Channel stability is often defined as the tendency of channel members to develop close interaction and create value through cooperation (Liu et al., 2009). Tian et al. (2014) and Xie and Li (2019) studied the stability between channel members in the context of vertical channels and pointed out that the higher the level of conflict between the enterprise and the upstream and downstream of the supply chain, the higher the default tendency among channel members, or even leading to no longer continuing the contract, and the enterprise needs to pay a huge coordination cost to solve the channel dilemma. The current research on channel stability is mostly carried out in the context of vertical channels. However, the core content of intimate interaction and value co-creation in channel stability is closely related to cross-channel integration. Therefore, strengthening the relevant research in the context of cross-channel integration possesses certain theoretical significance and practical value.

Effect of the Strength of Channel Conflict on Cross-Channel Integration

According to the event system theory, we should not only explore the impact of events on the organization as a whole but also explain the impact of events on organizational behavior from the strength attribute of events (Morgeson et al., 2015). Compared with the channel relationship of "manufacturer-supplier", the frequency of channel conflicts caused by resource problems is higher in the context of complex economic relationships resulting from enterprise multi-channel (Webb and Lambe, 2007; Liu et al., 2020). The channel conflict under multi-channel operation is more complex, and its novelty, disruption, and criticality are stronger. Hence, the organization needs to invest more resources to deal with it, which greatly affects the existing channel mode and status and impairs the development of organization channels. Moreover, resource allocation theory emphasizes that when scarce resources cannot maintain the best proportion and value tendency, it will hinder enterprises from achieving good performance and undermine the growth of enterprises (Hitt et al., 2001; Greenwood et al., 2011). Wang and Zhao (2010) and Fürst et al. (2017) pointed out that the reason for the conflict may be that the internal channel organization of the enterprise gives top priority to the interests of its own channel, does not abide by the treaties concluded with other channels, competes for customers or other important resources, and finally destroys the allocation of enterprise channel resources.

In the complex channel relationship of cross-channel integration, the competition between channels for customer groups or other key resources (Zhuang and Zhou, 2002) affects the rational allocation of original channel resources, hinders the development of enterprise channel integration, destroys the growth of the channel system, and makes the channel lose its unique competitiveness. Therefore, the higher the strength of channel conflict, the stronger the obstacles to the development of each channel subject, which impedes the smooth operation of the channel, consumes huge resources within the enterprise, and finally hinders the successful integration of cross-channels. Therefore, hypothesis 1 (H1) is proposed.

H1: The strength of channel conflict negatively affects the degree of cross-channel integration.

Effect of the Strength of Channel Conflict on Channel Fluency and Channel Stability

For multi-channel enterprises, channel fluency and channel stability are important manifestations of channel operation status (Bu, 2001). Generally, when all channels communicate well and take the interests of the overall channel system first, the interdependent relationship between multiple channels will be consolidated, the continuity of task migration and exploration of different channels will be strengthened, and the fluency and stability of channels will be improved.

Combined with the channel behavior theory and event system theory, it is considered that after the channel conflict event, the trust and mutual loyalty between members are greatly reduced. The channel conflict event mainly comes from when one channel member perceives that other channel members hinder them from achieving their own goals or business performance (Zhuang, 2000). Therefore, the high-strength channel conflict aggravates the relationship crisis between channel subjects and blurs the clear cognition of internal channels on their own tasks (Xie and Li, 2019). Also, channel conflict events urge channel members to shift their focus from the overall interests of the channel to individual interests and destroy the inherent multi-channel cooperative operation mode (Dong et al., 2016), and the relationship between channel members becomes tense or even stagnant. Channel fluency and channel stability are vital manifestations of channel coordination and intimate interaction (Tian et al., 2014; Liu, 2020). The negative behavior of putting personal interests first caused by conflict can further hinder the stable operation of internal channels, destroy the operation fluency of the overall channel system and the facilitation of information processing, and further weaken the supporting function of consumers for continuous cross-platform transformation and task migration (Liu, 2020). On the contrary, the smaller the strength of channel conflict, the better the channel operation status and the healthier the channel relationship. Therefore, the high strength of enterprise channel conflict is not conducive to the efficient cohesion and empowerment of channel functions, nor to the formation of the tendency of creating value jointly among channel partners, which finally accelerates the destruction of the fluency and stability of internal channel operation. Therefore, H2 and H3 are proposed.

H2: The strength of channel conflict negatively affects channel fluency.

H3: The strength of channel conflict negatively affects channel stability.

Effect of Channel Fluency and Channel Stability on Cross-Channel Integration

Event system theory holds that there is an interpretation process between the occurrence of events and entity behavior, and also emphasizes that events should be taken as a whole to explore their impact on the organization and the impact process of events on the organization should be explained from the attribute of event strength (Morgeson et al., 2015). As mentioned above, cross-channel integration highlights the effective cohesion and mutual empowerment of enterprise channel functions by synthesizing several components of the marketing channel system into a new unified whole to realize organizational change and rapid integration (Cao and Li, 2018). Channel fluency and channel stability are different manifestations of channel operation status and also have different effects on cross-channel integration.

Effect of Channel Fluency on Cross-Channel Integration

Previous studies have demonstrated the close relationship between channel fluency and cross-channel integration (Shen et al., 2018; Liu, 2020), and it is speculated that channel fluency plays a mediating role between channel conflict and cross-channel integration. Specifically, the conflict between channels reduces the fluency of task migration between channels and then affects the cross-channel integration of enterprises. Channel fluency is the key factor of channel integration (Liu, 2020). The effective interaction and efficient communication and information transmission between different channels of enterprises accelerate the development of channels (Shen et al., 2018) and finally optimize and deepen the degree of cross-channel integration. The impact of channel fluency on cross-channel integration is mainly reflected in: when the channel fluency is enhanced, the information consistency of various products in multiple channels will be improved, and the sharing, cooperation, and complementarity of channel information and functions will also be strengthened. For instance, manufacturers establish online and offline sales channels to maximize profits. Due to the strong multi-channel coordination and the high continuity and fluency of cross-channel information transformation and task migration, the product or service information of online channels can be transformed and synchronized to offline channels more quickly and efficiently, so as to realize cross-channel sharing; meanwhile, offline channels can provide customers with "experience" services, while online channels can realize better "promotion" functions for enterprise products. Both online and offline channels empower each other, maximize their respective channel advantages, and realize cross-channel complementarity and cooperation. Hence, the impact of channel conflict on cross-channel integration is mainly realized through the mediating of fluency among channel members within the enterprise. In the process of multi-channel operation, channel conflict will gradually affect the fluency of multi-channel task or information service migration, destroy the cooperation of resources and functions of different channels, hinder the further interaction and development between channels, and reduce the degree of cross-channel integration. Therefore, H4 is proposed.

H4: Channel fluency positively affects cross-channel integration and plays a mediating role in the relationship between the strength of channel conflict and cross-channel integration.

Effect of Channel Stability on Cross-Channel Integration

On the one hand, the stability between the internal marketing channels of enterprises is conducive to saving transaction costs and helping channel members recognize their own roles and tasks (Tian et al., 2014). On the other hand, channel stability is more likely to hinder the cross-channel integration process of enterprises, mainly because the stable relationship between existing channel partners tends to resist the change of major strategies to a certain extent (Bai, 2017), and then oppose organizational change and form inertia (Fu et al., 2019). For example, there may be an exclusion of the entry of new channel members or resistance to the change of existing channel structure, even if the emergence of new channels may increase the overall value of the channel. It conflicts with the idea of "organizational change" of accelerating the flattening and coordination of the whole channel system required for enterprise channel integration (Cao and Li, 2018), and the resistance to major strategic changes hinders the development of the organization (Bai, 2017), which is ultimately not conducive to the improvement of the degree of cross-channel integration. Notably, when the existing internal channels actively promote each other and maintain cross-channel operation through the current channel partnership, there will be no in-depth exploration of new models conducive to the whole cross-channel system, thereby reducing the overall value of the cross-channel system. Briefly, the existence of channel conflict can destroy the stability of channels and further affect the development of cross-channel integration. Thus, H5 is proposed.

H5: Channel stability negatively affects cross-channel integration and plays a mediating role in the relationship between the strength of channel conflict and cross-channel integration.

Conceptual Model

To understand the impact of channel conflict events on cross-channel integration dynamics, we adopt an event systems theory perspective (Liu and Liu, 2017), it combines strength attributes with channel conflict to investigate manufacturers' cross-channel integration processes based on a dynamic perspective, while examining the mechanistic role of channel fluency and channel stability in this context. We anticipated that the strength of channel conflict, channel fluency and channel stability serve as relevant antecedents of cross-channel integration (**Figure 1**).

RESEARCH METHODS

Sample Selection

This study took Chinese manufacturers implementing cross-channel integration as the empirical object and collected data from channel events and channel relations. In the process of issuing the questionnaire, the type of surveyed enterprises was strictly controlled, and the questionnaire was filled in by sales managers who were familiar with the situation of the enterprise. The questionnaire was mainly distributed through online channels, and after distribution, the samples were screened according to the answer time to ensure the effectiveness of the data. A total of 272 questionnaires were distributed and 229 were recovered, with a recovery rate of 84.19%. Sample distribution characteristics were shown in **Table 1**.

Most questionnaire respondents had been engaged in channel sales for more than 1 year, of which 19.56, 40.17, and 40.17% had been engaged in channel sales for more than 1–3, 4–6, and 7 years, respectively. In terms of the industry distribution, the surveyed enterprises were mainly the electronic product manufacturing industry, machinery manufacturing

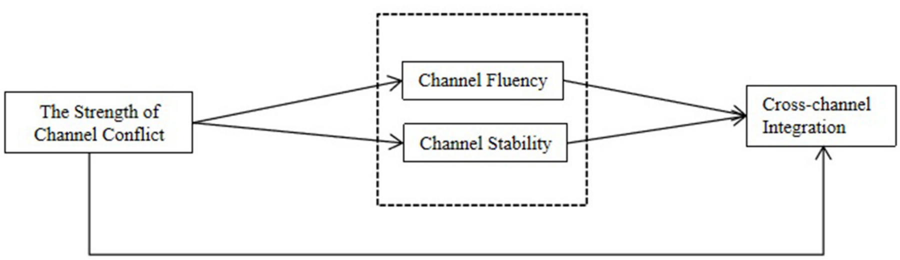

FIGURE 1 | Conceptual model of the impact of the strength of channel conflict on cross-channel integration.

TABLE 1 | Sample distribution features.

Types		Samples	Ratios/%	Feature variables		Frequency	Ratio/%
Industry	Textile and garment	33	14.41	Enterprise Size	<100	26	11.35
	Machinery	34	14.85		100–299	60	26.2
	Electrical	13	5.68		300–499	54	23.58
	Medical equipment	21	9.17		500–999	39	17.03
	Electronics	52	22.71		More than 1,000	50	21.83
	Food and beverage	16	6.99	Competitive position	Absolute advantage	3	1.31
	Software	31	13.54		Large advantage	59	25.76
	Household appliance	5	2.18		Small advantage	154	67.25
	Other	24	10.48		No advantage	11	4.8
Nature of business	Private enterprise	135	58.95		Disadvantage	2	0.87
	State-owned enterprise	52	22.71	Number of online platforms	<3	53	23.14
	Foreign-owned enterprise	26	11.35		3–5	118	51.53
	Joint-stock company	16	6.99		5–8	44	19.21
	Other	0	0		More than 8	14	6.11

industry, and textile and garment industry, accounting for 51.97% of the total sample; the software industry and medical equipment manufacturing industry accounted for 13.54 and 9.17%, respectively; the proportion of electrical appliance manufacturing industry, food and beverage industry, and household appliance manufacturing industry was small, with a total of no more than 15%. In terms of the nature of enterprises, the surveyed enterprises were mainly private enterprises and state-owned enterprises, accounting for 81.66%, which basically reflected the current situation of China's economic development.

Questionnaire and Variable Measurement

The questionnaire was mainly composed of four Likert scales, which were used to measure the strength of channel conflict, channel fluency, channel stability, and cross-channel integration, respectively. The scales consisted of several items, and the respondents need to score each item (1 = totally disagree; 2 = disagree; 3 = no opinion; 4 = agree; 5 = totally agree). All the scales had been used in previous studies and were modified based on the maturity scale according to the cross-channel integration research situation to meet the understanding habits of Chinese people. By referring to the event strength scale compiled by Liu Dong (Liu and Liu, 2017), the strength of channel conflict was measured from the novelty, criticality, and disruption of channel conflict events. By referring to the research of Shen et al. (2018), channel fluency was measured from three aspects: content fluency, process fluency, and task fluency. By referring to the research of Xie and Li (2019) and Tian et al. (2014), channel stability was inversely measured from the default tendency. By referring to the research of Zhuang et al. (2019), cross-channel integration was measured from cross-channel consistency, sharing, collaboration, and complementarity. In addition, this study controlled the possible effects of sales revenue (SR), number of online sales platforms (OSP), enterprise competitive position (CP), and market share (MS) on dependent variables.

Reliability and Validity of the Scale

The reliability test of the scale included the internal consistency coefficient Cronbach's α and construct reliability (CR). As shown in **Table 2**, the Cronbach's α of all variables was above 0.7, indicating good internal consistency reliability. Also, the CR value reflected whether all items in each variable were implemented to explain the variable, and the CR values of all scales in **Table 2** exceeded 0.7, indicating that all variables had good construct reliability.

In terms of validity, the model-fitting degree of confirmatory factor analysis was good, and the standard factor load of each item was greater than the threshold of 0.5. At the same time, the convergent validity was mainly based on the average variance extracted (AVE). It could be seen from the table that the AVE value of all scales was far greater than the critical value of 0.5. The mean, standard deviation, and correlation coefficient of variables are shown in **Table 3**.

Common Method Variance

As for the common variance caused by a single data source in the questionnaire survey, the Harman single factor test was performed to measure the degree of common variance in the data of this study (Podsakoff et al., 2003). The measurement items of all variables were put together for exploratory factor analysis. The results showed that there were eight factors with eigenvalues > 1, which explained 71.870% of the total variation. The first principal component load explained 13.363% of the total variation, which met the requirement that the first factor explained < 40% of the total variation, indicating that the common method variance was within the acceptable range.

RESULTS

We applied multiple regression and Bootstrap method to test hypotheses 1–5: the impact of the strength of channel conflict (CC) on cross-channel integration (CCI) and the mediating role of channel fluency (CF) and channel stability (CS), sales

TABLE 2 | Factor loading, reliability, and validity.

Variable		Item	Factor loading
The strength of channel conflict $\alpha = 0.903$ CR = 0.906 AVE = 0.617	CC1	The response to channel conflict incidents is not clearly knowable.	0.765
	CC2	Channel conflict incidents require new procedural steps to respond.	0.762
	CC3	Channel conflict events are important events for channel systems.	0.795
	CC4	Channel conflict events are of primary importance to the channel system.	0.779
	CC5	Channel conflict events change the way channel systems are used to working.	0.883
	CC6	Channel conflict events change the way channel systems respond.	0.720
Channel fluency $\alpha = 0.892$ CR = 0.938 AVE = 0.657	LC1	The company's operational systems support the smooth migration of consumers between different channels.	0.739
	LC2	The company's operational systems support consumers in successfully completing tasks across different channels.	0.898
	LC3	The company's operational system supports consumers' continuity of reading the service contents after channels transition.	0.741
	LC4	The company's multiple channels support consumers' continuity of exploring the service contents after channels transition.	0.803
	LC5	The company's operational systems support consumers' continuity of exploring services and information after channels transition.	0.779
	LC6	The company's operational systems support consumers in easily find the recent read contents after channels transition.	0.916
	LC7	The service across different channels are continuous.	0.770
	LC8	The service across different channels are interconnected.	0.817
Channel stability $\alpha = 0.875$ CR = 0.875 AVE = 0.700	CW1	The company's channels may not operate in full compliance with the agreed requirements between channels.	0.822
	CW2	During the operation of each channel, things may happen that are not allowed by channel agreement.	0.880
	CW3	Orders are continued when there is an order that increases the revenue of a channel but conflicts with the engagement.	0.807
Cross-channel integration $\alpha = 0.909$ CR = 0.943 AVE = 0.599	CCI1	The company's brand name, tagline and logo are consistent across multiple channels.	0.734
	CCI2	The description of the product is consistent across multiple channels.	0.813
	CCI3	The company's products are sold at the same price across multiple channels.	0.806
	CCI4	The company's promotional messages are consistent across multiple channels.	0.797
	CCI5	The company's operational system supports the sharing of inventory information across channels.	0.826
	CCI6	The company's operational system supports the sharing of logistics information across channels	0.816
	CCI7	The company's operational system supports the sharing of information on user orders across all channels.	0.722
	CCI8	The company's operational system supports users to check product sales information of offline channels through online channels.	0.702
	CCI9	The company's operational system supports inter-regional delivery according to customer orders.	0.813
	CCI10	The company's operational system supports users to earn points and coupons, which can be used in all channels.	0.753
	CCI11	The company's operational system supports different payment methods for users (online payment, cash on delivery, etc.).	0.720

(Continued)

TABLE 2 | Continued

Variable		Item	Factor loading
	CCI12	The company's operational system supports online purchases for physical shop pick-up, returns or repairs.	0.685
	CCI13	The company's online channel provides a 24-h service for consumers in physical shops.	0.804
	CCI14	The company sells some special products through online channels (low sales in physical shops or specific user products).	0.738
	CCI15	The company's offline channel can provide consumers with product experience services.	0.735
Model fit	X^2/df = 1.368, RMSEA = 0.040, GFI = 0.929, CFI = 0.980, NFI = 0.932		

TABLE 3 | Means, standard deviations, and correlation coefficients of variables.

Variable	Mean	SD	The strength of channel conflict	Channel fluency	Channel stability	Cross-channel integration
The strength of channel conflict	2.448	0.892	**0.785**			
Channel fluency	4.008	0.625	−0.422**	**0.711**		
Channel stability	2.818	0.994	−0.281**	0.110	**0.837**	
Cross-channel integration	4.106	0.557	−0.386**	0.579**	−0.076	**0.774**

*** denotes p < 0.01; the value on the diagonal is the square root of the corresponding variable AVE. The bold values indicate the square root of the corresponding variable AVE.*

revenue (SR), number of online sales platforms (OSP), enterprise competitive position (CP), and market share (MS) were used as control variables. The specific results are shown in **Table 4**.

The impact of the strength of channel conflict on enterprise cross-channel integration was analyzed using model 2 with CCI as the dependent variable in **Table 4**. The results showed that there was a significant negative correlation between the strength of channel conflict and cross-channel integration, and the standardization coefficient was −0.376 ($p < 0.001$), that is, the higher the conflict strength between enterprise channels, the less conducive to enterprise cross-channel integration. Thus, Hypothesis 1 was supported.

The impact of the strength of channel conflict on channel fluency was analyzed using model 4 with CF as the dependent variable in **Table 4**. The results showed that there was a significant negative correlation between the strength of channel conflict and channel fluency, and the standardization coefficient was −0.397 ($p < 0.001$). The impact of the strength of channel conflict on channel stability was analyzed using model 4 with CS as the dependent variable in **Table 4**. The results showed that the standardization coefficient was −0.272 ($p < 0.001$), indicating a significant negative correlation between the strength of channel conflict and channel stability. Thus, Hypothesis 2 and Hypothesis 3 were supported.

According to model 3 with CCI as the dependent variable in **Table 4**, the impact of channel operation status on enterprise cross-channel integration was analyzed. The data showed that the standardization coefficient of channel fluency and cross-channel integration was 0.498 ($p < 0.001$). It could be concluded that there was a significant positive correlation between channel fluency and cross-channel integration, that is, the higher the operation fluency between internal channels of the enterprise, the greater the degree of cross-channel integration. The data of model 3 showed that the standardization coefficient of channel stability and cross-channel integration was −0.189 ($p < 0.001$), which indicated that there was a significant negative correlation between channel stability and cross-channel integration, that is, the higher the stability of internal channels, the lower the degree of cross-channel integration. Therefore, the first half of Hypothesis 4 and Hypothesis 5 was supported, and the mediating role of channel stability and channel fluency in the second half will continue to be verified in combination with the multiple mediating effect test.

We followed the mediating effect test method of Wen and Ye (2014) and used the Bootstrap test. We performed repeated sampling 5,000 times, calculated the 95% confidence interval of the mediating effect, and established a mediating model to investigate the mediating relationship between channel fluency and channel stability in the strength of channel conflict and cross-channel integration. If the 95% confidence interval did not include 0, it indicates that the mediating effect was significant. Wen and Ye (2014) proposed that: (1) if the study is based on mediating effect, it should be explained according to the symbols of *ab* and *c'*; (2) further, if *ab* and *c'* have the same sign, it is explained as mediating effect; if *ab* has a different sign from *c'*, it belongs to masking effect.

As shown in **Table 5**, the effect size of the indirect effect 1 composed of the strength of channel conflict, channel fluency, and cross-channel integration was −0.198 and the Bootstrap 95% confidence interval did not include 0, indicating that its indirect effect was significant. The Bootstrap 95% confidence interval of direct effect did not include 0, indicating that the direct effect was significant and there might be other mediators. The same sign of *ab* and *c'* was finally explained as a partial mediating effect. Therefore, channel fluency had a significant indirect mediating effect on the the strength of

TABLE 4 | Regression analysis results.

Variable	Hypothesis	CCI			CF	CS
		Model 1	Model 2	Model 3	Model 4	Model 5
Independent variable						
CC	H1		−0.376***	−0.229***	−0.397***	−0.272***
CF	H2			0.498***		
CS	H3			−0.189***		
Control variable						
SR		−0.107	−0.065	−0.047	−0.019	0.048
OSP		0.054	0.130*	0.124	−0.016	−0.074
CD		0.104*	0.147*	−0.055	0.396***	−0.028
MS		0.161**	0.127*	0.0962*	0.074	0.033
R^2		0.051	0.186	0.410	0.239	0.086
F		3.036*	10.209***	21.905***	13.974***	4.202**

****, **, *, respectively, denote $p < 0.001$, $p < 0.01$, $p < 0.05$.*

TABLE 5 | Intermediary analysis results.

	Effect	Boot SE	Boot LLCI	Boot ULCI
Total effect	−0.376	0.062	−0.497	−0.254
Total indirect effect	−0.146	0.050	−0.250	−0.054
Direct effect	−0.229	0.060	−0.347	−0.112
M1 (CF)	−0.198	0.045	−0.295	−0.119
M2 (CS)	0.051	0.020	0.019	0.094

channel conflict and cross-channel integration. Thus, Hypothesis 4 was fully supported.

The effect size of the indirect effect 2 composed of the strength of channel conflict, channel stability, and cross-channel integration was 0.051, and the Bootstrap 95% confidence interval did not include 0, indicating that its indirect effect was significant. The Bootstrap 95% confidence interval of direct effect did not contain 0, indicating that the direct effect was significant and there might be other mediators. The different signs of *ab* and *c'* were finally explained as a partial masking effect. Therefore, channel stability had a masking effect on the the strength of channel conflict and cross-channel integration. Thus, Hypothesis 5 was fully supported.

DISCUSSION

Based on the event system theory and channel behavior theory, this study investigates the effectt of the strength of channel conflict on cross-channel integration and reveals the transmission path of channel fluency and channel stability among the above effects. The results demonstrate that the strength of channel conflict has a direct negative impact on cross-channel integration and also affects cross-channel integration through the indirect effects of channel fluency and channel stability.

The high strength of channel conflict has a significant negative impact on cross-channel integration. In the process of promoting cross-channel integration, especially in the early stage of integration, high strength of channel conflict is inevitable. The main reason is that the market subject has a strong profit motive under the cruel market competition. Generally speaking, when the offline physical sales channels of enterprises are relatively mature, they will expand online or other multi-channels. Manufacturers need to invest a lot of resources to operate new sales channels, which may damage the interests of existing mature channels. When one of the channel partners does not consider the benefits of the overall channel system and operates with personal interests first, it is very easy to destroy the effective cooperation, functional complementarity, and external consistency of information between internal channels. Therefore, the higher the strength of channel conflict, the more unfavorable it is for manufacturers to improve cross-channel integration.

Channel fluency has a significant positive impact on cross-channel integration. The fluent operation among internal channels reflects the performance of channel members in cooperation, coordination, and enthusiasm. When the fluency of interaction among internal channel members is high, the content interaction difference is small, the continuity of the handover process is strong, and the obstacles to consumer task migration are less, which can greatly promote the effective cohesion and mutual empowerment of channel functions and also improve the possibility of coordinating and managing multiple channels and media. In the context of cross-channel integration, the fluent operation among internal channels determines whether the handover and cooperation among channel members can go on smoothly, which is closely related to the idea of integration. Therefore, channel fluency can strengthen the effectiveness of communication between channels, strengthen interaction efficiency, and finally improve the degree of cross-channel integration.

Channel stability has a significant negative impact on cross-channel integration. The main manifestation of channel stability is that channel members have a weak tendency to default, a strong willingness to renew contracts, and a high acceptance of mutual cooperation. In the context of cross-channel integration, the stability of internal channel membership may be caused by the following reasons: the existing internal sales channels of the enterprise are used to the current channel operation mode, and maintaining the existing channels is more important than looking for new channels; in addition, there are many uncertainties, risks, and obstacles in finding new channels. On the one hand, a stable organizational relationship is a basis for channel learning. On the other hand, it hinders the generation of new ideas, leads to "narrow" and "inertia" of the system, and eventually weakens enterprise innovation (Fu et al., 2019). However, organizational innovation is one of the core ideas in cross-channel integration. How to better complement the different functions of the manufacturers' channel system and share information to the greatest extent is the inevitable focus of cross-channel integration. Thus, the channel stability will reduce the perception of the channel organization to the environment, form certain organizational inertia, and finally reduce the degree of cross-channel integration.

The strength of channel conflict can further affect cross-channel integration through channel fluency, which plays a partial mediating role. Channel conflict events hinder channel fluency and reduce cross-channel integration. In the research of channel behavior, the complex channel relationship brought by cross-channel integration is bound to bring high strength of channel conflict (Webb and Lambe, 2007). Fluency is widely regarded as a key factor in shaping trust, positive emotion, and perceived cognitive effort, and is ultimately the result of choice in the context of online shopping (Mosteller et al., 2014). Therefore, the higher the strength of channel conflict between the two sides of the channel, the weaker the fluency of interaction between the two sides, reducing the possibility of consumers' multi-channel shopping and hindering cross-channel integration. It is indicated that high strength of channel conflict events increase the difficulty of cross-channel information transmission, while inefficient cross-channel communication further reduces cross-channel integration.

The strength of channel conflict can further affect cross-channel integration through channel stability. Channel stability has a masking effect on the relationship between the strength of channel conflict and cross-channel integration. Firstly, high strength of channel conflict hinder channel stability. Channel stability means that channel partners have close cooperation relationships and have an in-depth intention to continue cooperation. High strength of channel conflict is manifested in disputes over important matters between channel partners due to unequal power or competing for the same customer group, and even the rupture of the relationship, which seriously deviates from the core of channel stability. Therefore, high strength of channel conflict generated in the context of cross-channel integration is easy to stimulate dissatisfaction between the two sides, destroy the intimate interaction, and hinder the stable development of channel partners. Secondly, the masking effect of channel stability is mainly reflected in that the direct effect value (*c*') of the strength of channel conflict on cross-channel integration is opposite to the indirect effect value of channel stability (*ab*). In the path of "the strength of channel conflict-cross-channel integration", the strength of channel conflict has a significant negative effect on cross-channel integration, that is, reducing the strength of channel conflict will enhance the degree of cross-channel integration. After introducing the channel stability variable, in the path of "the strength of channel conflict-channel stability-cross-channel integration", reducing the strength of channel conflict will reduce cross-channel integration by enhancing channel stability, which is contrary to the transmission result of the previous path, that is, the relationship between the strength of channel conflict and cross-channel integration is covered up.

CONCLUSION AND LIMITATIONS

To conclude, this study discusses how the strength of channel conflict affects cross-channel integration. The channel fluency and channel stability of channel operation status play a mediating and masking role between the strength of channel conflict and cross-channel integration, respectively. The strength of channel conflict can hinder cross-channel integration by reducing channel fluency, and the strength of channel conflict can also improve the degree of cross-channel integration by reducing channel stability. Therefore, to promote the development of manufacturers' cross-channel integration, we need to fully consider the different effects of the two channel operation statuses on cross-channel integration, effectively reduce the adverse factors of channel conflict events on cross-channel integration, and minimize its negative effects.

This study has certain theoretical significance. (1) This study carries out a relevant analysis of channel events from the perspective of a dynamic process, deeply discusses the complex role of the strength of channel conflict in China's multi-channel operation on channel operation status and cross-channel integration, and further enriches the research perspective of multi-channel. (2) This study reveals the impacts of different channel operation statuses by investigating the relationship between different channel operation statuses and cross-channel integration, which helps to enrich the relevant empirical research of cross-channel integration.

The conclusion of this study has certain reference significance for management practice. (1) Multi-channel conflict events have a significantly destructive effect on cross-channel integration. The higher the strength of channel conflict, the more channel members consider their own interests first rather than the overall development of the channel, which further destroys the interaction fluency between channels, makes it difficult to support consumers to continue cross-channel shopping, and finally hinders the improvement of cross-channel integration. Therefore, the managers of multi-channel manufacturers should strengthen the communication and coordination between emerging channels and traditional channels, try to reduce the contradictions and frictions between channels, and refine the daily maintenance of channels. According to the different characteristics of emerging channels and traditional channels, effective functional segmentation and reasonable positioning should be performed to cover and serve the consumer groups with different characteristics, give full play to their complementarity, and guide the cooperation and coordination among channels, so that there is no single conflict between channels, but competition based on cooperation and finally win-win results. (2) Considering the negative effect of channel stability on cross-channel integration, we should pay more attention to the stable cooperative relationship between channel members on the basis of reducing the adverse impact of high-level channel conflict on cross-channel integration, because the stability of the relationship between channel members is not conducive to the development of cross-channel integration. Manufacturers' managers should always put the overall interests of the channel first, actively innovate organizational norms, flexibly respond to the external market environment, break the relationship inertia and the existing stable channel network relationship, and promote the renewal and development of the cross-channel integration system. (3) Due to the rise and development of internet technology and online shopping, more e-tailers have emerged. The presence of e-retailers, who have been selling on online platforms since their inception, puts more pressure on manufacturers to integrate across channels. Manufacturers need to look at channel conflicts dialectically and use them wisely. In practice, it is important to use established offline channels to attract consumers to online channels in order to capture more of the online market demand. At the same time, manufacturers need to break out of the inertia and stability of their existing channels and actively build and embrace new online channels in order to better promote cross-channel integration, given that their channels are more likely to be stable than those of e-tailers.

This study also has some limitations. (1) This study adopts unilateral and single-time data and only measures the variables from only one side of the channel members. In the future, multilateral and multi-time series data should be used to make the results more credible. (2) This study only considers the role of channel fluency and channel stability among the above influencing mechanism, without considering the influence of other channel factors. Future research can further explore the regulatory role of channel width, channel breadth, or channel mode on the transmission mechanism of cross-channel integration. (3) In the context of the vertical channel, channel conflict has both destructive and constructive effects on channel development. In the context of cross-channel integration, whether channel conflict events also have a non-linear relationship with cross-channel integration is also a key issue to be determined in the future.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/ participants or patients/participants legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

W-WD finished study design. W-WD and Q-yL finished data analysis. Q-yL finished manuscript editing. All authors read and approved the final manuscript.

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"Wow! It's Cool": How Brand Coolness Affects the Customer Psychological Well-Being Through Brand Love and Brand Engagement

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In this era of razor-edge competition, marketers strive to outperform their rivals by improving their brands. Increasing brand coolness may be the best way to do it. This study used a stimulus organism response (SOR) model by integration with brand attribution theory to conduct a cross sectional study using purposive sampling technique and surveying young consumers of smart gadgets in Pakistan. A total of 1,178 responses were received and analyzed by structural equation modeling. The results found a positive impact of brand coolness (stimulus) on brand love and brand engagement (both modeled as organism). Brand experience moderated these links. Brand love and brand engagement also mediated the relationship between brand coolness and consumer well-being and delight (both modeled as response). The findings suggest a very important contribution to theory and practice by testing unexploited outcomes of brand coolness. Especially, this study contributes to the consumer well-being literature, again an unexploited aspect of marketing literature. Despite the uniqueness of the findings, the cross sectional design of this study remains a major limitation. Future research may supplement the findings with the help of longitudinal studies. Marketers and practitioners may benefit from this study by improving the coolness of their brands so they may not only increase consumer engagement with the brand but they will also make consumers happy with their brands.

Keywords: brand coolness, brand love, brand engagement, consumer well-being, customer delight

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INTRODUCTION

The extant literature has always focused on consumer satisfaction as an ultimate objective of marketing function. However, recent scholarship argues that market forces such as enhanced competition, technological changes, globalization, and evolving customer expectations have changed the landscape of consumer satisfaction (Wilder et al., 2014). Over a period of time, both researchers and practitioners have understood the fact that satisfaction, although important, is not enough to garner customer long-term loyalty and repurchase behaviors (Pansari and Kumar, 2017).

Thus, "the goal of organizations has evolved from relationship marketing to engaging customers in all possible ways" (Pansari and Kumar, 2017; Rosado-Pinto and Loureiro, 2020). The field of marketing has also progressed much in terms of managing customers. For example, traditional transactional approach was adopted, followed by relational approach in which developing a long-term profitable relationship is a prime focus. Now, the current era is said to be the era of customer engagement (Pansari and Kumar, 2017). This approach, i.e., customer engagement approach, is being considered very important for attaining a competitive edge (Kumar and Pansari, 2016; Alvarez-Milán et al., 2018), as it has a positive influence over relevant attitudes and behaviors such as satisfaction (Brodie et al., 2013), loyalty (Hollebeek, 2011), and brand usage (Hollebeek, 2011). Resultantly, practitioners are emphasizing something beyond mere satisfaction and consider customer delight as its alternative.

The ultimate purpose of human activity has always been to achieve great happiness. Numerous economists, psychologists, and sociologists, among others, have emphasized the significance of understanding human happiness or well-being (Diener and Seligman, 2002). In the past, marketing research has focused on achieving consumer joy, building customer loyalty (Netemeyer et al., 2004), and motivating consumers to repurchase and re-adopt (Hellier et al., 2003), whereas recent studies on consumer behavior and brand consumer relationships has begun to focus on consumer well-being (Mogilner et al., 2012). The concept of customer well-being influences not only brand loyalty but also how consumers choose products and spread word of mouth (Schnebelen and Bruhn, 2016). Researchers have also looked at what makes consumers happy at different stages of their consumption (El Hedhli et al., 2016).

In brand management literature, certain researchers focused on how brand consumer relationship quality, attachment, and self-congruence with a brand relate with consumer well-being (Schnebelen and Bruhn, 2018). Past research on brand-consumer relationship literature has focused on variables such as brand love, referred to as consumers' strong positive feelings for a particular brand (Carroll and Ahuvia, 2006). Marketing literature outlines the importance of brand love because of its strongly established empirical associations with other relatively favorable outcomes, i.e., loyalty (Bairrada et al., 2018; Coelho et al., 2019), word of mouth (Bairrada et al., 2018; Coelho et al., 2019), willingness to pay more and self-disclosure (Bairrada et al., 2018), active engagement (Bergkvist and Bech-Larsen, 2010), and well-being (Junaid et al., 2020).

This entails understanding how brands promote customer wellness by addressing their emotional and psychological requirements in the sphere of brand consumer interaction. Consumers nowadays are aware that brands have the ability to convey and elicit specific emotions (Isaksen and Roper, 2016). Users of Nike clothing, i.e., want to show their coolness, while Apple smartphone users want to communicate they are tech-savvy (Chaplin et al., 2014). This customer fit-in technique is critical in determining consumer brand choices (Albrecht et al., 2017). Brands are, therefore, focusing on differentiating factors to position their products. Technology-oriented products are highly standardized, having minor or no differences. These differences are not easily identifiable by a lay person. Sometimes, understanding minute differences need extra technical skills that many consumers do not have or do not bother about (Melewar and Lim, 2010). One way to differentiate between technology products is their "coolness," i.e., a prime factor for consumer evaluation of products (Sundar et al., 2014). In simple words, brand coolness refers to the consumer's perceptions of brands being aseptically artistic, appealing, reliable, useable, and authentic, and having appeal and higher status. Coolness in technology products is also considered to be an important factor for firms' competitive edge, achievement of objectives, and product differentiation.

Research studies suggest that cool products such as iMac, iPad, iPhone, and iPod have made much growth in terms of sales and have transformed their parent companies into fortune-makers (Im et al., 2015). Young consumers are heavily dependent on smart gadgets. However, smart gadgets are considered to be difficult to differentiate because of the use of similar technology and higher level of resemblance between competing products (Ebrahim et al., 2016; Tiwari et al., 2021). However, the construct of product coolness is still at the stage of infancy and needs further exploration.

The outcomes of the current study are supposed to highlight the important role brand coolness can play in developing brand love and engagement in technology-related products. Moreover, the study will also highlight the mechanism through which distant outcomes such as customer delight and psychological well-being are achieved. The study also emphasizes the fact that in this era of intense competition, technology products need to attain customer delight through brand coolness that is focused on their branding strategies.

Research Gap

The review of prior literature on brand characteristics has uncovered several open research gaps (i.e., theoretical, methodological, and contextual perspectives).

Theoretical Significance

Research on brand coolness is scarce and inconclusive; therefore, this study offers two major objectives: underpinning the concept of brand coolness in the technology-related context and understanding various components of brand coolness and their relationship to other brand-related emotional constructs (such as brand love and brand engagement) and outcomes (consumer well-being and customer delight). Moreover, consumer brand coolness and brand love have been acknowledged as one of the best ways for addressing the engagement of consumers. Previously, the major research stream regarding brand coolness has concentrated on cognitive variables like satisfaction (Liu and Mattila, 2019) and purchase intention (Liu et al., 2021). However, there was less focus on non-cognitive variables such as emotions, brand love (Tiwari et al., 2021), emotional arousal (Apaolaza et al., 2021), and passionate desire (Loureiro et al., 2020) despite the fact that emotions have greater influence over engagement behavior (Tiwari et al., 2021). Second, research on brand characteristics has outlined its impacts on various constructs such as brand love (Tiwari et al., 2021). Various studies have discovered significant relationships using the perspectives of "brand love" and "brand engagement" such as trust with satisfaction (Amegbe et al., 2021), image, symbolic personality, and brand hate (Kashif et al., 2021; Rodrigues and Brandão, 2021), social media involvement (Gómez et al., 2019), gamification (Xi and Hamari, 2021). In the same perspective, the contribution of other emotions and their processes on brand-related determinants of brand engagement such as brand coolness is also needed. The current study deals with understanding various components of brand coolness and their relationship with other brand-related strong emotional constructs (such as brand love and brand engagement) and outcomes (consumer well-being and customer delight). Third, researchers argue that there are various determinants that can predict the relationship between brand coolness and its brand-related emotional outcomes. Researchers (Kumar et al., 2021) have also emphasized the use of the stimulus-organism-response (S-O-R) theory to see how brand-related stimuli affect the organism to predict response. However, there is need to explore the mechanism through which this relationship can be understood and to test how characteristics of brands affect consumer emotions and behaviors. On the other side, the S-O-R framework has also been analyzed from different theoretical perspectives such as the triangulation theory of love (Kumar et al., 2021), brand relationship theory (Junaid et al., 2020; Kostritsa et al., 2020; Laato et al., 2020), and attachment theory (Koo and Kim, 2013; Mostafa and Kasamani, 2020). Therefore, understanding the mechanism of brand love using S-O-R, where O is brand love, can be of immense significance, especially when viewed in the background of the fact that the literature has mostly considered brand love as "response" in the S-O-R framework. Some other studies have looked at brand love as a sign of how people feel (Ali et al., 2021; Kumar et al., 2021). The current study uses different perspective to analyze S-O-R along with attachment theory. Therefore, there is a need to include a strong positive emotion-related aspect to investigate the limitations and attain deeper understanding of brand coolness to consumer well-being. This study, thus, tests brand love and brand engagement as "organisms" between brand coolness and its responses.

Methodological Significance

The existing research on brand coolness is at the developing stage; thus, the research has mainly focused on qualitative investigations to explore various issues related to its conceptualization and brand-related outcomes. A major limitation to qualitative studies on brand coolness is that these are unable to establish causality among the studied variables (Tiwari et al., 2021). Moreover, most qualitative studies on brand coolness have used smaller sample, thus creating desirability bias and threat to generalizability. The extant literature has identified from a single construct (Dar-Nimrod et al., 2012) that different studies use different components of "perceived coolness"(Sundar et al., 2014; Warren and Campbell, 2014; Bruun et al., 2016; Raptis et al., 2017), which limit our understanding of *perceived coolness*. Although some studies have shed light on the conceptualization of perceived coolness (Rahman, 2013), there is scarcity of empirical research on non-logical network of brand coolness (Chen and Chou, 2019; Cha, 2020; Loureiro et al., 2020; Apaolaza et al., 2021; Liu et al., 2021; Tiwari et al., 2021). With these limitations in the background, the current study examines the brand coolness concept with a quantitative method.

Contextual Significance

Research on brand coolness is overwhelmed by studies from the West, especially the United States and United Kingdom. However, consumers from different cultures may perceive brand coolness differently (Gerber and Geiman, 2012), and research from developing economies is scarce. This study, thus, focuses on consumers of a developing country especially, users of technology-related smart devices where brand coolness may work as a stimuli to affect positive emotions of brand engagement and brand love (both modeled as organism) and ultimately generate distant responses such as well-being and delight.

Finally, this study, therefore, aims at using brand personality concept such as brand coolness to estimate the consumers' attitudes, emotions, and behaviors. In this context, this study intends to test how brand coolness correlates with brand engagement and brand love and, further, the effect of brand love and brand engagement on customer psychological well-being and customer delight, and the moderating effect of brand experience will be examined for technology products. The expected outcomes of this study will be significant, as recent researchers suggest the empirical testing of brand coolness (Tiwari et al., 2021) and its impact on different types of attitudinal and behavioral outcomes. Furthermore, researchers (Khan et al., 2021; Tiwari et al., 2021; Joshi and Garg, 2022) have suggested testing of brand love with other marketing variables, e.g., well-being (Junaid et al., 2020) and delight (Junaid et al., 2020). Moreover, researchers (Joshi and Garg, 2022) have suggested testing of the moderating effect of brand experience on other marketing constructs with different product categories (e.g., technology products). In simple words, this study aims to achieve the following objectives:

1. To examine the impact of brand coolness on (as stimulus) brand love and brand engagement (as organism).
2. To analyze the impact of brand love and brand engagement (as organism) on consumer delight and well-being (as response).
3. To evaluate the impact of brand experience on the relationship among brand coolness, brand love, and brand engagement.

The next sections will provide relevant literature, followed by methodology for data collection. The results of data analysis will be presented next, followed by discussion and recommendations.

LITERATURE REVIEW

Theoretical Foundation

This study used the stimulus-organism-response (S-O-R) framework to explain its framework (Russell and Mehrabian, 1974). The S-O-R framework is a popular model used to understand the response of organisms based on certain contextual and psychological stimuli (Laato et al., 2020;

Kumar et al., 2021). This study likewise employs the SOR model to describe its research framework. This cognitive psychology-based paradigm gives a stronger foundation for comprehending consumer behavior. Consumer behavior is a function of an external stimulus and internal processing according to the basic tenets of this theory (Mehrabian and Russell, 1974; Jacoby, 2002). External stimuli, in combination with internal and psychological factors, influence behavior. This model has been widely utilized in environmental psychology, in which specific aspects of the environment serve as a stimulus (S), influencing a person's internal feelings (O) and ultimately leading to a behavior (R) (Eroglu et al., 2001). However, the research has explored individual factors related to health and the environment while using the S-O-R framework (Kumar et al., 2021). The current study has conceptualized brand coolness as a stimulus in the area of technology products. This model contains three major components in which instead of a direct link between stimulus and response, first the stimulus links with the organism, and then the affective reactions of the organism are linked with behavioral response. In the framework of this study, coolness is modeled as a stimulus, brand love and brand engagement are measured as the organism, and response is modeled through consumer well-being and customer delight.

Brand Coolness

Nowadays, coolness has been deeply studied in several areas, i.e., marketing (Warren et al., 2019; Loureiro et al., 2020), anthropology (Dar-Nimrod et al., 2012), psychology, and sociology, and characteristics of people and things have been mainly studied by coolness (Dar-Nimrod et al., 2018; Warren et al., 2019). Coolness had also been considered in the title of its origins (Nancarrow et al., 2002), vernacular usage, attributes (Rahman, 2013), elements of culture, characteristics of personality, and features of goods (Sundar et al., 2014; Bruun et al., 2016). The term "cool" was coined in 1960s in discussing the subculture which is the capital of cultural youth, arising in the cultural counter of black Americans. First, coolness is the abstract idea or it is the attribute of consumers (Belk et al., 2010). Second, coolness can also be an assessment of an individual. Productive consumers with ordinary backgrounds and their interests tend to differ about coolness of brands (Leland, 2004). Third, coolness features are highly dynamic and rapidly change with time (Wooten and Mourey, 2013). Fourth, coolness aids in the achievement of opposing ideas (Wooten and Mourey, 2013). Fifth, defining a product as cool reflects positive attributes of the product (Bird and Tapp, 2008). Sixth, coolness is a desirable trait that reflects social standing and association with cool communities (Horton et al., 2012).

Previous studies used brand coolness with multiple dimensions (Runyan et al., 2013; Sundar et al., 2014; Loureiro et al., 2020). To enhance the previous knowledge, the current study used five dimensions of coolness for technical products as recommended by authorities (Tiwari et al., 2021). They explored the coolness perceptions for the wearing gadgets interaction and they also suggested the structure of five elements of coolness along with the perceived use-ableness, innovativeness, attractiveness, usefulness, and attract sub-culture. Hence, contemplating smart gadget characteristics, there are five dimensions of this study (i.e., usability, reliability, originality, high status, and personal cool) to study the brand coolness construct and its impact on other attitudinal and behavioral responses.

Dimensions of Brand Coolness

Based on extensive literature review in the context of technology gadgets, the current study used five more relevant dimensions regarding brand coolness. The first element is reliability; it can be best defined as the ability to keep a promise and do correct things. Brands that have unreliable quality cannot attain brand coolness overtime. One popular case of Samsung is quoted in this regard such that when the Samsung model Galaxy S7 lost its reputation because of being unreliable. Its reputation score dropped by seven points in 1 year from 49 in 2015 to 42 in 2016. The second element is usability or usefulness; it is defined as the ability of a technology-related product to help users in performing intended tasks and enhancing performance. In technology products, usability is considered as an important aspect of coolness (Levy, 2006; Sundar et al., 2014). In 2017, a council presented a list of top 10 cool brands that consisted of PlayStation and Bose; the products were also frequently highly graded on the dimension of usability. In addition, usability has an impact on consumer intention to engage in product consumption for a longer period (Nascimento et al., 2018; Tiwari et al., 2021). Personal cool is the term rooted in self-concept theory that includes constructs concerned with young consumers' perception of coolness of brands. "Self-concept denotes the totality of the individual's thoughts and feelings having reference to himself as an object" (Sirgy, 1982). People tend to compare features of brands with their own self-concept such that they adopt brands that have congruence with self-concept. Having congruent brands adds symbolic meaning to user self-concept (Mehta, 1999). Originality is defined as "the level to which individuals think that a technological device is practically and aesthetically distinctive from the devices used in similar environments" (Kim et al., 2015). It is believed that devices whose external appearance is well-designed have superior functions and that interfaces that are easy to comprehend are considered distinct or original (Suh and Chang, 2006). Consumers having these devices feel themselves to be privileged and different from others who have traditional devices with less differentiating features (Kim et al., 2015).

Brand Coolness With Brand Love and Brand Engagement

The extant literature has documented a variety of outcomes of brand coolness. For example, Shin (2017), who found quality as an outcome of coolness (Im et al., 2015), suggested that brand coolness predicts perceived value, and Chen and Chou (2019) found a positive impact of brand coolness on attachment and loyalty. Some other outcomes include attitude (Warren et al., 2019), intention to use, and satisfaction (Liu and Mattila, 2019). The literature suggests brand love and brand engagement as a reliable means (Huang, 2019) of achieving consumer well-being (Junaid et al., 2020) and brand loyalty (Batra et al., 2012).

Therefore, in this study, we examine the relationship of brand coolness with brand love and brand engagement. Furthermore, a plethora of outcomes about coolness of brands has been found by researchers. Tiwari et al. (2021) argued that perceived coolness is one of the powerful predictors of brand love for technology products. Therefore, the literature review suggests scarcity of studies that outline the brand-related outcomes of brand coolness such as brand love and brand engagement. Based on the literature, we propose the following hypotheses:

H1a: Brand coolness has a positive impact on brand love.
H1b: Brand coolness has a positive impact on brand engagement.

Brand Love

The term "brand love" is derived from the psychological literature on love in interpersonal relationships (Batra et al., 2012). Love is a feeling that is intensely positive and is considered as an emotional attachment that is not equivalent to mere liking of brand (Carroll and Ahuvia, 2006; Rossiter, 2012). Brand love is "a higher-order construct including multiple cognitions, emotions, and behaviors, which consumers organize into a mental prototype" (Batra et al., 2012). Brand love can be defined as the "degree of passionate emotional attachment a satisfied consumer has for a particular trade name" (Carroll and Ahuvia, 2006). The consumer-brand relationship theory explains consumer brand love (Ferreira et al., 2019). This theory suggests that the existence of a relationship between a consumer and a brand is not enough, and that the quality, direction, and strength of the relationship matter most (Fournier, 1998).

Brand Love With Customer Delight, Psychological Well-being, and Brand Engagement

Brand love reflects positive feelings for an object, although recent research has found some variables that predict brand love such as brand trust, brand image, and brand satisfaction (Joshi and Garg, 2021). Brand love has been found to have an impact on brand engagement by other researches such as (Rodrigues and Brandão, 2021; Tran et al., 2021) and the connection of consumer brand (Tran et al., 2021), perceived coolness (Tiwari et al., 2021). However, researchers have found several outcomes of brand love such as word of mouth (Amaro et al., 2020; Rodrigues and Brandão, 2021), brand defense (Ali et al., 2021), brand hate (Kashif et al., 2021), brand engagement (Junaid et al., 2019; Joshi and Garg, 2021), and revisit intention (Amaro et al., 2020). Some other researchers found that brand love have a positive relationship with brand loyalty (Bairrada et al., 2018; Salem et al., 2019; Khan et al., 2021), overall brand equity (Verma, 2021), and consumer well-being (Junaid et al., 2019, 2020). In the same way, researchers found different emotional factors that affect customer delight, i.e., joy (Ball and Barnes, 2017; Barnes and Krallman, 2019), surprise (Ball and Barnes, 2017; Barnes and Krallman, 2019; Torres et al., 2020), and cognitive and affective experiences (Lee and Park, 2019). This study considers brand love as an emotional construct that, like other variables, may affect customer delight and psychological well-being. Based on the given literature, the following hypotheses are developed:

H2a: Brand love has a positive impact on customer delight.
H2b: Brand love has a positive impact on consumer's psychological well-being.
H2c: Brand love has a positive impact on brand engagement.

Brand Engagement

Customer brand engagement is the state of consumer's mindset depicting their motivation related to brands characterized with emotional, cognitive, and behavioral activities pertaining to consumer interaction with brands (Hollebeek, 2011). In the academia, the term "engagement" has been utilized in a variety of academic, such as psychology, sociology, political science, and organizational behavior (Brodie et al., 2011). In the literature pertaining to marketing, the terms "consumer engagement," "customer engagement," and "brand engagement" have been used interchangeably since 2005 (Brodie et al., 2011). Brand engagement in self-concept is "an individual difference representing consumers' propensity to include important brands as part of how they view themselves" (Sprott et al., 2009).

Today's competitive environment where there are a variety of brands available with dynamic technology has communicated to companies that consumers are not mere purchasers of brands, and that they indeed can contribute more to brand development (Brodie et al., 2011; Kumar and Pansari, 2016; Gupta et al., 2018). These opportunities are also available for consumer-to-consumer interactions through different online communities, blogs, and social media platforms (So et al., 2016). More specifically, in today's technologically advanced context, consumers can not only purchase brands, but they can also impact the brands by sharing their experiences with other consumers and brands using social media. Consumer feedback in this way is important for improving the services of brands (Gupta et al., 2018). Therefore, in current technologically advanced context, keeping customers engaged is paramount for companies to remain competitive (Kumar and Pansari, 2016).

Brand Engagement With Customer Delight and Psychological Well-being

Research has documented the importance of consumer brand engagement for a variety of outcomes related to brands as well as consumers such as positive word-of-mouth, consumer delight, customer well-being, brand referrals, and brand loyalty (Junaid et al., 2019; Singh and Srivastava, 2019; Algharabat et al., 2020). The following section outlines possible predictors and consequences of consumer-brand engagement. This discussion is the basis for the development of hypotheses for the study. Numerous researchers have studied the relationship of brand engagement with other constructs. Loureiro et al. (2017) who conducted a study on the millennial generation that uses electronic devices for online interaction and found that online brand experience, brand involvement, and self-brand image congruity are predictor of brand engagement. Other researchers found that brand love is a crucial determinant of brand engagement (Junaid et al., 2019, 2020; Samala and Singh, 2019).

Many researchers have found that brand engagement is a predictor of several outcome variables (Junaid et al., 2019, 2020). Carvalho and Fernandes (2018) suggested that customer brand engagement has a positive relationship with customer word of mouth, customer trust, and customer commitment. In the automobile industry, Adhikari and Panda (2019) found that the engagement of customer brand positively impacted relationship quality and brand loyalty. Furthermore, researchers found that brand engagement is a strong predictor of customer well-being (Junaid et al., 2019, 2020). Anam and Faiz (2016) found that brand engagement, brand attachment, surprise, and customer satisfaction are predictors of customer delight. There is further needed to explore the brand engagement relationship with customer delight and consumer well-being specifically psychological well-being. On the basis of the given literature, these hypotheses are presented in this study:

H3a: Brand engagement has a positive impact on customer delight.

H3b: Brand engagement has a positive impact on psychological well-being.

Brand Love as Mediator

Brand love has been taken as a mediator in various studies and contexts. Junaid et al. (2020) conducted a study on tourist well-being in which they found a mediating relationship between brand love and perceived value of tourists and their well-being. Khan et al. (2021) also found mediation of brand love between perceived benefits and brand loyalty in the smartphone industry. In another study, Junaid et al. (2020) found brand love as a mediator between participation in co-creation and consumer well-being. Tiwari et al. (2021) found that brand love is strongly predicted by the perceived coolness and that there is also a strong relationship between brand love and well-being of consumers (Junaid et al., 2019) and customer delight. On the basis of the mentioned literature, the following hypotheses are supported:

H5a: Brand love mediates the relationship between brand coolness and customer delight.

H5b: Brand love mediates the relationship between brand coolness and psychological well-being.

Brand Engagement as Mediator

Various researchers found a mediating role of brand engagement in their studies in different contexts. Kaur et al. (2020) found that customer brand engagement mediates the relationship among brand community identification, rewards, and brand loyalty in the context of virtual brand communities. Junaid et al. (2020) found that brand engagement mediates the relationship between brand love and customer well-being. Lima (2020) found brand coolness as a predictor of brand engagement, and brand engagement as a predictor of consumer delight and customer well-being. Therefore, there is a need to explore the mediating role of brand engagement in the relationship between brand coolness and consumer delight and psychological well-being based on this literature:

H6a: Brand engagement mediates the relationship between brand coolness and customer delight.

H6b: Brand engagement mediates the relationship between brand coolness and psychological well-being.

Customer Delight

Customer delight has always been a center of interest for both scholars and practitioners (N. Torres et al., 2014). Customer delight is defined as a "profoundly positive emotional state where expectations are exceeded to a surprising degree" (Oliver, 1997). Customer delight refers to enhanced levels of happiness felt by consumers related to their consumption experience (Kumar, 1996). Chandler (1989) argued that customer delight is the level of satisfaction beyond consumer anticipation resulting from a consumption experience. Although customer delight and customer satisfaction are interrelated, some scholars argue that customer delight is a recent phenomenon that needs further investigation as to its relationship with other concepts (Crotts and Magnini, 2011; Ma et al., 2013). Ahrholdt et al. (2016) emphasized to focus on studying customer delight in the service industry to see how service quality improves customer delight beyond customer satisfaction.

Moreover, researchers (Kumar et al., 2001) explored the psychological aspects of customer delight and have considered it as related to the enthusiasm, joy, and thrill displayed by consumers who receive a better service quality. In their investigation on supermarket shoppers, Barnes et al. (2016) found different variables leading to customer delight. Specifically, they found a strong association between joy and surprise and customer delight. Besides proposers of customer delight, some scholars such as Kim et al. (2015) shared different viewpoints. They argued that delight is not as powerful as satisfaction because of its strong impact on customer attitudes and behaviors. Dubey et al. (2020) studied different values (i.e., perceived price, perceived sacrifice, perceived benefits, perceived bargain, brand value, utilitarian value, transactional values, epistemic value, hedonic value, and self-congruity) with customer delight in mobile technology context in India.

Anam and Faiz (2016) studied surprise, brand attachment, customer satisfaction, and customer brand engagement with customer delight and brand loyalty. In their study, they found that customer brand engagement positively affects customer delight. Barnes and Krallman (2019) conducted a great study on customer delight and found antecedents and outcomes of customer delight in different perspectives, i.e., employee perspective, customer perspective, and contextual perspective. They suggested that joy, surprise, arousal, fun, comfort, and expectations are antecedents in customer perspectives, and that loyalty, brand beliefs, impulsive purchase, consciousness, word of mouth, and repurchase intentions are outcome of customer delight. Based on the given literature, this study tries to explore the psychological antecedents (brand love and brand engagement) of customer delight.

Customer Psychological Well-being

Well-being refers to one's condition and health. It has been studied in a variety of contexts such as physical, psychological, economic, or social state (Diener, 2009). This has resulted in a variety of definitions attributed to the concept of well-being with references to the context it is being studied such as social and economic well-being, and psychological and consumer well-being (CWB). CWB, like other concepts of well-being lacks a specific definition (Sirgy et al., 2007). In general, CWB implies the well-being of consumers (Lee and Ahn, 2016). More specifically, CWB entails consumption-related aspects of an individual and merits happiness derived out of consumption of goods and services. It also refers to what brands contribute in the life satisfaction of consumers (Grzeskowiak and Sirgy, 2007; Kim et al., 2012). Practically, it refers to a degree at which consumption of brands enhances consumers' feeling of quality of life (Sirgy et al., 2007).

The CWB concept has emerged in marketing literature very recently. It is rooted in the notion of the role marketing plays in economic and social aspects of consumers' lives (Sirgy et al., 2007). It has actually furthered the concepts of consumer satisfaction and consumer delight, which are just specific to the performance of brands; however, consumer well-being goes beyond brand features, and it is related to contributions brands make in the improvement of consumers' quality of life. Greater levels of quality of life achieved out of consumption of brands will reduce ill-being and foster social well-being and overall happiness (Grzeskowiak and Sirgy, 2007). That is why consumer well-being is becoming an end objective for consumers' consumption-related decisions (Sirgy et al., 2007). Consumer well-being is "a state of flourishing that involves health, happiness, and prosperity." Kim et al. (2012) conducted a research on consumer-well-being with brand attitude and perceived values (utilitarian values and hedonic values). The results showed that brand attitude and values positively affect consumer well-being.

Ogunmokun et al. (2021) conveyed a study on antecedents of consumer well-being in higher education context. They proposed customer engagement, and the perceived service features were the anterior well-being of consumers. In another study, Junaid et al. (2019) found brand engagement as a strong predictor of customer well-being. They also quantified that brand engagement mediates the relationship between brand love and customer well-being. Customer well-being is not explored well in marketing studies, and there is a need to explore customer well-being, specifically customer psychological well-being (Kemp et al., 2020). On the basis of this discussion, the study seeks to find the antecedents of customer psychological well-being.

Brand Experience

The "brand experience" concept has thus raised the attention of academics and interpreters. Brand experience has been well-defined as "sensation, feeling, cognition, and behavioral responses evoked by brand-related stimuli that are part of a brand design and identity, packaging, communications, and environments" (Brakus et al., 2009). The experience of the brand indicates the experience of the customer with brand and any of the organization whose brand being purchased and consumed by the customers, the brand also effect on the persons who don't even consume the brand (Khan and Rahman, 2015). Brands are considered as important resources for companies; therefore, managing consumers' experience of brands is an important aspect of the marketers' job. However, focusing on consumers' benefits accrued out of brands is not sufficient, as consumer experiences have lasting effects on brand progress (Ong et al., 2018). Consumer experiences are translated through different aspects of brands such as aesthetics (environment *per se*), joy (provision of entertainment), education (provision of knowledge and live experience), and escapism (full immersion with experience). Cleff et al. (2014) and Suntikul and Jachna (2016) argued that brands not only provide functional benefits but that they also contribute to consumers' experience.

Unlike interpersonal relationships, love at first sight is not always applicable in brands; it is an experience that develops affection and love toward a brand (Langner et al., 2016; Prentice et al., 2019). Positive consumer experiences of brands foster consumer engagement with the brands that shape customer behaviors and intention to revisit and repurchase the brands. Thus, marketers need to focus on relevant stimuli to make a consumer experience more positive and memorable, so benefits of consumer engagement may be achieved for a longer period (Ahn and Back, 2018). Other researchers found that brand experience has a positive influence on brand love (Ferreira et al., 2019; Rodrigues and Brandão, 2021; Safeer et al., 2021).

Brand Experience as Moderator

Brand experience, unlike attitude toward a brand, is a direct outcome of consumption of a product or a service. This experience may be different for different consumers (Joshi and Garg, 2021). Studies reveal that occasional brand experience cannot result in brand love unless it is repeated and accumulated by previous past positive experiences; however, brand attitude does not require an extensive and repeated experience (Park et al., 2010). Keeping in view this complex relationship of brand experience with brand love and engagement, this study considers that the effect of brand coolness on brand love and brand engagement will be different on different levels of brand experience. Previous studies have also tested the moderating role of brand experience. Joshi and Garg (2021) also investigated brand experience as a moderator among brand image, brand satisfaction, and brand love. Keeping in view the limited evidence of moderation of brand experience, this study intends to extend the literature by testing the moderating role of brand experience between brand coolness and brand love, and brand coolness and brand engagement:

H7a: Brand experience moderates the relationship between brand coolness and brand love.

H7a: Brand experience moderates the relationship between brand coolness and brand engagement.

Theoretical Framework

Based on the theory of the attribution of brand and model of stimulus-organism-response (SOR), here is the theoretical framework that has been constructed in our research (see **Figure 1**).

MATERIALS AND METHODS

Sample and Procedure

Since a survey is conducted to analyze correlations between constructs and to measure behaviors, a survey utilizing a

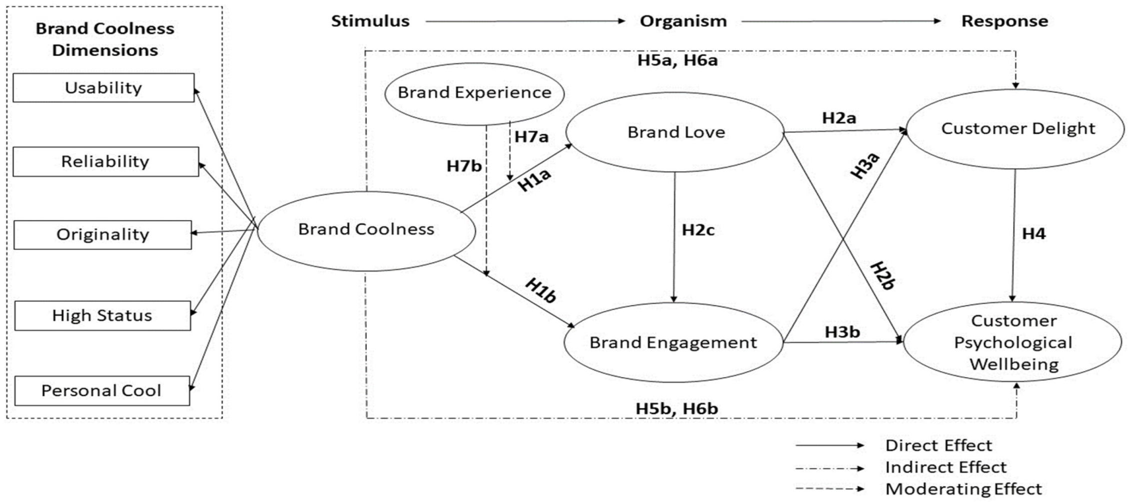

FIGURE 1 | Theoretical framework.

quantitative method was performed to collect primary data from respondents. The survey helped the research to collect data quickly and was easy to administer. The survey method is cost-effective, and researchers can collect large amounts of data. The information was gathered from young smart device users in Pakistan's major cities (i.e., Islamabad, Karachi, Rawalpindi, Lahore, and Multan) through a survey conducted at malls, shopping centers, bus stops, and universities. To establish content validity and refine the instrument, a focus group was conducted with 3 smartphone users and three scholars (with a specialty in marketing). The questionnaire was pre-tested before it was finalized to ensure its validity and reliability. The pilot study included 70 smart gadget users, and they were later excluded from the final data analysis. Most of the measuring scales were shown to be valid in the pilot study. Scales that were previously unfavorable were modified. Purposive sampling was conducted to find people who shared certain qualities that were related to the research's goals. We underlined that there are no right or incorrect answers to reduce social desirability bias and to maintain secrecy and anonymity. The survey was conducted in the English language for a host of reasons. First, based on the researchers' anecdotal experience, a considerable number of target audience of smart gadget users in Pakistan is comprised of urban residents that are well-educated and employed in multinational companies that require English language proficiency. Hence, communication in English is not a major concern for such users. Moreover, previous research has established that English is widely spoken by Pakistanis (Islam et al., 2019). We sent out 1,800 survey forms, from which responses were received from 1,213 people. After removal of missing values, the final data set had 1,178 replies, resulting in a response rate of 65.44%. There were too many items in the survey, and we approached the respondents in malls and shopping centers. There were respondents who did not complete the survey fully and questionnaires that were invalidated. Because of these reasons, the response rate was low. The demographic information of the participants is shown in **Table 1**.

A total of 1,178 people took part in the study, with 626 (53.1%) of them being male smart gadget users and 552 (46.9%) being female smart gadget users. Since the information was gathered from smart device users, the level of education showed that 17.9 percent of the respondents have only an intermediate education. **Table 1** shows that 37.9 percent of the participants have a bachelor's s, that 30.6 percent have a master's degree, and that just 2.5 percent have a doctoral degree. To check for normality, skewness and kurtosis were evaluated. The resultant values were within the range of −1 to +1 and −3 to +3, respectively.

Measures

Using existing scales, all the constructs were modified and conceptualized. The construct items were derived from a variety of measurement scales, and information was taken on a five-point Likert scale. Usability, reliability, uniqueness, high prestige, and personal cool are the five dimensions of brand coolness. **Table 2** summarizes all the measures.

TABLE 1 | Sample characteristics.

Demographic	Category	Percentage (Frequency)
Gender	Male	53.1 (626)
	Female	46.9 (552)
Age (In years)	Less than 18	7.4 (87)
	18–22 years	40.2 (473)
	23–27 years	34.9 (409)
	28–32 years	17.5 (204)
Education	High School	11.9 (141)
	Professional degree/vocational school	17.1 (201)
	Bachelors	37.9 (447)
	Masters	30.6 (360)
	Doctorate	2.5 (29)

TABLE 2 | Measurement scales with outer loadings.

Constructs	Code	Statements	Mean, (S.D.)	Loadings
Usability (Raptis et al., 2017)	usb1	My smartphone is simple to use.	3.20, (1.15)	0.80
	usb2	My smartphone is easy to operate	3.35, (1.18)	0.87
	usb3	My smartphone is easy to learn	3.42, (1.14)	0.88
	usb4	My smartphone is easy to use	3.28, (1.15)	0.86
Reliability (Tiwari et al., 2021)	rea1	My smartphone provides the services as promised.	3.34, (1.24)	0.84
	rea2	My smartphone performs tasks right every time.	3.54, (1.19)	0.89
	rea3	My smartphone rarely hangs/stops working.	3.49, (1.14)	0.90
	rea4	My smartphone is dependable in handling	3.48, (1.18)	0.87
Originality (Kim et al., 2015)	org1	This smartphone is original	3.68, (1.26)	0.88
	org2	This smartphone is unique	3.50, (1.17)	0.87
	org3	This smartphone stand apart from similar products	3.65, (1.18)	0.87
High Status (Loureiro et al., 2020)	hst1	This luxury fashion brand is chic.	3.23, (1.21)	0.81
	hst2	This luxury fashion brand is glamorous.	3.17, (1.10)	0.83
	hst3	This luxury fashion brand is sophisticated.	2.56, (1.28)	0.69
	hst4	This luxury fashion brand is ritzy	2.63, (1.25)	0.73
	hst5	This luxury fashion brand is attractive	3.22, (1.18)	0.77
Personal Cool (Runyan et al., 2013)	pcl1	A "cool" article of clothing fits my personality	3.21, (1.13)	0.84
	pcl2	A "cool" article of clothing boosts my confidence	3.20, (1.10)	0.85
	pcl3	A "cool" article of clothing fits my self-identity	3.19, (1.10)	0.85
	pcl4	A "cool" article of clothing boosts my self-esteem	3.32, (1.14)	0.83
	pcl5	A "cool" article of clothing fits my style	3.25, (1.15)	0.83
	pcl6	A "cool" article of clothing contributes to my individuality	3.29, (1.12)	0.84
Brand Love (Carroll and Ahuvia, 2006)	brl1	This is a wonderful brand.	3.16, (1.14)	0.80
	brl2	This brand makes me feel good.	3.41, (1.12)	0.87
	brl3	I love this brand!	3.46, (1.14)	0.88
	brl4	This brand is totally awesome.	3.44, (1.14)	0.86
	brl5	This brand makes me very happy.	3.40, (1.14)	0.85
	brl6	This brand is a pure delight	3.37, (1.12)	*0.59*
Brand Engagement (Xi and Hamari, 2021)	beg1	I love talking and using products of the brand with my friends	3.39, (1.15)	0.75
	beg2	I enjoy talking and using products of the brand more when I am with others	3.46, (1.10)	0.78
	beg3	Talking and using products of the brand are more fun when other people around me do it too	3.24, (1.19)	0.84
	beg4	I feel good about sharing my experiences with the products of the brand with others	3.11, (1.19)	0.83
	beg5	I feel fellowship with other people who use the products of the brand	3.06, (1.21)	0.82
	beg6	I like recommending the products of the brand to others	3.10, (1.23)	0.81
Customer Delight	cde1	I was delighted by this experience	3.15, (1.23)	0.83
	cde2	It was a thrilling experience	3.33, (1.13)	0.87
	cde3	It was an exhilarating experience	3.26, (1.10)	0.88
	cde4	I was pleased with this experience	3.27, (1.13)	0.87
Customer Psychological Well-being (Grzeskowiak and Sirgy, 2007)	cwb1	This smartphone plays a very important role in my social well-being.	3.27, (1.17)	0.84
	cwb2	This smartphone plays an important role in my leisure well-being.	3.39, (1.10)	0.84
	cwb3	This smartphone plays an important role in enhancing the quality of my university life.	3.47, (1.13)	0.85
	cwb4	This smartphone satisfies my overall needs	3.26, (1.21)	0.83
Brand Experience (Khan et al., 2021)	bex1	I have strong emotions for Brand X	3.18, (1.25)	0.85
	bex2	I engage in physical actions and behaviors when I experience Brand X.	3.44, (1.19)	0.89
	bex3	Brand X results in lively experiences.	3.50, (1.21)	0.90
	bex4	Brand X is willing or likely to take practical action to deal with a problem or situation	3.37, (1.19)	0.89
	bex5	Brand X stimulates my curiosity and problem-solving	3.40, (1.23)	0.87

Data Analysis

To investigate the structural model, we conducted structural regression modeling by partial least square (PLS) estimation. PLS is quite popular and widely used because of its ability to integrate linear regression with confirmatory factor analysis. PLS is also more accurate than covariance-based structural equation modeling in finding actual paths and not detecting non-existent paths (Goodhue et al., 2012). This method is meant for creation and examination of complex interactions between numerous variables. This technique is also useful for testing hypotheses and determining the relationship between various variables. It also assists in the analysis of latent variable causal relationships. PLS is an excellent technique for doing confirmatory factor analysis (CFA) and regression when testing a measurement and structural model (Hair et al., 2017). Smart-PLS is a cutting-edge program that was used to assess the measurement and structural model. We utilized Smart-PLS 3.3 to perform the PLS analysis in this study.

RESULTS

Common Method Bias

Common method variance (CMV) was found to be a source of concern in our study. As a result, we implemented a number of procedures to mitigate and minimize its impact on the outcomes. We used the techniques recommended by Podsakoff et al. (2003) to decrease CMV. The anonymity of respondents is protected first and foremost. Second, we integrate things from the available literature to eliminate item uncertainty. Third, the survey's items were arranged in a random order. Consequently, we carried out Harman's single factor test to see if the results in this study had a CMB that is in agreement with recent investigations (Talwar et al., 2020). The findings showed that a single factor could only describe 42.66% of the variance, which was significantly less than the cut-off value of 50% (Podsakoff et al., 2012). There was no CMB in the data; therefore, they were suitable for statistical analysis.

Measurement Model

Outer loads are considered first in a measurement model. Evaluating the observed constructs and their related items improves the significance of a measurement model. For this reason, each item's outer loading is evaluated. Any item having loading less than 0.5 is deleted based on the criteria (Hair et al., 2019). The next stage is to analyze the reliability and validity of all the constructs after a thorough assessment of loadings. Composite reliability and Cronbach alpha are two important criteria to consider while evaluating reliability (internal consistency). The final Cronbach alpha values varied from 0.88 to 0.95 and showed a high level of reliability (>0.7) (Hair et al., 2019). Composite reliability is the next measure of internal consistency. It was calculated using the outer loadings of all variables. The resulting composite reliability ratings varied from 0.91 to 0.95, showing good consistency (i.e., a number greater than 0.7) (Hair et al., 2019). Convergent validity can be used to investigate the relationship between all items in a concept. Average extracted variance (AVE) is used to assess the convergent validity of variables. The convergent validity of the variables ranged from 0.51 to 0.78, suggesting an excellent convergent validity (>0.5) (Hair et al., 2019). **Table 3** summarizes the findings.

Finally, the study variables' discriminant validity is assessed. This is performed by determining discriminant validity using the heterotrait-monotrait (HTMT) technique. The value of HTMT should not exceed 0.95 (Hair et al., 2019). **Table 3** summarizes the findings and proves that discriminant validity exists.

Structural Model

For all the constructs, variance inflation factor analysis was conducted to determine multi-collinearity. The result of VIF was less than 3.3, which is recommended by Hair et al. (2017), and showed that there was no issue with multi-collinearity. The results are summarized in **Table 4**.

The hypotheses are then tested in the second stage. All of the hypotheses were confirmed by the findings; hypothesis 1a (brand coolness influences brand love) is confirmed (β = 0.73***). Hypothesis 1b (brand coolness influences brand engagement) is confirmed (β = 0.34***). Hypothesis 2a (brand love influences customer delight) is confirmed (β = 0.15***). Hypothesis 2b (brand love influences customer psychological well-being) is confirmed (β = 0.53***). Hypothesis 2c (brand love influences brand engagement) is accepted (β = 0.44***). Hypothesis 3a (brand engagement influences customer delight) is accepted (β = 0.72***). Hypothesis 3b (brand engagement influences customer psychological well-being) is accepted (β = 0.2***). Hypothesis 4 (customer delight influences customer psychological well-being) is confirmed

TABLE 3 | Internal consistency and discriminant validity (heterotrait-monotrait, HTMT, and ratio) evaluation.

	Cronbach α	CR	AVE	BC	BL	BE	CD	WB	BX
BC	0.95	0.95	0.51						
BL	0.90	0.93	0.72	0.79					
BE	0.89	0.91	0.65	0.72	0.77				
CD	0.88	0.92	0.74	0.70	0.73	0.93			
PWB	0.91	0.93	0.70	0.83	0.82	0.74	0.71		
BX	0.93	0.94	0.78	0.78	0.82	0.76	0.74	0.80	

BC, brand coolness; BL, brand love; BE, brand engagement; CD, customer delight; PWB, psychological well-being; BX, brand experience.

TABLE 4 | Multi-collinearity evaluation.

	BL	BE	CD	PWB
BC	1.00	2.83		
BL		2.98	2.03	2.12
BE			2.03	3.23
CD				3.23
BX		3.03		

BC, brand coolness; BL, brand love; BE, brand engagement; CD, customer delight; PWB, psychological well-being; BX, brand experience.

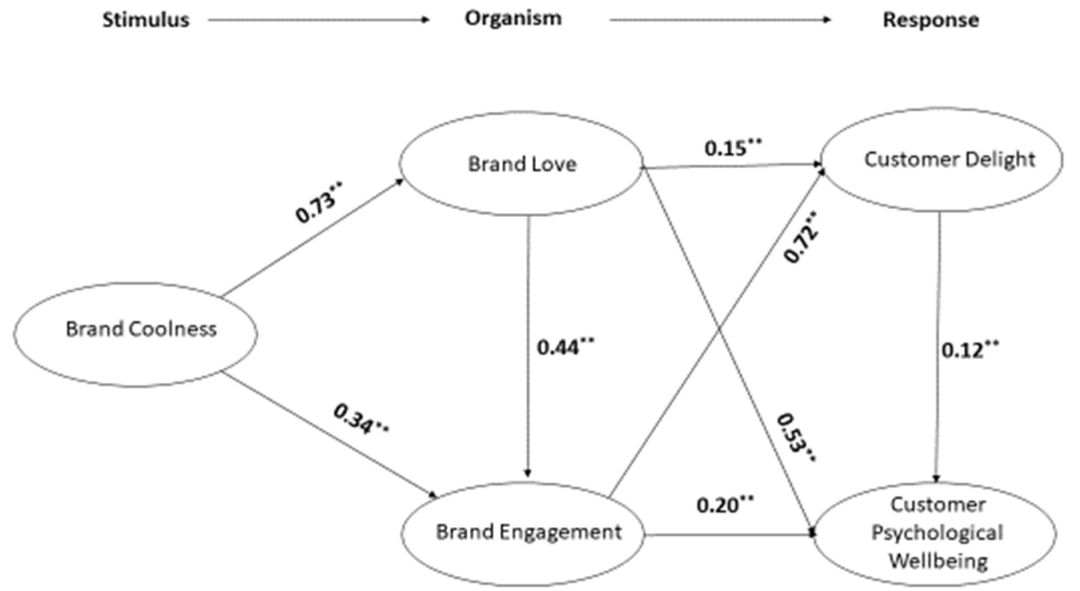

FIGURE 2 | Structural model. **Means p value < 0.00.

TABLE 5 | Hypotheses assessment.

Hypothesis	Path	Estimate	S.D.	*T*-value	*P-value*
H_{1a}	BC→BL	0.73	0.01	44.51	***
H_{1b}	BC→BE	0.34	0.03	8.39	***
H_{2a}	BL→CD	0.15	0.02	6.13	***
H_{2b}	BL→PWB	0.53	0.03	17.67	***
H_{2c}	BL→BE	0.44	0.03	11.98	***
H_{3a}	BE→CD	0.72	0.02	27.48	***
H_{3b}	BE→PWB	0.20	0.04	4.42	***
H_4	CD→PWB	0.12	0.03	3.01	***
H_{5a}	BC→BL→CD	0.11	[LCL = 0.08, UCL = 0.14]		***
H_{5b}	BC→BL→PWB	0.39	[LCL = 0.35, UCL = 0.43]		***
H_{6b}	BC→BE→CD	0.24	[LCL = 0.20, UCL = 0.29]		***
H_{6b}	BC→BE→PWB	0.07	[LCL = 0.04, UCL = 0.10]		***

****p < 0.001, BC, brand coolness; BL, brand love; BE, brand engagement; CD, customer delight; PWB, psychological well-being; BX, brand experience.*

(β = 0.12***) (see **Figure 2**). The R^2 values are 0.57, 0.58, 0.70, and 0.63 for brand love, brand engagement, customer delight, and psychological well-being, respectively. The Q^2 (blindfolding) values are 0.39, 0.34, 0.51, and 0.43 for brand love, brand engagement, customer delight, and psychological well-being, respectively and are greater than 0 (Hair et al., 2019) (refer to **Appendix**).

Similarly, the mediating effect hypotheses, H5a, H5b, H6a, and H6b, are accepted (β = 0.44, $p < 0.00$; β = 0.44, $p < 0$; β = 0.44, $p < 0$; β = 0.44, $p < 0$, respectively) (refer to **Table 5**).

Furthermore, a hypothesis related to moderating effect, H7a, is not accepted, as $p > 0.05$. However, H7b is accepted as interaction term coefficient β = 0.04, $p < 0.02$, which illustrates that brand experience strengthens the association between brand coolness and brand engagement. The result are depicted in **Figure 3**, which shows that brand experience strengthens the relationship between brand coolness and brand engagement.

DISCUSSION

The major hypotheses included the relationship of brand coolness with brand love and brand engagement. Brand love and brand engagement were hypothesized to mediate the relationship of brand coolness with customer delight and customer psychological well-being. Brand experience was modeled as a boundary condition to moderate the link between brand coolness and brand love, and brand coolness and brand engagement. As the link between brand coolness and brand love, and brand love and brand engagement was already tested by some studies in the extant literature, other linkages such as how brand coolness and brand love contribute to customer delight and well-being were not tested earlier.

The first hypothesis was concerned about the impact of brand coolness on brand love. It was supported by the results of this study. This finding suggests that brands that are perceived to be

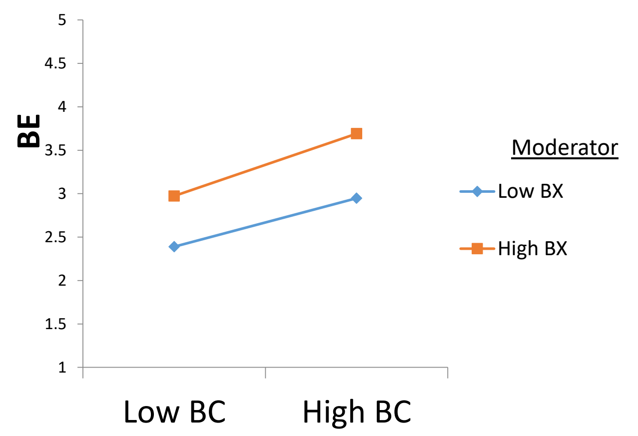

FIGURE 3 | Graphical representation of moderating brand experience.

cool, such as those having features like reliability, dependability, usability, uniqueness, and being cool, contribute to consumers' positive emotions such as brand love. Although empirical research regarding the link between brand coolness and brand love is scarce and at an emerging stage; limited previous research, however, has supported the notion regarding the role of consumers' perception of coolness of brands in development of intense positive emotions such as brand love and passion. For example, Tiwari et al. (2021), in a sample drawn from smart phone users in India, found that when consumers perceive that their technology products are highly reliable, useable, rebellious, innovative, attractive, and desirable, they feel like falling in love with brands. This bond becomes stronger and initiates other positive emotions. This finding is further supported by other recent studies (Ashfaq et al., 2021). There may not be a lot of research on the relationship between brand coolness and brand love; consequently, this research has a useful addition.

The second hypothesis was concerned with the impact of brand coolness on brand engagement. Brand engagement refers to more active involvement of consumers with brands beyond merely having positive feelings such as brand love. Despite the importance of brand engagement, empirical findings on the link between brand coolness and brand engagement are lacking. However, one research study on beauty brands found a positive association between brand coolness and brand engagement (Serras, 2020). In light of the brand attribution theory, the relationship between brand coolness and brand engagement is important. As coolness perception may be attributed and regarded in terms of enhanced quality and functionality of products, thus consumers having higher levels of coolness perception will be willing to engage with brands and communicate with others about their positive engagement (Bıçakcıoğlu et al., 2018; Rodrigues and Brandão, 2021). Lima (2020) also reported a positive relationship between brand coolness and brand engagement in a sample of social media users. This finding supports the notion that coolness perceptions ignite positive emotions toward brands in consumers (Blanco, 2020). One reason to this phenomenon is that the coolness feature is attributed to the higher status and prestige of a brand. Having prestigious brands in possession develops positive emotions toward brands (Dar-Nimrod et al., 2018).

H2a was concerned about the relationship between brand love and customer delight. Although brand love is a relatively newer construct in the marketing literature (Carroll and Ahuvia, 2006), scholars have been more interested to know about the romantic relationship between consumers and brands. Roberts (2005) conceptualized brand love based on interpersonal love. They theorized that brand love is based on sensational attraction, closeness, devotion, compassion, desire, and aspirations. Carroll and Ahuvia (2006) also argued that brand love is similar to interpersonal love and results in good feelings, happiness, and delight. Roy et al. (2013), in their conceptual article, discussed various outcomes of band love including romanticism, customer satisfaction, and consumer delight. Similarly, H2b was concerned about the impact of brand love on psychological well-being. The results are in support of the hypothesis and imply that as consumers feel themselves to be in a romantic relationship with the brands, it makes them feel better, well-off, and happy. Such finding is consistent with empirical research. Junaid et al. (2019) found a positive association between brand love and consumer well-being. As consumer well-being reflects consumers' perception of quality of life and feeling of happiness, brand love can best predict well-being, as brand love is the result of consistent satisfaction derived from positive experiences and likeness of a brand.

H2c was also concerned about the association between brand engagement and brand love. Empirical findings confirmed the brand love, as a positive emotion, positively impacts customers' engagement with brands. This finding is further supported by previous studies such as Junaid et al. (2019), who found that brand love predicts brand engagement. The literature suggests intense positive feelings toward brands such as brand love develop more active participation of consumers with brands such as brand engagement, which is characterized by vigor, dedication, and absorption (1). Therefore, if brands are able to generate positive feelings of customers toward them, consumers may engage more actively with brands (Junaid et al., 2020; Joshi and Garg, 2021).

H3a was about the relationship between brand engagement and customer delight. The findings supported this hypothesis, suggesting that when consumers are engaged with their loved brands, they feel happiness and satisfaction with the brands. The higher the levels of engagement, the higher consumer delight will be (Choi and Hwang, 2019). The authors suggest that positive consumer experiences with a brand will enhance their engagement with the brand, which will further foster their delight and satisfaction (Joshi and Garg, 2021). H3b found a positive impact of brand engagement on customer psychological well-being. This finding again implies that when consumers feel enthusiasm about a brand, they tend to feel better in life while remaining in a consumption relationship with the brand. Such tendency to feel belonging to the brand creates consumer feelings of happiness and thrill.

H4 was about the relationship between customer delight and well-being. The findings supported this link as well, implying that consumers are happy with the brand experience because they are happy with their life and have higher perceptions of quality of life (Netemeyer et al., 2004). Moreover, the finding also implies that when consumers feel delighted and thrilled in using certain brands, they feel themselves to be a very sensible person and capable of decision-making as their decisions lead to obtain the brand that provides them better experience as per their exceptions (Lee and Park, 2019).

H5a was about the relationship between the mediating role of brand coolness and consumer delight. The results supported this hypothesis. According to the SOR model, certain contextual factors act as stimuli and influence the organism to result in a response. In this study, brand coolness, as a consumer-level perception of brands' various features, is a strong stimulus to stimulate positive emotions such as brand love. Brand love, as an organism, results in responses such as customer delight. Zhu et al. (2019) also used the SOR model in their study and tested brand love as an organism in the model. The role of brand love as a mediator between brand coolness and customer delight is new in the literature; however, past research found that brand love mediated the link between brand experience and consumer satisfaction (Ferreira et al., 2019). H5b was related to mediation of brand engagement between brand coolness and brand delight. This relationship was also substantiated by the findings of this study, implying that when more consumers engage with brands, they will form a positive image of the brands and consider the brands as cool, reliable, dependable, and useable. These feelings will also stimulate consumers to form a perception of delight and satisfaction (Ferreira et al., 2019).

H6a was also concerned about the mediating role of brand love between brand coolness and consumer delight. This study has also supported this hypothesis, implying that brand coolness is such a powerful stimulus that it will encourage consumers to engage with a brand. Brand engagement will later result in satisfied and delightful consumers. Similarly, H6b was about the mediating role of brand engagement between brand coolness and consumer well-being. The findings also corroborated this relationship. This finding implies that customers engaged with brands not only feel satisfied but that their feeling about their quality of life also increases positively (Junaid et al., 2020). The research has acknowledged the association between brand engagement and satisfaction (Fernandes and Moreira, 2019), and this study has supported the mediating role of brand engagement between brand coolness and well-being. Research on HRM studies also supports the idea that engaged employees show greater levels of psychological well-being (Robledo et al., 2019). There are also other studies that support the relationship between brand engagement and consumer well-being (Kumar and Nayak, 2019).

H7a was related to the moderating role of brand experience between brand coolness and brand love. This relationship was found to be insignificant. H7b was related to the moderating role of brand experience in the relationship between brand coolness and brand engagement. The findings supported this link. As stated earlier, the moderating hypothesis between coolness and brand love was not supported. However, the relationship between brand coolness and engagement was supported. This difference may be attributed to the difference between love and engagement, as love reflects one's admiration to and likeness of a target, whereas engagement is an action-oriented construct that reflects one's intention to act in a certain way (Kumar et al., 2019). Brand experience is also an active construct that is based on a solid experience. Therefore, the coolness of brand may stimulate one's affective states such as love and likelihood (Erhan et al., 2020), which may not be influenced by experience. However, an engagement is based on the level of consumer experience; the more consumers experience a brand, the greater their engagement with the brand will be.

Conclusion

The major conclusions of this study are related to evidence of the relationship among brand coolness, brand love, and engagement. Brand coolness also fosters customer well-being and customer delight. The findings are important in the sense that they reflect the positive sides of brand coolness described in terms of brand reliability, usability, prestige, and personal coolness. The conclusions imply that coolness of brand can foster customer delight by increasing brand love and engagement. Moreover, these variables are also important for the well-being of consumers. Happy consumers are indeed a great asset for organizations. This study has a variety of inferences emerging out of it. For example, this study suggests that if brands are able to develop coolness perceptions such that customers perceive brands to be useful, unique, and rebellious, they can sense that the brands are cool; thus, they can fall in love with the brands. Their engagement with brands can also increase, which will further make them happy, delighted, and psychologically well-off. Moreover, brands can make consumers more engaging by increasing the reliability of their brands and improving the services. Happy consumers are expected to share their positive experience with others and remain loyal to brands. From a theoretical perspective, this study used the SOR model by integrating it with the brand attribution theory. The basic premise of the SOR model is that the certain conditions in the environment function as stimuli to have an impact on consumers' internal state of mind (organism) and develop consumer behavior. From an attribution theory perspective, it is assumed that people tend to reflect on their past experiences to guide their future decisions and behaviors. By integrating both theories in the brand management literature, this study assumed that when consumers find a certain brand higher in terms of brand coolness (stimulus), it will stimulate brand love and brand engagement (organism), which will in turn result in customer delight and customer well-being (response).

Theoretical and Practical Implications

This study offers important implications for academicians, practitioners, and policy-makers. This study used the SOR theory and the brand attribution theory to understand the basic mechanism that prevails in the external aspects of brands that stimulate a response. More specifically, this study found that consumer perceptions of brand coolness generate positive emotions and active engagements, which are important for customer delight and psychological well-being. Both the predictors and the outcomes of this study are important contributions in the literature such that customer psychological well-being is now an important aspect of the marketing literature, which is getting popular. The typical marketing literature, focused on customer satisfaction, has progressed further to address more macro-level variables like customer psychological well-being and customer delight. The outcomes have some lasting effects and thus can be a catalyst for further benefits of brands and organizations. This study offers various academic insights. For marketers, this study is a strong proponent of focusing on features that are considered to be contributing to coolness perceptions. Again, this literature extends beyond the functional benefits offered by brands; it focuses on emotion stimulant features like brand coolness that create a strong bond between consumers and brands. For marketers that emphasize on brand consumer interactions, the findings of this study are a strong example to follow so as to achieve certain durable outcomes.

This research intended to contribute to the literature of brand coolness. More specifically, it aimed to know how brand coolness contributes to the development of customer delight and customer well-being by enhancement of positive outcomes such as brand love and brand engagement. For doing this, this study utilized the SOR model and integrated it with the brand attribution theory. Brand coolness was measured in terms of its latent dimensions such as usability, originality, reliability, greater status, and personal coolness, and consumer engagement with and love for brands resulting in consumer delight and well-being. This study is significant for academicians and practitioners in the sense that most of the brand management literature has traditionally been focused on consumer satisfaction and delight, but at present times the role of marketing is being acknowledged to develop consumer well-being and happiness (Alexander et al., 2021). This study has responded to such calls and provided a robust model to develop consumer psychological well-being by increasing brand coolness and fostering positive responses in consumers. Furthermore, this study has introduced some new linkages and thus has offered greater contributions for academicians and policy-makers.

Limitations and Future Recommendations

The major limitations of this study are methodological in nature. The cross-sectional design of this study precludes causality. Recent research emphasizes cross-sectional design. Future research may use longitudinal design with proper time intervals to see how the predictors of this model translate to distant outcomes. This study has used the SOR model and the brand attribution theory to study the impact of brand coolness as a stimulus to emotional and behavioral outcomes. Regardless of the sophistication of the SOR model, the phenomenon of brand coolness perceptions may be understood through the use of self-categorization theory (Trepte and Loy, 2017), which proposes that people, based on their prestigious belongings, compare and categorize themselves to show their attachment and linkage with particular brands or groups. This attachment may ignite certain positive emotions reflecting passion and love and may translate further into delight and well-being. Recognizing this promising possibility, it is recommended that future research should use this theory to test the model of this study.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for this study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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APPENDIX

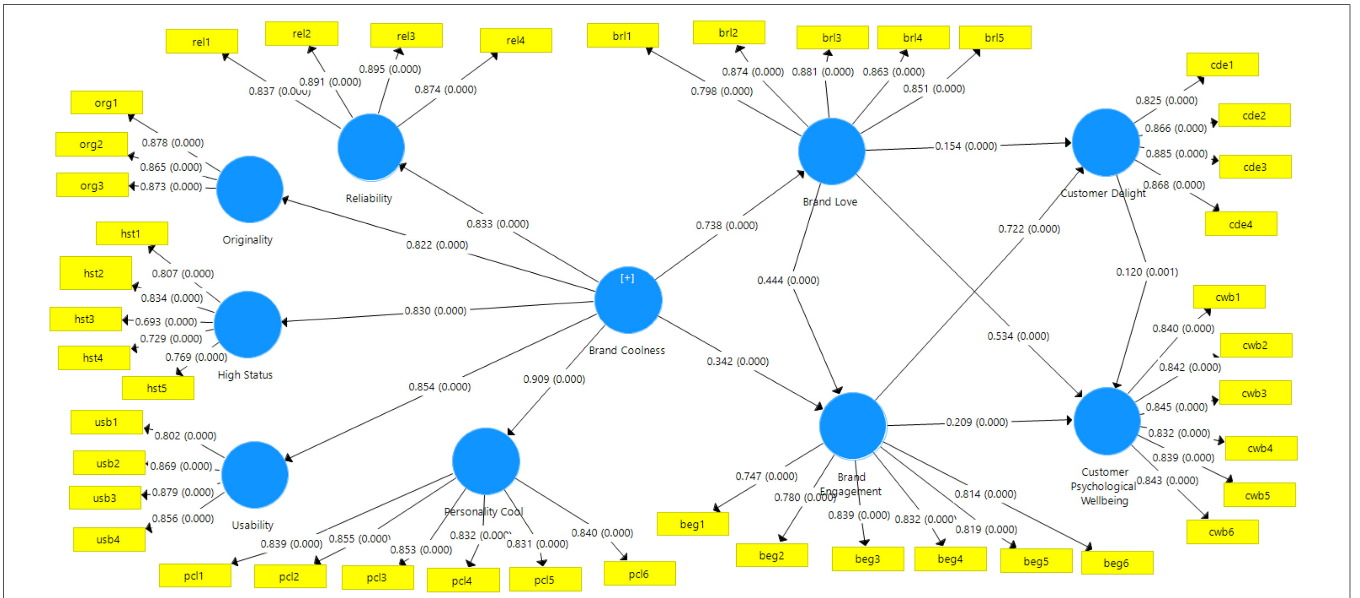

FIGURE A1 | Structural model.

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Love Is Blind! Exploring the Impact of Brand Love on eWOM in Chinese Hospitality Industry

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The rising penetration and value of online information reviews in the hospitality industry have been extensively examined. People are increasingly interacting on interactive online media, prompting firms to create online communities to share electronic word-of-mouth (eWOM) with them and with one another in order to increase brand love. This study seeks to discover what drives consumers to participate in these online brand communities. To examine the research model, an online survey was conducted on 508 consumers who had shared eWOM on social networking sites (SNS). Structural equation modeling (SEM) was employed to test all hypotheses. The findings show that each of the variables has a high impact on brand love, with information quality and virtual interaction having the most significant impact. As a result of brand love, eWOM is significantly increased. Additionally, findings show that the gender gap in the online setting is increasing, as the influence of all characteristics then reward of online brand communities on brand love was adaptable among both male and female associates. Considering the effects of online features (information quality, system quality, virtual interaction, and reward) on online brand communities' impact on brand love and eWOM. Online hotels manager is advised to carefully develop their marketing strategies to retain and attract new consumers. Furthermore, online hotels manager can use the findings from this study to understand the consequences when eWOM is strongly influenced by online brand communities' features. This study is one of the first to illustrate and empirically confirm insight into how online features affect brand lovers in online brand communities. The study adds to the body of knowledge concerning the effectiveness of social media marketing in the Chinese hotel sector.

Keywords: eWOM, brand love, information quality, system quality, reward, virtual interactivity

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INTRODUCTION

In recent years, brands and firms are adopting social networking sites (SNS) as the newest way to discuss with potential and actual consumers, as well as to upgrade hotel services (Hajli and Sims, 2015; Hu and Kim, 2018). SNS is the interactive channel that enables consumers to connect with their brands regularly (Tafesse, 2016). According to recent statistics, the number of SNS users was 71%, and it is predicted that by 2020, the number of active SNS users will be more than 3 billion (Statista, 2018). Notably, SNS users in China have increased to 61.7%, and daily users of SNS have reached 57.9% (Zong et al., 2019). SNS has become a powerful communication platform by which hotel firms interact with consumers. Thus, a significant objective for brands is to raise consumers' attachment through their SNS by analyzing relevant consumer segments that will be most flexible to their communication through their SNS (Grange and Benbasat, 2018).

The fast expansion of SNS has changed how information is accessed and delivered to consumers with an online platform wherein they can easily share information and suggestions about a brand or experience, namely electronic word-of-mouth (eWOM) (Kim et al., 2018; Bilal et al., 2022). eWOM has become an essential platform for several firms because it influenced consumers' behavior and attitude (King et al., 2014). Specifically, these impacts are influential in the service firm. In the scenario of the intangible and experiential nature of the offering, consumers are motivated to seek additional information from experienced consumers who have absorbed the service (Papathanassis and Knolle, 2011). Tourists strongly depend on eWOM when making trips (Zhang et al., 2014). Approximately 90% of visitors read eWOM before scheduling trips (Erskine, 2017). Online consumers' reviews provide assessments in terms of eWOM about services, products, and firms on third-party websites. Online consumers' reviews strongly influence fostering eWOM (Gottschalk and Mafael, 2017; Bilal et al., 2020a,b). According to Phillips et al. (2017), eWOM is a significant source of information for the hotel sector to understand their consumers' desires and enhance their hotel booking and accommodation quality.

It is particularly true in the hotel firms in China, where online information has been considered a reliable and significant innovation in the recent decade (Gössling et al., 2016; Hu and Kim, 2018). Online communication forums such as SNS and hotel websites have become important quality information sources for consumers and the hotel industry (Liu and Park, 2015). Consumers post and seek information from this platform because they think it is reliable, credible, and independent and can decrease the chances of their uncertainty (Schuckert et al., 2015). For industries, online information is a means to figure out the consumers' perceptions and increase their performance (Phillips et al., 2017). Therefore, the quality of online hotel information influences the consumers' choices and leads to brand love (Audrezet and Parguel, 2018).

The present research attaches to the attribution theory (Heider, 1958). The theory has examined the outcomes of the online community posting information on consumers' hotel choices and booking intentions. Based on attribution theory, people are pretty susceptible to virtual environment inputs. Accordingly, when consumers discover various online hotel information, they are able to attach specific hotels (in terms of information quality, system quality, virtual interactivity, and rewards), which eventually influence the hotel booking intention.

The current study focuses on SNS in terms of the online community, which examined the fact that the online community platform provides an immense opportunity to share opinions or evaluate hotel service providers. The significance is also encouraged by the undeniable fame of the forum. In the marketing literature, the online community's desire for brand love research is broadly approved (Hollebeek et al., 2014). Significant attention has been paid to online community research on brand love in recent years, but the field of empirical exploration is still underdeveloped (Keh and Sun, 2018). Research on brand love motivation in online groups has lagged behind the industry's ever-changing context despite this rational demand. Earlier research has indicated the need to explain online community characteristics and their influence on brand love (Keh and Sun, 2018) because these characteristics consider a consumer's complete impression of the online community. Multiple studies have demonstrated the impact of online community qualities on commitment, fulfillment, and brand awareness (Jang et al., 2008). Regardless of the fact, studies analyzing the online community characteristics and the direction in which these variables elements brand love is uncommon.

Several important contributions are made by this study to the existing literature. First, we propose and empirically examine a conceptual framework for the development of brand love and eWOM *via* online community characteristics (information quality, system quality, virtual interactivity, and reward). Second, whether the online comments generated on SNS influence hotel booking intention; third, this study investigates the role of gender as a moderator in the relationship between information quality, system quality, virtual interactivity, and reward. Finally, our study support hotel industries in developing an effective plan to reduce uncertainty and encourage consumers to read online hotel reviews for hotel booking. The research findings will have practical implications for the Chinese modern hospitality industry.

THEORETICAL DEVELOPMENT

Electronic Word-of-Mouth in the Hotel Industry

The eWOM is a significant source of information because it provides experience-based, completed, non-commercial, and up-to-date information online (Hennig-Thurau et al., 2004). eWOM is extended in different practices, such as social media (e.g., WeChat), online communities, and online information can be stored and revised on the web. eWOM primarily transforms the spatial, expressive, and private social network limits of traditional WOM and investigates the impact of a diverse scope of more powerful consumers than family, peers, or relatives in the offline scenario (Dellarocas, 2006). eWOM offers some rare kind of feature. First, eWOM extends the space of influence because eWOM is easily non-perishable and referable nature. Second, SNS helps consumers to share and search for information as well as to manage online transactions. Based on this eWOM has become an essential channel in consumers' hotel booking and decision-making behavior (Ye et al., 2009). Because many hotel websites give online opportunities where consumers to share information and communicate with hotel experience consumers. An investigation by Tsao et al. (2015) shows that 87% of consumers believe that online information helps them book hotels confidently, and 98% evaluate that online information is accurate.

In the context of hotel industries, eWOM can get multiple forums such as posting and hotel reviews on the consumer suggestion sites (e.g., official hotel websites), revealing to be incredibly imperative (Phillips et al., 2017). These reviews contain descriptions and hotel services, and usually, these reviews are created by hotel staff. With the rising trend of online electronic communication, young consumers are always eager to post reviews of their visits on hotel websites (Law et al., 2018). Therefore, hospitality consumers are encouraged to evaluate the analysis, comments, and shared experiences of other customers online before making a reservation. According to the study's literature, the tourism sector has a massive impact on eWOM, and hotels appear to be the most concerning. Consequently, this area calls for considerable attention (Ladhari and Michaud, 2015).

Attribution Theory

In line with (Heider, 1920), attribution theory serves as a foundation for the following theories on peoples' views advised by multiple writers. The goal of that study was to resolve the conflict between real objects and fleshly information. Far ahead, Haider focused on the domain of social interaction and measured how people create a feeling for other people. Found by Heider (1958), "persons are recognized as action places and as such possible do something to us. We may positively or negatively influence them, and they can be beneficial or harmful to us deliberately. Persons have capabilities, aspirations, and opinions; they can manifest decisively and might notice or observe us."

Attribution Theory is defined as: "a theory that explains the cognitive process by which individuals assess the causes of behaviors and events in their globe" (Mullen and Johnson, 2013, p. 174). Haider's attribution theory proposes a condition of the psychology of interpersonal associations (Patwardhan and Patwardhan, 2016); additionally, Haider expanded the theory by concentrating on the people's different responses (Heider, 1958).

The present study, attribution theory, is recognized as a core theory that connects hotel information quality *via* online and brand love, coined the term "attribution theory," which appeared from the psychology of personal associations. This theory targets the person's opinion on an event and its result on peoples' attitudes (Heider, 1958). "Attribution theory behaves with how people clarify behavior and events based on their casual judgment. Their explanations play a vital role in deciding reactions to these experiences or behavior (Chang et al., 2015, p. 50). In these circumstances, when consumers are disclosing the information, they try to compare information in the brand offering style. As a result, satisfaction requires information that may lead to a relationship with a particular brand or brand lover (Chakraborty and Bhat, 2018); brand lover likes to share and recommend to other online users as a result of increasing the number of brand lovers as well as their impact on consumer hotel booking behavior (Jackson, 2019).

Brand Love

Proposed by Rubin (1973), brand love is a mindset that consumers hold toward a specific brand, which adds their skill to feel, behave, and think concerning the particular brand. Brand love was investigated to influence competitor brand-related opinions such as brand relationships and eWOM. An individual ability to recognize and desire a few brands is one of the decision variables so that consumers feel willing to buy a particular brand continuously. The relationship it has also been recognized to develop brand love is enduring and profound; thus, brand love provides unique qualities (Albert and Merunka, 2013). Carroll and Ahuvia (2006) defined it as "the level of feelings and dedicated connection that a satisfied consumer has to a specific brand."

Furthermore, Batra et al. (2012) argue that brand love is emotionally attached to continuous interaction with a specific brand. From SNS's perspective, brand love may develop with self-expressive brands on SNS, considering a rewarding and favorable interaction relationship that they have "liked" (Wallace et al., 2014). For example, consumers who love a particular brand are eager to pay for their brands and are excited to share, collect, and suggest the products or brands.

Recently, brand love has received devotion in the context of the hospitality research concept because the setup has been expressed to influence key marketing variables such as brand information quality, willingness to award a premium price, spreading eWOM, switching resistance, and repurchase intention (Batra et al., 2012; Wang et al., 2019). Moreover, brand love and changing resistance loyalty highlight the literature that brand love is crucial to the hotel business, which has severe issues in holding loyal consumers. Similarly, the electronic marketing of multiple services, such as hotels, travel packages, cruises, and flights, has been increased because of various benefits to E-tailers and consumers. SNS has been established as the essential channel for hotel firms during the past decade. In addition, SNS extends eWOM influence on consumers deciding on hotel brands. SNS provides the opportunity to acquire other consumers' hotel experiences (Su et al., 2015; Gleason et al., 2019).

RESEARCH MODEL AND HYPOTHESES

Information Quality and Brand Love

The previous multiple studies have applied various measures of information system success. These measures involve users' specific brand information (Gao et al., 2017), improved performance and decision quality (Mpinganjira, 2016), and information systems benefits (Peters et al., 2016). All these different studies are given a valuable point of information quality in an online community hotel appreciably on the information quality connected to the brand. In hotel industries, information quality is considered as a valuable asset that has been studied by many research scholars (Holbrook, 2006). Information quality in an online context is defined as "the quality of the information displayed on a website as perceived by users" and reviews the differentiation between users' perceptions and expectations of information circulation (Liu et al., 2018). From an online viewpoint, consumers perceive information quality as the expansion to which they provide information to verify their potential and fulfill their required information that may lead to a relationship with the specific brand. High-quality information allows consumers to obtain information and receive a useful opinion on one particular brand (Zheng et al., 2013). When an online consumer gets a more outstanding quality of information, they consider it likely valuable (Kim et al., 2016). In line with Albert and Merunka (2013), they demonstrated that higher quality of information might have a vital role in developing brand love. Therefore, we suggest that:

H1. Information quality positively influences on brand love of hotel firms promoted on SNS.

System Quality and Brand Love

System quality indicates "convenient and fast seeking information in an online platform" (Nikhashemi et al., 2017). It is "an evaluation of the certain extent to which the system is designed to ease of use technically, user-friendly, error-free, well documented, response time, resilience, and security." A robustly considered system is vital for obtaining hotel benefits such as increased revenue, enhanced process performance, and cost reduction. Conversely, a poorly designed system may turn out destructive to hotels and lead to intensive service costs and low hotel efficiency (Moody et al., 2017). In addition, the quality of system factors is influencing because they reveal to shaping the service procedure to be more pleasant and energetic (Langaro et al., 2018). System quality gives an effective impression to its consumers to reply positively to the brand's visible view, develop a relationship with the brand, convince repeat buying, and develop trust (Shin et al., 2013). Consumers like to participate in a high-quality system, recall the brand, and share positive eWOM (Gorla et al., 2010). According to Albert and Merunka (2013), consumers connecting their relationships could have a great act in developing brand love, and system quality may also play a vital role in brand love. Therefore, we postulate the link:

H2. System quality positively influences on brand love of hotel firms promoted on SNS.

Virtual Interactive and Brand Love

Theory suggests promising to react and multimedia web characteristics in developing multiple dimensions of relationship building with consumers in the context of virtual environment research on interactivity (Di Pietro et al., 2012). This research shapes definition of Steuer's (1992, p.4), which virtual interactive (VI) defines as "the extent to which online users can engage in modifying the website's content in real-time." This study defines VI as SNS users and hotel industries discussing directly with each other, without regard for time or distance, sharing, investigating, and providing hotel-related information via SNS in a timely manner. According to this definition, interactivity refers to the value of tools that promote interactivity with and between consumers and encourage consumers to share information on the hotel's website (Jakeli and Tchumburidze, 2012). Numerous researches on VI investigate the abrupt influence on the creation of healthy ranks of branding elements. However, the improvement of consumers' relationship with the brand has not yet been examined (Jakeli and Tchumburidze, 2012), specifically in the hotel (Xiang et al., 2014). People, who are more attached to the brand, search for information about the brand, are involved to a higher degree in the choice between alternatives, are well familiar with the difference between similar categories of the brand, and show more preference for the exact brand. VI plays a vital role in developing brand trust and satisfaction. Interactivity encourages consumers to join and stay in SNS. According to Barreda et al. (2016), they argued that VI positively influences brand love in a hotel context. Therefore, we postulate the link:

H3. Virtual interactivity positively affects the brand love of hotel firms promoted on SNS.

Reward and Brand Love

The monetary or psychological rewards pattern for devoted SNS users is interpreted as the reward for activities (Kim et al., 2013). In the hotel industry, rewarding is one of the main elements that develop a relationship with a specific brand (Barreda et al., 2016). In this article, reward indicates the level of monetary or psychological motivation for its consumer and reflects all the favor that consumers receive through their relationship with a specific brand (Newman and Sheikh, 2012). The reward can include financial (discounts, special deals, and loyalty) value, functional (moral support and right information) profits, social (image building, appreciation, and altruism) benefits, and psychological (entertainment and belonging) benefits (Wirtz et al., 2013).

Offering various incentives is indicated as an essential driver for developing a consumer's relationship with a specific brand and service (Rohm et al., 2013). These incentives influence consumers' decisions to choose a particular brand from a competitive platform and to join such communities for development purposes. Past research found that rewards are positively related to the level of consumer engagement (Wirtz et al., 2013). Similarly, Lee et al. (2021) demonstrated that hotel industries need to allot psychological and financial rewards to develop consumers' relationships, interest in, and preference for a brand/service. Therefore, we postulate the link:

H4. Reward positively affects brand love of hotel firms promoted on SNS.

Influence of Brand Love on eWOM

The direct relationship between brand love and eWOM is well documented in the literature (Aro et al., 2018). According to Leong et al. (2020), eWOM plays a great role in influencing consumers' behavior. If the consumers are intensely engaged with the brands, they like to show their feelings toward it by informing and suggesting to others about it (Leong et al., 2020). Independently spend brand-related effort/time publicly spreading their feelings on different SNS (Hollebeek, 2011). Thus, consumers are considered loyal brand activists who like brands on social sites. Brand loving motivates the consumers to suggest it to their family and friends.

Searching brands on SNS give the brand a chance to interact with consumers who have an emotional link with the brand and join with the brand by high association and spread eWOM (Bilal et al., 2021). Brand lover consumers like to discuss it through the construction and identity process (Batra et al., 2012). The effect of brand love on eWOM has been positively disclosed (Carroll and Ahuvia, 2006). The current study suggests that consumers who like a brand on SNS appear as the evangelists for the product/brand, taking into sharing eWOM. These brands dearest not only interface with others internally, they similarly have passionate holding with the brand ground on which they plan to share the brand with others (Leong et al., 2020). Therefore, we postulate the link:

H5. Brand love positively influences the eWOM of hotel firms promoted on SNS.

Gender as a Moderator

Apart from gender-specific skills, the theory of gender-based socialization shows that men and women who are indifferent to specific cultural atmospheres are able to achieve personal attributes and individual views of different sexes, giving them the ability to be implored by masculine or feminine disposition (Barry et al., 1957). Consequently, propelled by different values and options in the ethical area, both genders cultivate value-sets, respectively (Mason and Mudrack, 1996). Discrepancies between the two genders have been handled by two mainstreams in the research area, which are the biological sex research stream (Chang, 2006; Bilal et al., 2020a,b) as well as the gender identity research stream (Gould and Weil, 1991).

For one thing, men and women are reckoned by the former one throughout the field of gender regarding biological sex (Kolyesnikova and Dodd, 2009). Nevertheless, the latter is prone to concentrate on the psychological sex identity when it comes to gender (Gould and Weil, 1991), which is built on two contrasting personality traits of gender. Researchers discover that it is a gender identity that exerts influence on customers' views and simultaneously plays a role in predicting behavioral performance in consumers' activities.

Nonetheless, the part gender identity plays in the bounds of consumer behaviors research is suspected (Kolyesnikova and Dodd, 2009), and in the meantime, compared with gender identity, researchers have adopted biological sex as a vital factor in predicting behaviors of consumer groups. Additionally, from a realistic perspective, recent studies have increasingly unveiled men and women as a separation variable (Das, 2014). Therefore, this study considers gender to be a biological reality (men and women).

A good quantity of research has evaluated the role of gender in the marketing and management domain, but such studies are rare in association with the online situation (Ladhari and Leclerc, 2013). According to online research, gender differences in information and decision-making processes between men and women play an essential role in using and adopting the internet by men and women (Verhagen and Van Dolen, 2011). As opposed to women, men engage in fewer trials and exploratory behavior, prefer web booking and have optimistic beliefs about web advertisement as opposed to traditional media (Wolin and Korgaonkar, 2003). The moderation result regarding gender in the online environment is questionable. According to one research direction, the gender gap performs a key position in the online context because men and women interact contrarily on the web (Verhagen and Van Dolen, 2011). Another research direction proposes that online media's gender gap reduces as both men and women find critical features like system quality and information quality, etc., as equally essential (Liu et al., 2018). Furthermore, perception and similarity among men and women are found in how online experience and web atmosphere influence their SNS consumers' behavior, attitude toward SNS, and hotel-quality service. As a result, this research aims to recognize this discrepancy by examining how different sexes establish links between the critical feature of online reviews and brand love.

Men and women express different perceptions, behavior, and attitude toward online-based interaction (Chen and Macredie, 2010). Past studies reveal that men tend to pay attention to the detailed information that they consider essential. On the other hand, women adopt relational processors who review all existing information and explore the relationship and differences or similarities among different kinds of information (Meyers-Levy, 1989). These findings suggest that:

H6. Information quality and brand love vary according to gender.
H7. System quality and brand love vary according to gender.
H8. Virtual interactivity and brand love vary according to gender.
H9. Reward and brand love vary according to gender.

METHODOLOGY

Research Setting

As an appropriate research framework (see **Figure 1**), this study was conducted in Beijing because China hotel market is the fastest-growing market in the world. In 2016, a number 59.27 million of people stayed in hotels overnight (Business Wire, 2016). The hotel industry in China has 10,956 hotels, with 807 five-star hotels. Hotels industries in China had made ≈211.278 billion CNY, of which 42.86% was related to restaurants, and room-related services accounted for 35.55%. The average rate of a one-night hotel room in China was CNY357.61 in 2016, and the average residence was 55.59%. In 2014, China hotel industry provided more than 66 million job opportunities (Travel, 2015). In addition, the administration of China is working on a sustainable strategy to motivate the local hotel industries in order to promote hotel chains that will provide fresh jobs and stable the economic gap between rural and urban areas and between upper and middle classes. Considering the world's largest population group, the attitude of Chinese consumers regarding consumption is shifting every day. Therefore, the government of China developed a choreographed plan that motivates the hotels' industries to expand and improve, which will support the development of technology, human resources, and capital. Consumer psychologists have hypothesized the customers' perceptions of online hotel information in hospitality research, and China hotel market has become an essential field for a researcher who has assessed the behavior of online hotel consumers (Wang et al., 2015; Ahmad and Sun, 2018). We, therefore, follow this instruction and include an empirical study of consumers' psychology, hospitality, and service management.

Sampling and Data Collection

We targeted people who had stayed in a 3-star hotel or a 4-star hotel in Beijing or planned to do so; our targeted population is Chinese. The 3-star and 4-star hotels were our first choice

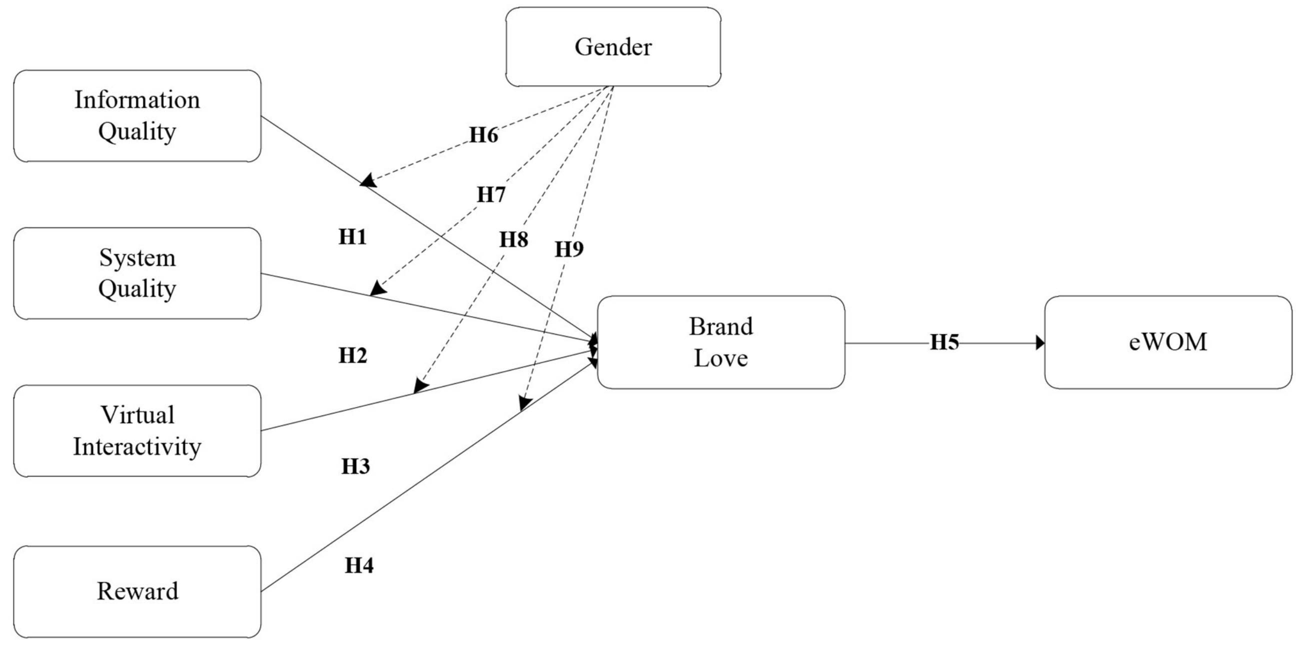

FIGURE 1 | Research model.

because they account for 70.13% of all hotels in China (Travel, 2015). According to Ahmad and Sun (2018), there is no actual method of conveying star rankings to hotels, so a European or Asian hotel with a similar star category differs from a U.S. hotel with varying star ratings in terms of the level of amenities and services. In China, the Tourism Bureau and the National Tourism Administration control the hotel rating system instead of a third-party platform such as Expedia and TripAdvisor (Su and Sun, 2007), which gives a rating based on the consumers' views, like that a more excellent rating is not the best indicator of hotel service quality. According to the UNWTO (2014), report 84% seeker *via* online information, and 75% of consumers considered hotel classification.

Similarly, 36% consumers use online information for searching the hotel brand, 52% consumers used online information to find the hotel classification (Statista, 2017). We chose 3- and 4-star hotels with higher consumer prospects than other hotels. We chose Beijing because it attracts visitors from all around China, increasing the generalizability of our findings.

Data were obtained through convenience sampling. This procedure is investigated by Seckler et al. (2015) when the questionnaire's items are suitable and when the study's nature is exploratory and relevant to the respondents. This method has been adopted in the extant literature and has been simultaneously shown as suitable for data collecting (Román, 2007). According to Seckler et al. (2015), in exploratory studies with items that are correlated to respondents, this method is reasonable and adequate. The constructs of our study have not yet been explored in the literature. Hence, the research must be exploratory, and the items on the questionnaire are applicable to the respondents, so the study meets both of these criteria. Data were collected between Augusts and November, 2021. Respondents in the hotel were contacted and asked if they were scheduled to stay (arrivals) or stayed (departures) at any 3-star or 4-star hotels in Beijing, China. We hired 6 PhD applicants to conduct the survey. Consumers accomplished the survey in ≈15 min, after which we showed sincere gratitude with cards for their support. Total, 589 eligible members were requested to contribute to the survey, and 508 responses were received for a rate of 86%. A total of 79 eligible members were not included for further analysis because of exciting values (e.g., all fives or all ones) incompleteness.

DATA ANALYSIS

Demographics of Respondents

Table 1 displays the demographic information for the survey participants. The mainstream of respondents was between 26 and 30 years old. Men made up 48.6% of all participants, and women were 51.3%. Approximately 67% of those polled were single. More than half of those polled had a bachelor's passed, with 40.7% having a master's degree. We classified respondents based on their online hotel booking and review experience. The mainstream of participants, 54.9%, had used social media websites. With online hotel reviews, 60.2% were moderately experienced, while 39.7 were fully experienced. Furthermore, 53.3% of participants frequently share eWOM about their hotel experience on social media.

Instruments

All of the items used in this study were adapted from the previous studies. We measure items that had been used and validated in an earlier study, with proper modifications in wordings to suit our

TABLE 1 | Respondents' profile ($n = 508$).

Demographics information	Frequency	Percentage
Gender		
Male	247	48.62
Female	261	51.38
Marital status		
Single	343	67.52
Married	165	32.49
Age		
20–25	71	13.97
26–30	269	52.95
31–35	59	11.61
36–40	77	15.15
Over 40	32	6.30
Qualification		
High school	53	10.43
Higher secondary school	49	9.64
Bachelor's degree	162	31.88
Master's degree	207	40.74
Doctorate	37	7.28
Online hotel booking information source		
Travel websites	61	26.9
Search engines	73	12.00
Hotel websites	95	18.70
Social media	279	54.92
Online hotel reviews and hotel booking experience		
Fully experienced	202	39.76
Moderated experienced	306	60.24
eWOM experience: How often did you post hotel experiences online?		
Never	27	5.31
Few (1–2 times)	51	10.03
Frequently (2–3 times)	159	31.29
Often (more than three times)	271	53.34

research setting. A ten-item measure for information quality was modified from Teng et al. (2014). Six-item measures for system quality were amended by Ahn et al. (2007). Four items measured for virtual interactivity were adapted from Jang et al. (2008). A two-item measure for reward was adapted from Jang et al. (2008). Four-item measures for brand love were adapted from Carroll and Ahuvia (2006). A four-item measure for eWOM was adapted from Alhidari et al. (2015). All measurement items were taken on the five-point Likert scales, from 1 "totally disagree" to 5 "totally agree."

Analysis and Results

The first step was to analyze the data; we checked all the variables outliners, missing values, the accuracy of data, multicollinearity, and normality. The next step was the Confirmatory Factor Analysis (CFA) to check for convergent and discriminatory validity by AMOS 20; the psychometric character of the scales used. Furthermore, the validity of the content and professional recommendations was removed, as were items with low (0.5) factor loading. Structural Equation Modeling (SEM) was used to test the model and presented the hypothesis of this research.

Table 2 shows the construct's factor loading, Composite Reliability (C.R.), Average Variance Extracted (AVE), and Cronbach a. Each item's loading was larger than 0.5, so convergent validity standards were fulfilled (Bagozzi and Heatherton, 1994). All constructs' value of the Cronbach's were suitable (>0.7). The C.R. must be above 0.70 (Fornell and Larcker, 1981); it ranged between 0.81 and 0.93, thus satisfactory. The constructs' AVE ranged from 0.61 to 0.79, which was higher than the accepted value of 0.50 (Fornell and Larcker, 1981). Podsakoff et al. (2003) examined the common method bias; Harman's single-factor test was utilized. The findings show that the initial factor was 28%, below 50% of the whole variance; all the loads showed considerable t-values ($p < 0.01$). Consequential convergent validity (>0.5), which represented the common method bias, did not pose a threat to our research. Discriminant validity is defined as "the level to which various ideas are unique from one another" (Bagozzi and Heatherton, 1994, p. 20); in this study, the AVEs square root of each item is compared to all of its relevant associations (Fornell and Larcker, 1981) (see **Table 3**).

Structural Model

To estimate the model fitness, assessments containing the χ^2 statistics, root mean square error of approximation (RMESA), the goodness of fit index (GFI), normed fit index (NFI), and comparative fit index (CFI) were evaluated. As per Joreskog and Sorborm (1989), appropriate values for the NFI and GFI are >0.9; the CFI, according to Hu and Bentler (1999), should be below 0.95. The RMSEA values <0.06 show an acceptable range (Browne and Cudeck, 1993). **Table 4** shows the structural model result that information quality ($\beta = 0.51$; $t = 5.63$, $p < 0.05$), system quality ($\beta = 0.54$, $t = 4.64$, $p < 0.05$), virtual interactivity ($\beta = 0.47$, $t = 5.32$, $p < 0.05$), and reward ($\beta = 0.52$, $t = 4.43$, $p < 0.05$) display significant positive effects on brand love, with virtual interactivity and information quality showing the solidest effects. The results also indicate a significant positive effect of brand love on eWOM ($\beta = 0.54$, $t = 0.52$, $p < 0.05$). Thus, H1, H2, H3, H4, and H5 are supported.

This research conducted a multi-group analysis in AMOS 20.0 to check the moderating influence of gender as expected in H6, H7, H8, and H9. The whole sample was divided into two sets, male ($n = 247$) and female ($n = 261$). For each group, the independently constructed model fit well: for men, $\chi^2 = 275.141$, $df = 127$, $\chi^2/df = 2.16$, $NFI = 0.911$; $CFI = 0.925$, $IFI = 0.919$, $GFI = 0.922$, $RMSEA = 0.059$; for women, $\chi^2 = 239.51$, $df = 137$, $\chi^2/df = 1.74$, $NFI = 0.907$; $CFI = 0.915$, $IFI = 0.909$, $GFI = 0.911$, $RMSEA = 0.072$. A solid model fit was validated again by the structural multi-group: $\chi^2 = 299.243$, $df = 139$, $\chi^2/df = 2.152$, $NFI = 0.903$; $CFI = 0.923$, $IFI = 0.911$, $GFI = 0.913$, $RMSEA = 0.065$. These findings follow the same structure in both sample sets.

Male and female samples were compared for their relationship effects, which are summarized in **Table 5**. As a result of the findings, the level of information quality and brand love is significant and positive for both genders (male: $\beta = 0.53$, $t = 5.45$, $p < 0.01$; female: $\beta = 0.46$, $t = 4.87$, $p < 0.01$), accepting

TABLE 2 | Reliability and convergent validity.

Constructs	Items	Means	SD	Item loading	CR	AVE	Cronbach's	KMO
Information quality	10	3.32	1.17	0.79–0.89	0.81	0.72	0.82	0.83
System quality	6	3.52	1.14	0.81–0.87	0.89	0.79	0.92	0.76
Virtual interactivity	4	4.11	1.31	0.88–0.93	0.91	0.67	0.86	0.82
Reward	2	3.20	1.15	0.80–0.91	0.86	0.78	0.89	0.75
Brand love	4	3.15	1.10	0.76–0.94	0.89	0.61	0.87	0.79
eWOM	4	4.35	1.73	0.77–0.95	0.93	0.65	0.91	0.84

TABLE 3 | Discriminant validity.

Constructs	1	2	3	4	5	6	Square root of AVE
(1) Information quality	–						0.84
(2) System quality	0.44	–					0.88
(3) Virtual interactivity	0.38	0.43	–				0.81
(4) Reward	0.32	0.31	0.47	–			0.88
(5) Brand love	0.34	0.37	0.49	0.37	–		0.78
(6) eWOM	0.37	0.39	0.39	0.38	0.43	–	0.80

TABLE 4 | Hypotheses testing results.

	Hypotheses	β	t-values	Results
H1	Information quality → Brand love	0.51	5.63	Accepted
H2	System quality → Brand love	0.54	4.64	Accepted
H3	Virtual interactivity → Brand love	0.47	5.32	Accepted
H4	Reward → Brand love	0.52	4.43	Accepted
H5	Brand love → eWOM	0.54	5.52	Accepted

H6. The significant positive effect of system quality on brand love varies across gender (male: $\beta = 0.49$, $t = 4.49$, $p < 0.01$; female: $\beta = 0.54$, $t = 5.69$, $p < 0.01$), supporting H7. Similarly, virtual interactivity has a significant positive impact on brand-love across genders (male: $\beta = 0.50$, $t = 4.52$, $p < 0.01$; female: $\beta = 0.46$, $t = 5.78$, $p < 0.01$), accept H8. Finally, a positive relationship between rewards and brand love for both genders was found (male: $\beta = 0.48$, $t = 3.69$, $p < 0.01$; female: $\beta = 0.47$, $t = 3.99$, $p < 0.01$), not supporting H9. Therefore, instead of a reward, gender moderates the impact of community features on brand love.

DISCUSSION

Social networking sites have extraordinarily changed the communication style of consumers and the hospitality sector worldwide. Consumers have become sharp in making conversation with the hotel through an online platform overall and brand communities specifically. Developing and maintaining a brand lover client base in such a digitalized era is a big obstacle that hospitality faces. Hotels industries are more attentive to recognizing higher brand love drivers than properly used marketing notions like perceived service quality and customer satisfaction. Brand love has been proposed to be a potential unexpected predictor for eWOM. Thus, hospitality industries are emerging brand communities on the social network to communicate, stimulate, and advertise their offering to their consumers.

Our model provides insight into the importance of information quality, system quality, virtual attractively, and reward as critical drivers of brand love. Our findings suggest that managers should focus their marketing communications on improving brand attributes for consumers, which will positively affect consumer brand estimations. Our findings imply that managers must focus on expressing their brand-related (organizational) ethics to customers through SNS in a way that relates to these individuals' personal (ideal) brand love while retaining the brand's (organization's) fundamental values to create a distinct proposing.

This study established the possible effects of online community characteristics such as information quality, system quality, virtual interactivity, and rewards on brand love and the subsequent impacts of brand love on eWOM. All characteristics positively influence brand love, with information quality and system quality manner the decisive influence. Brand love also has a progressive impact on eWOM. This study adds brand love literature by offering an empirically confirming a unique framework for brand lovers with the hospitality community on SNS, applying the moderating role of gender.

Investigating the role of gender allows marketers to determine whether they want gender-based strategies implemented by men and women. In this study, moderation analysis reveals that the effect of online brand community characteristics on brand love is persistent across men and women. This means that the gender breach in online platforms is increasing. Previous research has

TABLE 5 | Hypotheses testing results across gender.

	Hypotheses	Male		Female		Test results
		β	t-values	β	t-values	
H6	Information quality → Brand love	0.53	5.45	0.46	4.87	Supported
H7	System quality → Brand love	0.49	4.49	0.54	5.69	Supported
H8	Virtual interactivity → Brand love	0.50	4.52	0.46	5.78	Supported
H9	Reward → Brand love	0.48	3.69	0.47	3.99	Not supported

shown that the system quality is most influencing factor effects on male than female. In contrast, the female content quality is observed as significant (Chu and Sung, 2015), and women report information quality is less than men (Liu et al., 2018). However, this study's finding is constant with current studies that established the gender difference in the online context, mostly regarding information quality, system quality, and virtual interactivity instead of reward (Mishra et al., 2018). Likewise, this study's result is consistent with Sohaib et al. (2019), who show that the gender hole in the online platform is increasing.

Theoretical Implications

Our research adds concepts in the fields of information sorting and service management. This study extends the literature by (a) expanding our view of the role of information quality, system quality, virtual interactivity, and rewards effects as key drivers of brand love in the hospitality sector; (b) the effect of brand love on eWOM; (c) the role of eWOM in forming eventual consumer brand love in; and (d) exploring the role of gender as a potential moderator in the information quality, system quality, virtual interactivity, and reward. Theoretically, our model study emphasizes the stated effects of online information on brand love, which is evidently lacking in the literature. Whereas, the previous research has primarily examined brand love through the prism of relationship marketing or S-D logic (Vargo and Lusch, 2017), Little is revealed regarding the impact of eWOM motivator factors and brand love through the setting of attribution theory, as reported in this research article. As a result, our adoption of an integrative attribution theory perspective supplements current findings and supports the conceptual claims of these theories in the online information setting.

Second, even as studies on deception in a variety of many online settings have been conducted, the interpretation of reviewers with brand love and consumers' belief in the authenticity of reviewers' inference gestures has received less theoretical attention. Studies on the link between online reviews and brand love have been done in a limited number of cases (Ahmad and Sun, 2018; Hayat Bhatti et al., 2019). In contrast to previous research, our study adds to prior knowledge about eWOM sharing by the potential consumer on SNS. Hotel customers rely on experienced consumers to purchase and use a specific brand product or service, and our findings show that potential consumers posted on hotel and travel websites are influenced by hotel customers.

Third, whereas gender is a well-reported variable in the literature, little study has been conducted to evaluate the existence of gender effects on customer engagement. To assess whether or not, marketers might gain from gender-specific segmentation methods in the service sector of online review, we investigated the moderating influence of gender on the connection between information quality, system quality, virtual interactivity, and rewards. Interestingly, we discovered that gender significantly affected this connection instead of reward, adding an additional theoretical contribution to this work.

Fourth, by focusing on a specific sort of online hotel reviewer, the current study contributes to the body of knowledge in information processing. Our findings contradict Ahmad and Sun (2018) and Xie et al. (2011), who found that online information and sharing of consumers' experiences build brand trust. In comparison, the current study findings imply that consumers rely on confirmed and verified results of hotel industry experts' products and services because they believe online reviews provided by experienced consumers are accurate and dependable. We also discovered that consumers use online reviews from previous customers as a source of credibility when making hotel reservations.

Managerial Implications

This study has a variety of managerial implications for hotel management marketing strategy. In the electronic era, one-to-one marketing and user-generated (including posting information) content are becoming crucially influential for the strategic improvement of consumer eWOM sharing and brand dedication (Brodie et al., 2011). In this setting, information quality, system quality, and virtual interaction are critical in promoting consumer motivations to enter and attach to a specific brand.

The functionality of online brand communities has improved recently, allowing marketers to encourage brand lovers that strengthen to share eWOM. According to the findings, the most influential predictors of brand lovers in online brand communities are information quality and virtual interactivity. As a result, organizations are advised to provide relevant, reliable, and efficient services, generate key messages, encourage the user to engage with the brand and other customers, allow consumers to request questions, submit inquiries, and exchange ideas and information. Marketers must set up quality control structures to confirm the quality of information. For example, at the start of reviews, hotel and hotel booking review websites may upload a photo of the peer reviewer's hotel booking voucher as well as a picture of him or her in the hotel room.

The study's findings indicate that to improve system quality and increase virtual interactivity, and the hotel industry could enhance the effectiveness of information search by providing superior navigational options, tracking members' previous browsing data, and proposing or emphasizing the best popular matters presently being imparted. This could result in noticeable effects that entice customers to stay with a specific brand. Marketers must give a more structured approach for customers to publish, share, and participate in brand community discussions in their entirety. This may also encourage more consumers to participate and contribute. To investigate the reviews on the hotel website and SNS, the hotel's manager could create an organization that registers industry specialists and makes their knowledge available on a separate page of their sites as well as on SNS. This will assist hotel organizations in developing a strong brand community through SNS.

Limitation and Future Direction

In addition to making contributions to both theory and practice, our research has some limitations that can be applied to future studies. First, the developed framework was tested in the context of virtual brand communities, which was a unique setting. As a result, future researchers may be concerned about investigating the framework in offline settings or exploring its dynamics in composite online/offline platforms (Hollebeek et al., 2019). Second, our research examined eWOM as a direct result of brand love. However, additional dependent variables may comprise the consumer's desire to pay a premium for specific offerings, service innovation, and brand image. Third, the participants for this study were all from Beijing. Future researchers can resemble the study using different countries and markets to test for the effects of variances in market situations and cultures and simplify our findings and model. In addition, because the research used cross-sectional data, future researchers may be able to use longitudinal data to confirm the causal mechanisms identified herein. Finally, the scope of the study is restricted to the hospitality industry. Future studies can test our model's robustness against other sectors, such as healthcare, banking, and airline, to see if it holds up in different situations.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Anhui Polytechnic University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

Conceptualization and data analysis: MB and UA. Methodology: YZ and MB. Writing—original draft: MB and SC. Writing—review and editing: UA and YZ. Formatting, data analysis, and literature review: ZW. All authors have read and agreed to the published version of the manuscript.

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The Influence of Tourists' Online Value Co-creation Behavior on Consumer-Brand Relationship Quality: The Moderating Effect of Altruism

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In recent years, there is the popular phenomenon of "grass planting" marketing. The value co-creation behavior of ordinary consumers KOC (key opinion consumer) in the online community is sometimes out of utilitarian intentions, which is deemed as plain people's "grass planting" advertising in a certain degree. We collected the tourists' data in Chinese Grand Canal National Cultural Park, analyzed the impact of value co-creation behaviors such as tourists' experience sharing, topic discussions, and suggestions in online communities on the value of tourism experience and the quality of brand relationships under the "planting grass" marketing environment and verified the moderating mechanism of tourist altruism in it. According to the results, tourists' online value co-creation behavior has a significant positive impact on the consumer-brand relationship quality, and experience value plays a mediating role. Tourists' online value co-creation behavior has a significant positive impact on experience value, in which altruism plays a moderating role. The greater the tendency of altruism, the higher the impact of tourists' value co-creation behaviors on their experience value, and vice versa. This conclusion is not only of great significance in deepening and improving theories of value co-creation, altruism, experience value and consumer-brand relationship quality, but also has important certain management enlightenment on how to combine the design of merchant value co-creation incentive mechanism with altruism in "grass planting" marketing.

Keywords: "grass planting" marketing, value co-creation behavior, altruism, experience value, consumer-brand relationship quality

INTRODUCTION

National Cultural Park is not only a new carrier of a country's cultural heritage but also an important platform for international cultural exchange. Managers working in the park can take measures to encourage tourists to participate in value co-creation, thus improving the experience value of tourists, as well as customer loyalty (Yi and Gong, 2013). However, according to the latest marketing practice, more and more businesses have been attracting customers to participate in online value co-creation, forming a group of plain consumers KOC (key opinion consumer), while other consumers begin to have some negative comments on them. Under such circumstance, the internal mechanism and boundary of online value co-creation behavior of tourists in National Cultural Park affecting the consumer-brand relationship quality is worthy of further attention from theoretical and practical fields.

Altruism can make subjects carry out behaviors beneficial for the society, and simultaneously enhance their emotional bond, as well as the perceived value (Au et al., 2020; Rong et al., 2021, etc.). Previously, some scholars regarded citizenship behavior as a dimension of value co-creation behavior, which can affect the experience value in combination with participation behaviors (Chan and Kuok, 2021). However, altruism belongs to a concept from the perspective of value, while citizenship behavior belongs to a concept from the perspective of behavior, and there are obvious differences between them. In this paper, taking tourists of the China Grand Canal National Cultural Park as the research object, altruism is introduced into the online value co-creation participation behavior, experience value, as well as the consumer-brand relationship quality model, and the mediating mechanism of experience value and the moderating mechanism of altruism are analyzed. This paper is of great significance for deepening and improving theories of value co-creation, altruism, experience value, and brand relationship quality, and is of enlightening significance on how to combine the design of value co-creation incentive mechanism of park managers with altruism in "grass planting" marketing.

THEORETICAL FOUNDATIONS

Value Co-creation Behavior

For the first time, Prahalad and Ramaswamy (2010) proposed the concept of value co-creation in 2010; in the process of value creation, both parties jointly build individualized experience through continuous dialog and interaction and jointly determine and solve problems or tasks waiting to be solved. In addition, according to Ramaswamy (2011), in value co-creation, all stakeholders in the whole value chain can be integrated, namely, it can be understood that there are multiple subjects participating in value co-creation. Since the proposition of the value co-creation, the concept of value co-creation behavior has attracted the attention and discussion of many scholars. From a general perspective, scholars generally regard value co-creation behavior as various interactive and cooperative behaviors carried out by participants in value creation (Ranjan and Read, 2016; Shen et al., 2020). In terms of participants in value creation, most scholars generally believe that value co-creation involves not only consumers and enterprises (Ramaswamy, 2011; Grönroos, 2012). Taking canal tourism as the research context, tourists' online value co-creation behavior is defined as various interactive and cooperative behaviors carried out by tourists to participate in the online value co-creation process.

Based on the connotation of value co-creation, value co-creation behavior can be divided into participation behavior and citizenship behavior (Yi and Gong, 2013). Among these two behaviors, participation behavior refers to the behavior that the subject must carry out to make the value creation succeed. Citizenship behavior refers to the behavior which the subject creates added value for the organization or others independently and voluntarily. In terms of the research on online value co-creation behavior of tourists in this paper, the participation behavior of tourists is taken as the research object and the impact of this behavior on the experience value and the consumer-brand relationship quality will be discussed.

Altruism

Altruism originated from the field of social psychology and behavioral economics and is defined as "An act aimed at improving interests of others" (Darity et al., 2006), which refers to the behavior and tendency of people to sacrifice their interests for the interests of others in social communication (Penner et al., 2005; Wolfe, 2021), which is not based on the intention of obtaining personal interests, and their roles even exceed requirements of the society on them (Xudong and Ruiyao, 2019).

From the perspective of economics, the essence of altruism is still self-interest (Piccinini and Schulz, 2019; Xiao and Fang, 2019), namely, altruism is also egoism. Although the behavior direction of altruism is an activity that is beneficial to others, it is a benefit in itself, which is not material feedback, but an internal benefit, including the sense of pleasure and achievement obtained after helping others, as well as the kindness and generosity of parents to their children, in which parents' self-value has also been achieved (Chunyan and Lei, 2015; Azizi et al., 2022). Sometimes this internal benefit will also become the driving force for the subject to continue their behavior (Xudong and Ruiyao, 2019).

Wilson (1976) divided altruism into two varieties, namely, pure altruism (unconditional altruism) and reciprocal altruism (conditional altruism). Relatives are unconditional service objects, while distant relatives and unrelated individuals are conditional service objects. According to the scope of altruistic behavior in the population, altruism can also be divided into two types: kinship altruism and non-kinship altruism. Therefore, it is believed in this paper that altruism among actors is not consistent, namely, these subjects can be divided into those with high initiative in altruistic behavior and those with low initiative in altruistic behavior. For instance, in the behavior of sharing creative ideas, those with high initiative in altruistic behavior have higher perceived value (Jun et al., 2016; Tan et al., 2020). And for staff in the news industry, those with high initiative in altruistic behavior have a higher commitment to their organizations and lower turnover intention than those with low initiative in altruistic behaviors (Xudong and Ruiyao, 2019; Petrakis et al., 2021).

Altruism is to take the initiative to create value for others and act from a higher standing point. Therefore, altruism is introduced into the field of tourism in this paper to explore the impact of tourists' online value co-creation behavior on their experience value under the action of altruism, based on which canal brand should pay attention to and make full use of altruism, thus obtaining long-term value.

Experience Value

Experience value (EV) comes into being under the popularity of the experience economy. Although scholars defined experience value from different perspectives, they all have the following three characteristics in common. First of all, it is generally believed that experience value is a subjective feeling of tourists, for example, Kim et al. (2020) and Lin et al. (2020) believed that experience value was the overall feeling of tourists. In addition, it is recognized that experience value is generated in the process of interaction. For instance, Tran et al. (2020) and Cheng H. et al. (2021) believed that experience value embodied characteristics of relativity and interaction. Finally, it is believed that experience value runs through the whole process of tourism activities. Rather (2020) and Peng et al. (2021) believed that experience value could be generated in the whole process of hotel consumption. In brief, it is believed in this paper that experience value refers to the experience and feelings obtained by tourists when interacting with all parties in all links of tourism activities, which may be positive or negative, and it is shared with all parties, with characteristics of value co-creation.

Many scholars applied the theory of customer experience value to the fields of leisure, recreation, and tourism for empirical research, analyzed the factors influencing tourism experience value, and divided these influencing factors into two categories based on the summary of Fang (2013); one category is analyzed from the perspective of tourism experience object, for instance, Haibin (2005) believed that the restaurant environment, theme, and staff's service and attitude will have a deep influence on customers' experience value. The other is analyzed from the comprehensive perspective of subjects and objects in tourism. Tourists' factors (including tourism preferences and expectations, etc.), tourism destination factors (including the product price, etc.), and other factors (including fellow tourists, etc.) will all influence tourists' experience value (Taoyan, 2009; Deng et al., 2021).

Consumer-Brand Relationship Quality

Brand relationship quality (BRQ) was first proposed by Fournier (1994) and was defined as the strength and depth of the interaction between consumers and brands, which embodies the strength of the continuous connection between consumers and brands. Fournier (1998) supplemented this definition, he believed that brand relationship quality refers to people's attitudes and views on the interactive relationship between consumers and brands, which can be simply summarized as the brand relationship quality refers to the strength and depth of the relationship between consumers and brands, which can be used to measure whether the brand relationship is stable and lasting (Fernandes and Moreira, 2019). Referring to Fournier's definition of consumer-brand relationship quality, this paper takes the consumer-brand relationship quality as the research variable.

To better measure and evaluate the brand relationship quality, existing literature research on the brand relationship quality is sorted out and analyzed, relevant dimensions are shown in

TABLE 1 | Dimensions of brand relationship quality.

Researcher	Main dimension
Fournier, 1994; Keller, 2001	Love, self-connection, commitment, and intimacy brand partner quality. Loyalty, attachment, commitment, and belonging.
Zhimin and Taihong, 2004	Cognition, emotion, and loyalty
Louis and Lombart, 2010	trust, reliance, and commitment
Nguyen et al., 2016	Interdependence, passion, self-connection, commitment, intimacy, and trust
Barry and Graca, 2019	Trust
Snijders et al., 2020	Trust, honesty, conflict, commitment, and satisfaction
Lan, 2020	Trust, satisfaction, and commitment
Yi, 2020	Satisfaction, trust, and dependence
Wanying et al., 2021	Loyalty

Table 1. According to the research on dimensions of brand relationship quality at home and abroad, although there is no clear definition of the dimensions of brand relationship quality in the current academic field, the basic dimensions of brand relationship quality are trust, commitment, as well as loyalty, based on which dimensions of consumer-brand relationship quality is divided into trust, commitment, and loyalty in this paper.

RESEARCH HYPOTHESIS AND CONCEPTUAL MODEL

Research Hypothesis

The Influence of Tourists' Online Value Co-creation Behavior on Experience Value

Many scholars have studied the relationship between value co-creation behavior and experience value. For example, in the context of social commerce, some scholars have analyzed experience value co-creation and its influencing factors, and believe that users' value co-creation behavior significantly positively affects their experience value (Cheng J. H. et al., 2021; Nadeem et al., 2021). In the context of virtual brand community, some scholars take customers as the core subject of value co-creation, study their behaviors in the value co-creation behavior and its impact, and propose that customers' value co-creation behavior will affect their experience value (Bu et al., 2020; Siuda, 2020). In the context of commercial banks, some scholars take value co-creation as a research perspective, discuss how value co-creation affects experience value, and give corresponding research strategies (Galdolage and Rasanjalee, 2022). In the context of the automotive service field, some scholars have studied the relationship between value co-creation and service brand experience, and believe that value co-creation has a significant positive impact on service brand and service brand experience (Tchorek et al., 2020). Based on the existing research on value co-creation behavior and experience value in different contexts, this study proposes the following hypothesis based on the context of canal tourism:

H1: Tourists' online value co-creation behavior positively affects tourist experience value.

The Influence of Tourist Experience Value on Consumer-Brand Relationship Quality

For the research on the relationship between experience value and consumer-brand relationship quality, many scholars have analyzed it based on different situations. Based on clothing brand research, some scholars have proposed that experience value in customer perceived value has a direct impact on customer loyalty (Rehman and Shafiq, 2019). Based on the study of shared bicycles, some scholars proposed that experience value significantly positively affects their trust in brands (Durugy et al., 2020; Kim and Kim, 2020), while Jiawei (2021) also concluded that the same is true in the context of virtual knowledge community. Based on the study of virtual brand community, some scholars believe that customer experience value has a significant positive impact on customer satisfaction and customer commitment (Wang et al., 2019; Kumar and Kumar, 2020; Qiao et al., 2021). Many scholars have studied customer perceived value and relationship quality based on the coffee shop industry and proposed that customer perceived value has a positive impact on customer satisfaction, customer trust, and customer commitment (Park et al., 2019; Sethjinda and Laothumthut, 2019; Thamrin et al., 2020). Based on the existing research on experience value and consumer-brand relationship quality in different contexts, this study proposes the following hypotheses based on the canal tourism context:

H2a: Tourist experience value positively affects consumers' trust to the Canal brand.

H2b: Tourist experience value positively affects consumers' commitment to the Canal brand.

H2c: Tourist experience value positively affects consumers' loyalty to the Canal brand.

The Moderating Effect of Altruism

In recent years, many scholars have studied altruism. In the field of corporate governance, some scholars have discovered the mediating role of altruism and proposed that altruistic behavior is the embodiment of focusing on corporate relationship governance, and strengthens the emotional connection in the intergenerational inheritance of enterprises (Alnajjar and Hashim, 2020; Miotto and Youn, 2020; Rong et al., 2021). Effective family governance has always been one of the focuses of research in the field of corporate governance. Some scholars believe that in family governance, altruism can build and enhance trust among family members, and have the courage to take responsibility for family businesses (Ruiz-Palomo et al., 2019; Xiao and Fang, 2019). In the field of charitable donation, some scholars believe that altruism has a significant positive impact on individual charitable donation willingness and encourages charitable donation (Gabriel, 2017). Xiaoqing (2019) divided altruism into two dimensions, altruistic personality traits and altruistic values, and came to the same conclusion. We can find that the expressions of the first two scholars both show that altruism can enhance the emotional connection between behavioral subjects. Therefore, in terms of emotional experience, many scholars also put forward their own opinions. For example, Wei et al. (2021) took the crowdsourcing community as the research context, found the moderating effect of altruism, and believed that the behavior of altruists like helping others can bring them satisfaction and pleasure. Qingxing et al. (2019) argued that the pleasure that altruists get from helping others will significantly affect their attitudes, behaviors, and goals when making resource allocation decisions.

Based on the above literature analysis and literature review, we find that:

(1) The research fields of altruism include corporate governance, charitable donation, and so on, so this paper can try to introduce it into the field of tourism.
(2) Altruism is mostly studied as an independent variable, and also has a small part in mediating and moderating effects. This article can try to study it as a moderating variable.
(3) Altruism can enhance perceived value such as the emotional connection between actors, and high altruists have higher perceived value than low altruists.

Therefore, we think: the participation of tourists in value co-creation will increase the brand value of the canal. The reason may be that tourists have invested energy and emotion, and their experience value will be higher, so they will be more loyal to the canal brand; however, this does not consider the level of altruism in value co-creation, so we propose the following hypothesis:

H3: The higher the tendency of altruism, the greater the influence of tourists' online value co-creation behavior on experience value, and vice versa.

The Influence of Tourists' Online Value Co-creation Behavior on Consumer-Brand Relationship Quality

Many scholars have studied the relationship between value co-creation behavior and consumer-brand relationship quality in different contexts. In the research on social business value co-creation, some scholars believe that there is a significant positive relationship between value co-creation behavior and commitment (Hajli, 2019; Wang et al., 2020). Some scholars also believe that value co-creation has a significant impact on customers' trust in merchants (Algharabat et al., 2020; Cheng J. H. et al., 2021; Hajli and Shirazi, 2021). However, in the study of virtual brand communities, some scholars believe that the degree of customer participation has a negative moderating effect on the impact of customer self-efficacy on community trust (Yinping, 2017). Based on empirical research in the auto service industry, some scholars have explored how consumers' participation in value co-creation affects their loyalty (Opata et al., 2021). Similarly, in the study of sports events, some scholars have proposed that multi-value co-creation activities of sports events can have a significant impact on audience value, which cannot only increase their loyalty to the events but also improve their satisfaction (Woratschek et al., 2020; Jiang et al., 2021). Based on the existing research on value co-creation behavior and consumer-brand relationship quality in different contexts, this study proposes the following hypotheses based on the canal tourism context:

H4a: Tourists' online value co-creation behavior positively affects consumers' trust to the Canal brand.

H4b: Tourists' online value co-creation behavior positively affects consumers' commitment to the Canal brand.

H4c: Tourists' online value co-creation behavior positively affects consumers' loyalty to the Canal brand.

Conceptual Model

Based on the above literature analysis, this paper develops a measure of related constructs in combination with the tourism context of China's national cultural parks. Among them, tourists' online value co-creation behavior mainly refers to the concept definition and measurement proposed by Ranjan and Read (2016), Shen et al. (2020), and others. Altruism mainly refers to the concept definition and measurement of Piccinini and Schulz (2019) and Wolfe (2021). The tourist experience value mainly refers to the concept definition and measurement of Kim et al. (2020), Rather (2020), Tran et al. (2020), and Deng et al. (2021). Consumer-brand relationship quality mainly refers to the definition of Fournier (1998), Fernandes and Moreira (2019), and others, and its measurement mainly refers to Barry and Graca (2019), Snijders et al. (2020), and Wanying et al. (2021). Finally, the conceptual model designed in this paper is as follows.

METHODS AND FINDINGS

Pre-investigation

According to the function mechanism model of tourists' online value co-creation behavior and consumer-brand relationship constructed in this paper, we developed the corresponding questionnaire. To ensure the reliability and validity of the questionnaire, a preliminary survey is hereby conducted. Pre-investigation adopts the way of mutual filling and multi-channel collection. Finally, 62 samples were collected, 5 invalid samples were excluded, and 57 questionnaires were used as the basis of pre-investigation. The analysis of the pre-investigation results shows that the reliability meets the standard (the reliability coefficient of the total table is 0.949 and the coefficient α of each variable is greater than the lowest value of 0.70). In the factor analysis, the factor load of some items failed the test, so it was deleted. After pre-investigation, the final item was determined.

The Descriptive Statistical Analysis

The questionnaire survey is completed using field distribution, e-mail delivery, the promotion of platform, and so on. A total of 216 questionnaires were issued on February 21, 2022, 32 questionnaires with seriously invalid information were excluded and 184 valid questionnaires were collected, with an effective rate of 85%. The descriptive statistical analysis is shown in **Table 2**.

TABLE 2 | The descriptive statistical analysis.

Category	Feature	Frequency	Percentage
Gender	Male	79	43%
	Female	105	57%
Age	18 and under	2	1%
	18–24	36	20%
	25–30	70	38%
	31–40	45	24%
	41–50	29	16%
	51–60	2	1%
Education	Junior high school and below	11	6%
	Senior high school/technical secondary school/technical school	22	12%
	Specialty	73	40%
	Undergraduate course	65	35%
	Master's degree or above	13	7%
Occupation	Personnel of government departments at all levels, enterprises and institutions, party and government organs and public organizations	23	12%
	Professional and technical personnel (teachers, doctors, engineers, writers, etc.)	12	6%
	Staff (persons engaged in general affairs)	76	41%
	Industrial workers	5	3%
	Housewife	8	4%
	Private enterprise owner	13	7%
	Students	7	4%
	Others	40	22%
Annual household income	1,00,000 and under	32	17%
	1,00,001–2,00,000	73	40%
	2,00,001–3,00,000	62	34%
	3,00,001–4,00,000	13	7%
	4,00,001–5,00,000	3	2%
	Over 5,00,000	1	1%

Reliability and Validity Analysis of Large Sample Survey Data

In this paper, SPSS26.0 is used to analyze the reliability coefficient (Cronbach's α). The results show that the reliability coefficient of the total scale is 0.910 and the α coefficients of each variable are greater than the lowest value of 0.7. Therefore, the reliability of the questionnaire is high and it is suitable for validity tests.

Validity analysis usually includes content validity, aggregation validity, and discrimination validity. Since this paper refers to the existing maturity scale, the items and variables meet the requirements of content validity.

After that, the factor analysis of the items shows that the Bartlett approximate chi-square is 2230.311, $P < 0.001$, the KMO index is 0.887, and the data can be analyzed by factor analysis. The results show that the value of CR is more than 0.7, the value of Ave is more than 0.5, and the convergence validity test is tested.

The value of x^2/df is 1.528, less than 3, the adaptation is ideal, and the RMSEA value is 0.054, less than 0.1, the adaptation is ideal. The values of GFI, NFI, IFI, TLI, and CFI were more than 0.9, the discriminant validity was passed, and the adaptation effect was good. Taken together, the overall model fits well, and the test data are shown in **Table 3**.

TABLE 3 | Reliability and validity test.

Variable	Measuring term	Factor load	α	AVE	CR
Tourists' online value co-creation behavior (TOV)	TOV1	0.615	0.817	0.526	0.814
	TOV2	0.802			
	TOV3	0.803			
	TOV4	0.661			
Experience value (EV)	EV1	0.763	0.911	0.569	0.913
	EV2	0.662			
	EV3	0.755			
	EV4	0.780			
	EV5	0.641			
	EV6	0.765			
	EV7	0.778			
	EV8	0.868			
Altruism (ALT)	ALT1	0.751	0.905	0.577	0.905
	ALT2	0.711			
	ALT3	0.710			
	ALT4	0.726			
	ALT5	0.853			
	ALT6	0.754			
	ALT7	0.767			
Trust (T)	T1	0.746	0.866	0.614	0.864
	T2	0.750			
	T3	0.831			
	T4	0.805			
Commitment (C)	C1	0.776	0.769	0.634	0.776
	C2	0.816			
Loyalty (L)	L1	0.724	0.788	0.686	0.812
	L2	0.921			

x^2/df = 1.528, RMSEA = 0.054, GFI = 0.901, NFI = 0.903, IFI = 0.964, TLI = 0.954, CFI = 0.963.

TABLE 4 | Decribes the results of statistics and correlation analysis.

Variable	*M*	*SD*	1	2	3	4	5	6
Tourists' online value co-creation behavior	3.45	0.73	0.725					
Experience value	4.04	0.63	0.203**	0.754				
Altruism	4.14	0.69	0.344**	0.501**	0.760			
Trust	4.05	0.61	0.214**	0.612**	0.544**	0.784		
Commitment	3.94	0.55	0.254**	0.627**	0.657**	0.548**	0.796	
Loyalty	3.96	0.84	0.300**	0.566**	0.559**	0.549**	0.603**	0.828

*At level 0.05 (double tail), the correlation was significant. Diagonal value is the square root of AVE. **At 0.01 level (double tail), the correlation was significant. Sex: 1 = male, 2 = female; age range: ① 18 and below, ② 18–24 years old, ③ 25–30 years old, ④ 31–40 years old, ⑤41–50 years old, and ⑥ 51–60 years old.*

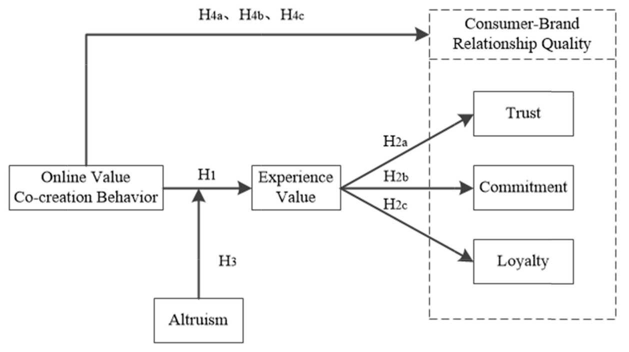

FIGURE 1 | The model of this research.

Correlation Analysis

The correlation between the variables is tested, and the results are shown in **Table 4**. There is a significant correlation between tourists' online value co-creation behavior, experience value, trust, commitment, and loyalty.

Hypothesis Test

The Relationship Between Tourists' Online Value Co-creation Behavior and Trust: The Mediation Effect of Experience Value

First of all, we used Model 4 (Model 4 is a simple intermediary effect model) in SPSS macro compiled by Hayes (2012) to study the mediation effect of experience value between tourists' online value co-creation behavior and trust under the control of gender, age, and so on. The result shows that tourists' online value co-creation behavior plays a significant role in predicting trust ($B = 0.1933$, $t = 3.1809$, $P < 0.01$), H4a is verified.

After adding mediating variables, tourists' online value co-creation behavior had no significant predictive effect on trust ($B = 0.0893$, $t = 1.7832$, $p > 0.05$), but tourists' online value co-creation behavior had a significant positive effect on experiential value (B = 1.1824, $t = 2.8735$, $p < 0.01$), and experience value had a significant positive effect on trust ($B = 0.5706$, $t = 9.9274$, $p < 0.001$). This shows that experience value plays a complete intermediary role between tourists' online value co-creation behavior and trust. H1 and H2a are tested.

The Relationship Between Tourists' Online Value Co-creation Behavior and Commitment: The Mediation Effect of Experience Value

After that, this paper uses the same method to test the mediation effect of experience value between tourists' online value co-creation behavior and commitment under the control of gender and age. The result shows that tourists' online value co-creation behavior plays a significant role in predicting commitment ($B = 0.1984$, $t = 3.656$, $p < 0.001$), H4b is verified.

After putting in the mediating variable, the predictive effect of tourists' online value co-creation behavior on commitment was still significant (B = 0.1984, t = 3.656, p < 0.001), the positive effect of tourists' online value co-creation behavior on experience value was significant (B = 1.1824, t = 2.8735, p < 0.01), and the positive effect of experience value on commitment was significant (B = 0.523, t = 10.3477, p < 0.001). This shows that experience value plays a mediating role between tourists' online value co-creation behavior and commitment. In addition, the upper and lower limits of the Bootstrap 95% confidence interval of the direct effect of online value co-creation on commitment and the mediating effect of experience value do not contain 0, as shown in **Figure 3**. It shows that tourists' online value co-creation behavior can not only predict commitment directly but also predict commitment through the intermediary role of experiential value. The direct effect (0.103) and the mediating effect (0.0954) account for 52% and 48% of the total effect (0.1984), respectively. H2b is tested.

The Relationship Between Tourists' Online Value Co-creation and Loyalty: The Mediation Effect of Experience Value

Finally, this paper uses the same method to study the mediation effect of experience value between tourists' online value co-creation behavior and loyalty under the control of gender and age. The result shows that tourists' online value co-creation behavior plays a significant role in predicting loyalty (B = 0.3508, t = 4.2185, P < 0.001), H4c is verified.

After putting in the mediating variable, the predictive effect of tourists' online value co-creation behavior on loyalty is still significant (B = 0.1984, t = 3.656, p < 0.001), the positive effect of tourists' online value co-creation behavior on experience value is significant (B = 1.1824, t = 2.8735, p < 0.01), and the positive effect of experience value on loyalty is significant (B = 0.523, t = 10.3477, p < 0.001). This shows that experience value plays a mediating role between tourists' online value co-creation behavior and loyalty. In addition, the upper and lower limits of the Bootstrap 95% confidence interval of the direct effect of online value co-creation on loyalty and the mediation effect of experience value do not contain 0, as shown in **Figure 4**. It shows that tourists' online value co-creation behavior can not only directly predict loyalty but also predict loyalty through the mediating role of experience value. The direct effect (0.2215) and the intermediary effect (0.1293) account for 37% and 63% of the total effect (0.3508), respectively. H2c is tested.

The Relationship Between Tourists' Online Value Co-creation Behavior and Experience Value: The Moderating Effect of Altruism

Because altruism only plays a moderating effect between online tourists' value co-creation behavior and experience value, and the outcome variables in the model include three dimensions, this paper uses model 1 (model 1 is used to verify the simple moderating effect) in the SPSS macro compiled by Hayes (2012) to test it under the control of gender and age. The results are shown in **Table 5**. After altruism is put into the model, the product of tourists' online value co-creation behavior and altruism has a significant predictive effect on experience value (b = 0.1124, t = 2.0055, P < 0.05); H3 is true.

To clarify the essence of the moderating effect of altruism, a simple slope analysis is further carried out. The results are shown in **Figure 5**.

CONCLUSION AND RECOMMENDATIONS

Summary of Findings

Based on the survey data of the Grand Canal National Cultural Park, this paper explores the relationship between tourists' online value co-creation behavior and consumer-brand relationship quality and verifies the mediating effect of experience value and the moderating effect of altruism. The research shows that online value co-creation behavior significantly and positively affects the sub-dimensions of experience value and consumer-brand relationship quality, namely trust, commitment, and loyalty. Experience value positively affects tourists' trust, commitment, and loyalty to the canal brand. Altruism plays a moderating role between co-creation behavior and brand relationship quality, and the online value co-creation behavior of high altruists has a higher coefficient of influence on experience value, and vice versa. Experience value plays a mediating role between co-creation behavior and brand relationship quality, and it also plays a complete mediating effect between online value co-creation behavior and trust, that is, after adding the variable of experience value, the effect between online value co-creation behavior and trust is fully realized through experience value. Experience value plays a partial mediating effect between online value co-creation behavior and

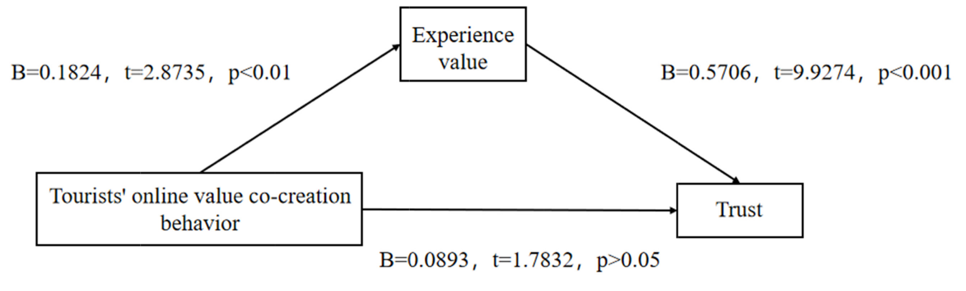

FIGURE 2 | Test of mediating effect of experiential value-1.

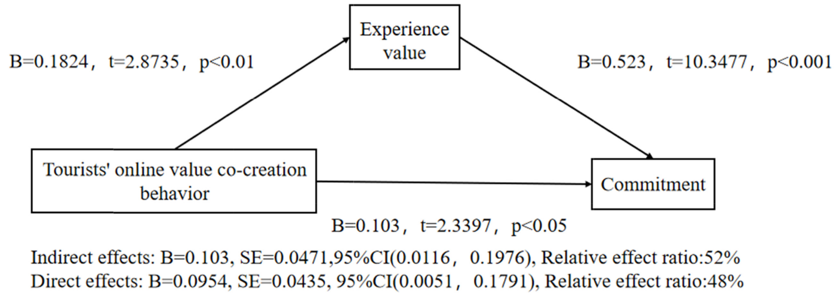

FIGURE 3 | Test of mediation effect of experiential value-2.

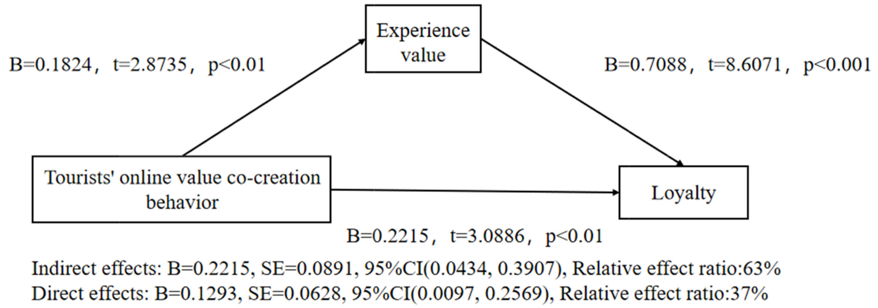

FIGURE 4 | Test of mediation effect of experiential value-3.

TABLE 5 | Moderating effect model test.

Predictive variable	**Result variable: experience value**	
	B	***t***
Constant	4.1798	80.1861***
Tourists' online value co-creation behavior	0.1678	2.092*
Altruism	0.21	2.5834**
Tourists' online value co-creation behavior × altruism	0.1124	2.0055*
R-sq	0.2786***	
F	11.9313***	

****P* < 0.001, ***P* < 0.01, and **P* < 0.05.*

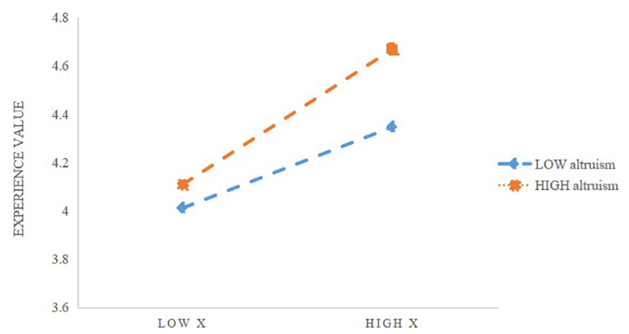

FIGURE 5 | Simple slope analysis of altruism.

commitment, online value co-creation behavior and loyalty, the relative effects accounted for 48 and 37%, respectively. This shows that the mediating effect of experience value is not equal, and when the outcome variables are different, the mediating effect is also different. This further suggests that the utility of experience value between online value co-creation behavior and loyalty, commitment, and trust is gradually increasing.

The theoretical contributions of this study mainly include the following two points: first, in the past, altruism was mainly used as an independent or mediating variable to influence other behavioral variables. Some scholars also regarded citizenship behavior as a dimension of value co-creation behavior, and together with participation behavior as an independent variable to affect an individual's perceived value. This paper incorporates altruism into the research model of "value co-creation-experience value-brand relationship quality," and explores its adjustment mechanism. The research results show that the higher the altruistic tendency, the greater the impact of online value co-creation on experience value, and vice versa, this finding enriches and deepens the basic theory of altruism and value co-creation behavior. Second, the construction of China's national cultural parks is in full swing, but the theoretical research mainly focuses on conceptual analysis, connotation mining, policy recommendations, and so on. The quantitative analysis of the main effect, mediating effect, and moderating effect in this paper is of great value to the theoretical exploration and management practice of China's national cultural parks.

Managerial Implications

Tourists' online value co-creation behavior will be beneficial for the experience value and the sub-dimension of consumer-brand relationship quality, which is more significant among high altruists. Based on the after-effect of online value co-creation behavior, the following reference suggestions are proposed in this paper.

First of all, build a platform to encourage virtual community interaction and promote the systematic establishment of tourism information in cities along the line. Through an open and fair online communication platform, expand channels for tourists to obtain and share information and communicate with the staff of the scenic spot and other tourists, to improve their sense of participation. In virtual communities (Weibo, etc.), tourists can share their tourism experience and opinions, and scenic spots can also encourage tourists to shoot a series of works through new media (micro movies, etc.) and select the best among these works, which furthermore, give timely and effective rewards to tourists' participation behavior, to make tourists more enthusiastic about participating in these activities. Smart cities and smart scenic spots can be realized through the 5G technology, and a complete and unified tourism website system of cities along the line can be built, to realize online multi-functional services including tourism online service, online marketing, online reservation and payment, expand the amount of information, improve the efficiency of online service, strengthen the publicity through a variety of media, and finally make the canal brand more influential.

Second, insist on altruism to arouse the initiative of tourists. Considering the moderating function of altruism, scenic spot managers must consider tourists' altruism, formulate corresponding management methods and strategies, and provide corresponding platforms and ways for tourists to value co-creation behaviors. The canal brand can explore the main preferences and demands of tourists in tourism on the corresponding platform according to the requirements of the brand, to provide tourists with a high-quality experience through innovative technologies and tools, fully cultivate the subjectivity and initiative of tourists, and promote the development of the canal brand from the innovative perspective.

LIMITATIONS AND FURTHER RESEARCH

Limitations

(1) The scale used in this paper has certain limitations. First of all, for the scale of value co-creation behavior, there is currently no scale developed in the tourism context. This paper only draws on the scale widely used in the service industry and optimizes it based on the canal tourism context. Therefore, the scale still needs to be improved. Second, for the scale of experience value, this paper mainly draws on the scales used by foreign scholars to measure the experience value of domestic tourists in the context of ecotourism, so the results may have certain errors.

(2) Due to time constraints, it is difficult to carry out point-to-point interviews and fill in all interviewees. During the filling process, a small number of respondents appeared to answer the first part of the questions carefully, while the latter part lacked thinking. Therefore, the universality and reliability of the research conclusions will be affected to a certain extent.

Directions for Future Research

Based on the limitations of this study in terms of research scales and questionnaires, future research can develop higher-quality scales for national cultural parks. Under the support of sufficient conditions, we will further select suitable interviewees and strive to obtain sample data from all provinces across the country to support empirical research, thereby improving the reliability of the empirical results.

In this research, in the "grass planting" marketing environment and the questioning voice of other consumers, the influence boundary of tourists' value co-creation behavior on experience value in the "grass planting" marketing environment, namely, the moderating mechanism of altruism is explored, and in future research, other moderating variables can be explored by scholars. Furthermore, if consumers question the value co-creation behavior of ordinary consumers KOC (Key Opinion Consumer) in the online community, how do they change their information search model? Finally, how do the altruistic tendencies of ordinary opinion leaders affect the consumption decisions of other consumers?

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation, to any qualified researcher.

AUTHOR CONTRIBUTIONS

YZ was responsible for the theme determination, participated in the revision of the writing, and contributed to the elaboration of ideas, additional analysis, and final draft. YL participated in determining the theme, was responsible for literature review and initial writing, and then revised the article. WT was involved in determining the theme, analyzing the data, and then revising the article. All authors contributed to the article and approved the submitted version.

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Impact of knowledge management capabilities on new product development performance through mediating role of organizational agility and moderating role of business model innovation

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In several studies, knowledge is witnessed as one of the foundations of long-term competitive edge and is also a basic source of new product development (NDP) performance. The aim of this study is to investigate the role of knowledge management capabilities (KMC) in new product development performance with the mediating role of organizational agility. Additionally, this study also intends to examine the moderating role of business model innovation on the relationship of KMC with organizational agility. This study was conducted on the Chinese automobile sector, and the NPD project managers, supervisors, and engineers of the sector were respondents of this study. A survey questionnaire was used to collect the data from 201 respondents, and data were analyzed using the Smart PLS 3 software. The findings of this research, although limited to the automobile industries, indicate that knowledge sharing and knowledge application have significant and positive effects on the development of new products. Organizational agility significantly mediates the relationship of KMC with NPD. The results found that business model innovation has a significant moderating role in the relationship between KMC and organizational agility. Moreover, the results of this study will assist the managers in developing a modern competitive business environment by implicating KMC in the process of NPD. Lastly, organizations may improve the sustainability of their product and their overall performance by using organizational agility and modern ways of value delivery.

KEYWORDS

knowledge management capabilities, new product development, organizational agility, business model innovation, Chinese automobile sector

Introduction

In a contemporary business environment of higher complexity and uncertainty, the organization always faces issues of awareness that what kind of information, competencies, and expertise are essential for an organization to take widespread advantage of available opportunities (Husnain et al., 2021). In addition to these competencies, an organization must possess unique features; therefore, competitors find it difficult or are unable to imitate them while operating in the same market and industry (Sousa and Rocha, 2019; Sohail et al., 2020). In the situation of intense competition with a higher need for a new market, it is difficult for a new product to capture the market successfully because of the high failure rate, which is ∼40% of new product development (NPD) (Haider and Tehseen, 2022). A large number of researchers, practitioners, as well as managers associated this failure with less awareness of continuous changes in the sector (Jiao et al., 2019; Kafetzopoulos et al., 2019). In this regard, Allameh et al. (2017) recommended that organizations must keenly and constantly consider changes that are taking place in the market and should design their processes according to the market demands. For the NPD effectively, organizations are necessarily required to recognize the needs and wants of the market for obtaining accurate and up-to-date information. Moreover, organizations should recognize what kind of competencies are required to avail the market opportunities effectively (Shahzad et al., 2021).

While developing products innovatively, the primary role of knowledge management (KM) is to develop, introduce, and sustain a competitive advantage with the help of appropriate knowledge application and collaborative operations (Haider, 2019). However, Acharya et al. (2022) concluded that introducing and sustaining an innovative product is extremely complex because of reasons, such as varying demands of customers, the intensity of competition in the market, and quick technological advancements. It has become difficult for organizations to achieve sustained innovation and competitive advantage internally. Therefore, some of the large organizations, like Xerox and Hitachi, had made collaborations outside the organizations to achieve sustained competitive advantage and innovation (Lee and Choi, 2021). Such collaborations may facilitate the KM or result out from the firm's pursuit to use new knowledge. In a collaborative relationship, an organization has access to the operations and processes that other organizations use, and these can be incorporated into various settings. Information and competencies acquired through collaboration are regarded as efficient and effective sources of successful innovation. Besides, appropriate information management and its application reduce complexity while developing a new product as knowledge is regarded as a resource that has significant importance in the innovation process (Pitt and MacVaugh, 2008). In product development, innovation entirely depends upon the availability of information; therefore, the complex phenomenon of explosion of richness and availability of knowledge is required to be considered and managed appropriately (Haider and Kayani, 2020). Marion and Fixson (2021) indicated that an increased amount of information readily available for business organizations creates more complexity regarding designing and controlling while developing a new product. However, this uncertainty and complexity can be reduced by managing knowledge with the help of a strategic nature of knowledge-intensive business units.

Knowledge management (KM) capabilities are necessary and exceptional for an organization. Organizations are required to decide what kind of knowledge is required, how to attain it, and its application mechanism to reap effective and efficient results in the shape of innovation while developing a new product that ultimately will attain a sustained competitive edge (Cerchione et al., 2016; Attia and Salama, 2018; Haider et al., 2021). Arora and Ratnasiri (2015) focused on the importance of knowledge with regard to economic performance in the Asian economy. In the international rivalry, knowledge is regarded as a key resource for small and medium enterprises (SMEs). It is considered as a significant contributing factor for the success of SMEs and certainly an important factor of sustainable competitiveness. According to Acharya et al. (2022), many businesses are shifting to knowledge specialties. In relation to these firms, KM is an innovative management method that benefits them in theory application, as well as in practice (Shahzad et al., 2021).

In the modern business environment, it is necessary that there should be an established organizational mechanism for managing information that may smoothly distribute information among employees of the organization and remove barriers to the generation and acquiring of knowledge (Balodi, 2014). The cultural component of an organization plays a significant role because it is the culture that inspires organizational employees to search for innovative information and idea generation. Moreover, the technological factor is also significant in the firm because it provides improved means of communication and helps discover innovative knowledge (Imran et al., 2021). Furthermore, organizational agility (OA) is an important ability that helps organizations to capture and utilize emerging opportunities rapidly by adjusting the activities of their ongoing new product development projects (Haider et al., 2021). Organizational agility refers to the ability of an organization of recognizing and responding to market variations (Rafi et al., 2021). Organizational agility enables firms to assess market information timely and appropriately in the decision-making regarding product development (Najafi-Tavani et al., 2018). It also facilitates organizations in the application and execution of innovative strategies developed on the basis of acquired knowledge (Chakravarty et al., 2013). Illustratively, Apple assessed the market potential of smart wearables, quickly focused on the development of smartwatches, and released it within 2 years, which captured 75.5% of the smartwatch market's share globally (Cai et al., 2019). On the other hand, attaining this kind of agility is not easy for most of the business organizations (Lee and Choi, 2021). However, it is necessary to understand how organizational agility contributes to the development of a new product.

Organizations can create innovation in all aspects of business by utilizing available opportunities, creating value for customers, and by providing better service delivery by addressing issues of sustainability (França et al., 2017). Osterwalder and Pigneur (2010) described the business model as the foundation that how a business unit generates, distributes, and captures value. Business model canvas (BMC) has become a *de-facto* benchmark for the development of business models (Rachinger et al., 2018). Additionally, Geissdoerfer et al. (2018) argued that the business model is now an attention-seeking topic of research for scholars. The innovative business model is regarded as an imperative factor for sustainable organizations (Visnjic et al., 2016). Nevertheless, a major hurdle prevails that the design of operating business model traditionally fails to integrate the dimension of sustainability (Upward and Jones, 2016). Hence, the extent of sustainability is generally not appropriately comprehended because of insufficient planning, narrow scope of operations, and low competence of human resources in integrating employees and systematic undertakings in sustainable manners (Rohrbeck and Schwarz, 2013). Ultimately, the opportunity for innovation and sustainability during business-value generation processes is wasted.

The purpose of this research study is to offer a profound, thoughtful understanding of the effect of knowledge management capabilities in the development of new products by mediating the role of organizational agility and moderating the role of business model innovation (BMI). The research focuses on automobile parts manufacturing firms in Guangdong China, where they are offering innovative and unique products in the market. Automobiles parts manufacturers are such organizations in which the issues of innovation, KM, and swiftness to respond are critical elements. Therefore, improving KMC was focused on significantly influencing the business capacity to create new products. In practice, this study significantly provides a deeper insight and better understanding to automobile sector managers in leading and governing innovation and avoiding failures of being left behind.

Literature review

Theoretical background

In organizations where various kinds of knowledge capabilities are required for innovation, knowledge management is regarded as a key success factor and plays a vital role in achieving competitive advantage (Attia and Salama, 2018; Garcia-Perez et al., 2020). This study introduces KM by describing its capabilities and influence on creating new products and services. An extensive study of the relevant literature suggests a theoretical model incorporating various factors. In maintaining competitiveness, organizations consider KM as an optimal instrument. Previous studies explored that KM is the formation and acquisition of knowledge by the stockholders of an organization intrinsically, as well extrinsically to disseminate, integrate and store in the three phases that are applied to establish effective knowledge resources and benefits for the generation of higher profit (Nonaka and Takeuchi, 1996). Hence, with reference to the various research studies, this study establishes three dynamic processes with regard to the content and nature of KM mechanisms by categorizing them into (1) "Knowledge creation and acquisition", (2) "Knowledge diffusion and integration", and (3) "Knowledge storage and Application". The above-mentioned three dynamic processes are applied to explore KM mechanisms as research variables in the industry.

Knowledge management capabilities

Rafi et al. (2021) defined KM as the availability and formation of expertise, information, and competencies that shape new capabilities, result in better performance, motivate innovation, and generate higher value for customers. Visionary managers always consider and focus on the need of developing and utilizing knowledge for the prosperity of the organization (Haddad and Ribière, 2007). Knowledge can be described as understanding the association, situation, phenomena, concepts, and procedures of a prevailing problem or domain (Naqshbandi and Jasimuddin, 2018). With respect to the competitive advantage, knowledge has vital and increasing significance in organizations. Knowledge of the contemporary situation is regarded as the foundation of innovations in organizations. Hence, organizations are intensely required to recognize innovative knowledge for innovation initiation (Garcia-Perez et al., 2020). Knowledge is broadly categorized into two kinds that are explicit and tacit knowledge. The explicit form of knowledge is found in textbooks, research articles, and guiding manuals; however, tacit knowledge is difficult to contextualize (Zahoor et al., 2022). Defining tacit knowledge, Kikoski and Kikoski (2004) said, "What are unsaid and unexpressed could be the reservoirs of tacit knowledge". So, it is difficult to acquire, identify, and communicate tacit knowledge for an organization. Cooperation among people is needed for the success of KM. Davenport (1996) further added that KM meant gathering information and communicating to the individuals in demand. Collective activities that favorably enhance the resource of organizational knowledge, including gaining, formation, application, and communication of knowledge, are called "knowledge management".

It is essential for organizations to have the ability of recognizing and leveraging new knowledge for competing in the market and attaining competitiveness (Gold et al., 2001). Thus, an important concern of the organizations arises is how they can effectively allocate resources while developing new products and services that create a competitive edge for the organizations over their rivals. For this reason, a business is required to incorporate knowledge in the way of value creation from the intangible resources of an organization (Löfsten, 2014). Management of knowledge comprises of various elements, including identifying, recognizing, generating, applying, communicating, and storing it (Liu and Tsai, 2007; Martinez-Conesa et al., 2017) concluded that activities of knowledge management are decisive for innovation application. Consequently, the organizational role is not merely limited to the acquisition of competences. Moreover, organizations are essentially required to develop organizational knowledge as it is regarded as a resource and a foundation of competitiveness and differentiation in the organization. In prior research, Costa and Monteiro (2016) concluded that KM has a proven impact on innovation with respect to the development of product and service because it initiates innovations.

Furthermore, Zaim et al. (2019) discussed that irrespective of the knowledge generation or innovation, the knowledge wave started was when people involved in sharing knowledge among groups or persons. Chang et al. (2017) explained that many business organizations recognized creativity as the key to competitive advantages, and knowledge is the key to continuous creativity. Creative knowledge has become a topic of wider attention in research. Based on the extensive literature, this research considers gaining, creation, storage, and diffusion of knowledge as the primary constructs of "KM capabilities." Past studies by Chang et al. (2017) and Jasimuddin and Naqshbandi (2019) discussed two major kinds of knowledge management capabilities. The first kind of capabilities deals with the structure of KM because it provides a framework to the organization that enables the knowledge flow within the organization, as well as in the external context (Kim et al., 2013). These kinds of capabilities are called "knowledge infrastructure capabilities". The second kind of capabilities are associated with the dynamic activities of KM by recognizing dynamic variations in the environment and making the organization able to adopt capabilities that may effectively deal with these dynamic changes (Lee and Choi, 2021). These kinds of capabilities are called "knowledge-based dynamic capabilities".

For a sustained competitive advantage, organizations must appropriately practice the activities of generating, acquiring, storing, communicating, and implementing knowledge for problem-solving and exploring available opportunities (Shahzad et al., 2021). However, effective KMC involves an understanding of connections that prevails between KMC processes, including acquiring, generating, storing, communicating, and implementing the knowledge (Seleim and Khalil, 2011). Businesses with a higher level of KMC practices enable them to develop a learning environment that expands their competencies of reducing redundancy, responding efficiently to market variations, and emerging creative and innovative ideas (Bresnen et al., 2003). The decision-making quality of a business depends upon gaining, communicating, and applying knowledge among individuals and groups in the organization. In KMC, knowledge acquisition and application are rudimentary and the main goal of the knowledge management process (Gold et al., 2001). Organizational culture, information technology, and organizational structure make organizational infrastructure capability contribute to knowledge sharing (Gharakhani and Mousakhani, 2012). So, for a more concise understanding and in line with previous scholarly work, this research takes into account and focuses on the three key capabilities, i.e., acquiring, distributing, or sharing knowledge, and the usage or application of knowledge.

Knowledge acquisition

Acquisition of knowledge is a part of KM that is defined as "the process of critically managing knowledge to meet existing needs, to identify, and exploit existing and acquired knowledge assets and to develop new opportunities" (McAdam and Reid, 2001). It is also described as the process of obtaining knowledge. Acquired knowledge may be of a tacit nature or of an explicit kind or a combination of both kinds. The acquisition takes place with the contribution of individual, interactive tasks, technological applications, asset utilization, and human resources deployment in a specific setting (Tsoukas and Vladimirou, 2001). Many researchers suggested that knowledge management in an organization is an ongoing process that results in knowledge acquisition (Harsh, 2009). Two primary sources of knowledge gathering are exploring entirely new knowledge and creating new knowledge from the existing database through interaction among individuals and business counterparts (Harsh, 2009; Dost et al., 2019). Numerous scholars focused that knowledge acquisition is critical when an organization collaborates with others (Martinez-Conesa et al., 2017; Shahzad et al., 2021). External channels of a firm are significant sources of acquiring knowledge. Codified and non-codified means of external information frequently generate valued information and provide innovative knowledge (Assimakopoulos and Yan, 2006). Though acquiring knowledge from external sources is not an easy task for a business, it provides information of greater value. External sources of acquiring knowledge include gathering public information from internet sources, books, personal networks, and professional associations (Choi et al., 2010).

Knowledge sharing

The purpose behind sharing knowledge is to generate new knowledge by collaborating on existing information or appropriately expanding existing knowledge (Rehman et al., 2021). In literature, knowledge sharing is defined as a culture of social contact that contains sharing of knowledge, expertise, and skills among employees working in an organization or department (Chang et al., 2017). It also contains a combination of shared understandings regarding access of employees to the related data for the development and application of networks inside the business (Akhtar et al., 2022). Knowledge sharing is associated with the common beliefs or behavioral practices about sharing of learning between various persons or departments working in a concern (Moorman and Miner, 1998). It refers to the persons, groups, and entities that share and acquire information from each other. In addition, networks of personal, as well as organizational levels, are important for knowledge accessibility. Personal or virtual networks help in knowledge sharing, and without these networks, it is hard to access knowledge. Furthermore, networks are possible to maintain with the help of face-to-face meetings officially or casually. For the success of an organization, sharing of knowledge is a critical factor (Davenport, 1996). The major hurdle regarding knowledge sharing is to convince, compel, or command people within the organization for sharing information they possessed (Jiao et al., 2019). With respect to the organizations, sharing of knowledge include acquiring, arranging, recycling, and communicating experience-based knowledge that prevails inside the organization and sharing that information with others inside the business. Hence, knowledge sharing enables a business to create opportunities for the enhancement of the organizational ability to deal with the requirements of the market (Li et al., 2022), provide an effective solution, and helps in attaining competitive advantage in the long run (McAdam and Reid, 2001).

Knowledge application

Knowledge application is another significant dimension of the process of KM. Therefore, Husnain et al. (2021) stated that the value of knowledge resourced is recognized at the time of developing new products, providing services, or when these products or services are transacted for value. It is regarded as the focal component of the KM procedure (Haider and Kayani, 2020). According to the knowledge-based model, the worth of personal, as well as organizational knowledge, mainly resides in the application of knowledge due to stickiness of it (Grant, 1996). Some of the researchers defined the application of knowledge as the implementation and utilization of knowledge in the value-adding process of an organization. It also comprises the placement of knowledge in the expansion or creation of organizational ability (Song et al., 2005). In addition, it includes identifying, integrating, and implementing knowledge in the products and operations of an organization. However, "knowledge application capability" can be described as the competence of employees to apply information for the development of problem-solving frameworks and coping with the prevailing issues that business is facing during the process of NPD (Sarin and McDermott, 2003). With the effective application of knowledge, some mistakes are also expected at the individual employee level; however, it may improve the efficiency of employees and decrease redundancy (Choi et al., 2010).

Hypotheses development

Knowledge management capabilities and new product development

Song et al. (2005) stated four factors for assessment of relative success in NPD: quality of the newly introduced product as compared to the product of competitors, sales volume of newly introduced product in comparison to that of competitors, rate of return of newly introduced product in comparison to that of rivals, and the ratio of success regarding new products introduced in the market with the estimated return targets. In addition, Calantone et al. (2002) considered the investment ratio, the growth rate of investment, the sales ratio, share of market, and its growth rate as the evaluating factors of NPD performance. Besides, Hopkins (1981) applied these five elements for the measurement of NPD performance, including target assessment, financial evaluation, contribution of new products in total sales, market share of successful new products, and customer satisfaction regarding NPD. Generally, organizations introduce new products according to the expectations of the customers, and they try their best to apply their capabilities and strengths for the creation of valuable products. For this reason, KM is the key tool that enables organizations to apply their acquired knowledge in the form of appropriate effort (Haider and Kayani, 2020). It also helps in comparing the capabilities of business with other counterparts and molding their operations to attain competitiveness (Cepeda-Carrion et al., 2017). By realizing the importance of KM, organizations are able to attain superior competence in relation to all of their competitors.

Consequently, organizations enhance their productivity by opting this and it will help for the introduction of innovative features and designs in products that potentially will be recognized by the targeted customers as it addresses the needs and demands of customers. It is also regarded as an important aspect of market orientation in confirming the success of a newly introduced product (Donate and de Pablo, 2015). In line with the above arguments, organizations with appropriate knowledge management always look for superior quality offerings and technologies that are necessary for the assimilation of quality elements. Actually, fulfilling the criteria to maintain standards is a demand of customers. Hence, stability in the association of information storage and value generation for customers

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is a primary theory of every NPD organization looking for distinction (Tzokas et al., 2015). According to the knowledge-based view of the organization, how efficiently an organization develops its innovative competencies by exchanging various pieces of information among individuals and departments. It will certainly enhance coordination among knowledgeable persons. For the exploration of creative ideas, these kinds of interactions among team members are productive and essential that ultimately generate innovative knowledge for the successful offering of new products (De Clercq et al., 2015). Accordingly, the hypotheses proposed are as under:

Hypothesis 1: Knowledge acquisition is positively associated with new product development.
Hypothesis 2: Knowledge sharing is positively associated with new product development.
Hypothesis 3: Knowledge application is positively associated with new product development.

Mediating role of organizational agility

In literature, researchers recognized that description of organizational adaption is hard due to variations, complexity, and instability (Kammerlander and Ganter, 2015). In an unstable and uncertain environment, dynamic alignment and management capability are key factors of success for an organization. Organizational agility (OA) is applied for the contextualization of a situation. Numerous scholars described "organizational agility", but the explanations (Hatum and Pettigrew, 2006; Bernardes and Hanna, 2009) are more appropriate. Here, Teece et al. (2016) defined OA as the capability of a business to transform its assets into value for customers operating in volatile internal and external environments. Moreover, OA is also described as the responding ability of a firm in turbulent environments innovatively that also include unforeseen variations regarding technology and demand (Tallon and Pinsonneault, 2011). In addition, these turbulences produce opportunities and threats where businesses must discover innovative solutions to deal with the phenomenon. Furthermore, Bernardes and Hanna (2009) stated that agility is a strategy for managing unpredictable turbulence. It is the capacity of a business to deal with uncertain situations and is associated with the dynamic capabilities of business (Teece et al., 2016). For the development and enrichment of business agility, Shafer et al. (2001) suggested three steps, including initiation, adaptation, and distribution. First, initiation is concerned with the competence of business to avail opportunities and deal with the prevailing threats.

Second, adaptation is associated with the quickly responding capability of business regarding internal and external variations in the business environment. Last, delivery deals with the operational progress of business in effective and efficient manners. So, firms with agile ability proficiently, sustainably, and profitably operate in uncertain settings (Jacobs et al., 2011). Organizations operating in diverse industries adopted the concept of agility, including manufacturing concerns (Theyel and Hofmann, 2020), software businesses, supply chain networks (Mohammadi et al., 2019), and project management (Ahimbisibwe et al., 2017). However, the concept of OA is not explained in these industries uniformly (Koch and Schermuly, 2020). Illustratively, there are various methods to advance OA in the software industry, likewise scrum, software development learning, dynamic system development technique, and extreme programming (Conforto et al., 2014; Nicholls et al., 2015). In addition, a higher capability to reconfigure processes, including machining and workflow, to cope with the various demands of customers also increases organizational agility. From product development planning to launching a new product in the market, development teams deal with the various uncertainties in the NPD process. The application of pre-determined solutions in uncertain situations of the NPD process is highly risky (Wang, 2017). Dealing with uncertain situations with the application of agile abilities, development teams have more opportunities of controlling risk and generating new ideas where these ideas may be applied in the development procedure. Therefore, firms are required to consider the significance and rewards of adopting OA before the NPD. Accordingly, the hypotheses proposed are as under:

Hypothesis 4: Organizational agility is positively associated with new product development.
Hypothesis 5: Organizational agility mediates the relation between knowledge acquisition and new product development.
Hypothesis 6: Organizational agility mediates the relation between knowledge sharing and new product development.
Hypothesis 7: Organizational agility mediates the relation between knowledge application and new product development.

Moderating the role of business model innovation

Generally, a business model (BM) is acknowledged as a framework in what way an organization generates and conveys value to customers and what apparatuses are applied to gain value (Teece et al., 2016). By applying the BM idea, a business defines its scope in terms of "what it does," "what its offers," and "how the offer is made" (Ritter and Lettl, 2018). In addition, business model innovation (BMI) is defined as the process of developing BM that may be new for that particular organization or new to the entire industry (Björkdahl and Holmén, 2013; Foss and Saebi, 2017). Moreover, BMI is elucidated as the outcome of an innovative move by substituting the existing BM in an organization or entirely modifying any BM carried by a business (Lindgardt et al., 2012). These changes may be in terms of the value chain or the value proposition with regard to the customers or partners in an organization (Matzler et al., 2013).

BMI is the modification in the existing operational designs of a business ranging from the focal firm and its customers, shareholders, suppliers, and rest of the stakeholders contributing to the value-creating process (Andreassen et al., 2018). Value creation components helping BMI are more varied, environment specific, and shortly explained than those associated with product innovation (Clauss et al., 2019). Additionally, Amit and Zott (2010) have the opinion that BMI-supported e-businesses generate value with the help of added innovation, complementarity, competence, and lock-in. The value creation process of incumbent in the “nondigital” industry particularly is a topic of greater interest for researchers (Amit and Zott, 2015). Similarly, the first contribution regarding that in what ways manufacturing business generates value. Particularly, the application of value for customers by transferring the model to the service industry is started to appear (Raja et al., 2013). Accordingly, the interaction between product development and BMI requires attention greatly. Nowadays, scholars are paying greater attention to the supporting role of BMI in enhancing value creation while developing a product (Desyllas and Sako, 2013). They also emphasized that firms must consider the way how BMI and product innovation are associated with each other (Gambardella and McGahan, 2010) In addition, BMI can enhance the influence of KMCs during new product development. Accordingly, the hypotheses proposed are as under:

Hypothesis 8: Business model innovation plays a moderating role in the association between knowledge acquisition with organizational agility.

Hypothesis 9: Business model innovation plays a moderating role in the association between knowledge sharing with organizational agility.

Hypothesis 10: Business model innovation plays a moderating role in the association between knowledge application with organizational agility.

Research framework

In accordance with the scholarly work of previous authors, this study takes into account the process capabilities factors and examines how they impact the new product development performance under circumstances where firms are able to adapt and modify their operational design in the process of creating value. Therefore, this study measures three knowledge management capabilities processes [knowledge acquisition (KA), knowledge application (KAP), and knowledge sharing (KS)] from the perspectives of Gold et al. (2001), Lin and Lee (2005), and Gharakhani and Mousakhani (2012) at the SME level on NPD performance (see Figure 1), but with a different approach and methodology.

Research methodology

Sampling and procedure

This study uses online questionnaires to collect data. The automobile parts manufacturing firms in Guangdong province were surveyed for this study as sustainability and going green, such as reduction in CO_2 emission and light weight production, are key factors forcing firms to continually develop new products and consider new designs (Wellbrock et al., 2020). Moreover, China is the leading manufacturer of automobile parts, so it is impossible to collect data from the whole population, so we strategically selected five cities in Guangdong province. Because of resource and time constraints, convenience sampling was used to collect and analyze the data. 丫亿欧 EqualOcean Company’s data list was used to identify the main industry players in the automobile sector of the five cities in Guangdong province (Guangzhou, Shenzhen, Zhuhai, Foshan, and Dongguan). As part of the data collection programs, 100 firms with employees in the range of 300–1,500 were approached to participate in the study. Only 36 firms agreed to participate in the email questionnaire survey. Firms were solicited to identify their NPD managers, Team leaders, engineers, and supervisors with adequate knowledge of KM and NPD processes to participate in the study as they were more likely to present a large view of the firm’s level NPD performance. Participants were informed that their responses would remain anonymous. Data were collected in 8 months, from October 2021 to May 2022. This study uses a cross-sectional approach and quantitative data techniques to establish links among the constructs of the study (Nardi, 2018).

Thirty-six agreed firms from the list of 丫亿欧 EqualOcean Company’s data list were contacted through telephone calls and emails. The main challenge for this research was to collect face-to-face data because of COVID-19. Therefore, we requested each of the agreed firms to identify the key contact persons with adequate knowledge and can act as sources and help in the data collection process. In total, 360 questionnaires accompanying a cover letter with the full explanation of our detailed research objectives and declaring privacy and confidentiality were sent out to identified participants at their email addresses. To increase and improve our response rate not only follow-up calls and emails were used, but we also offered an incentive to share our aggregate survey findings with the informants who completed and returned their questionaries. According to the G* power software, 153 participants are required for this study to reach a power of 0.95 and an average effect size of 0.15

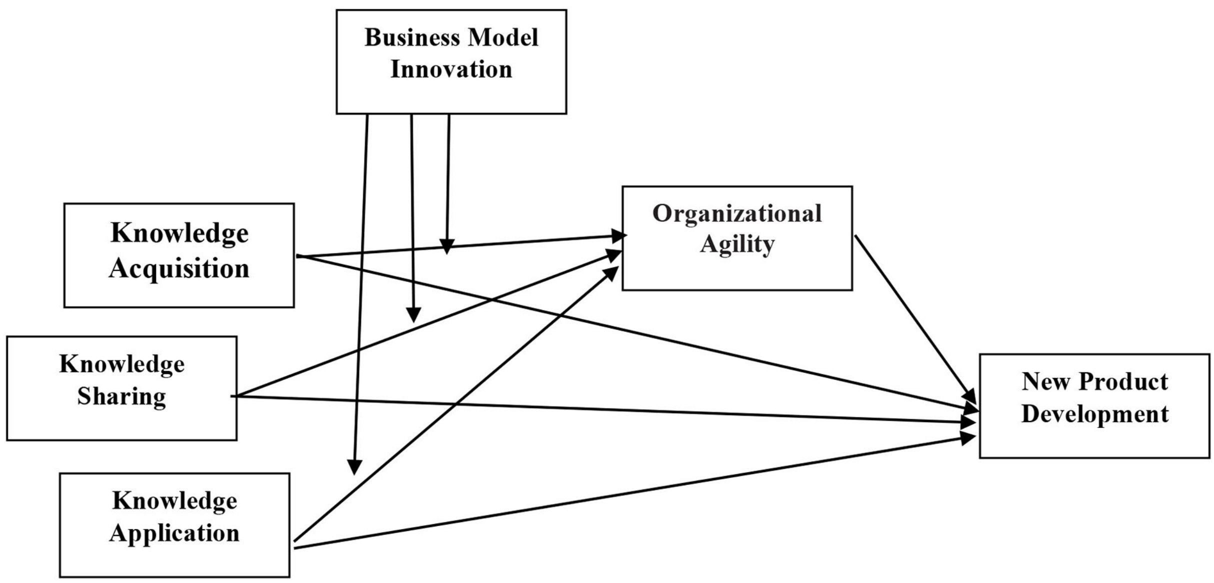

FIGURE 1
Conceptual model.

(Faul et al., 2007). In total, 360 questionnaires were sent out, but only 238 responses were received. Out of 238 responses received, 201 are useable, as 37 responses were excluded because of incomplete or flawed responses making the response rate 56% (201/360). According to Comery and Lee (1992) inferential statistics approach, a sample of this size is a good sample.

Measures

The situation allowed us to adapt or when possible use validated measures derived from extensive inquiry into the extent of literature. The items in each construct were measured using a five-point Likert scale. The first English version of the Questionnaire has 27 construct items in total. We used a professional translator to translate the first English version into Mandarin Chinese. The translated Mandarin version was back-translated into English. The translators and one researcher are both well-versed in English and Chinese. The back-translation was done to avoid potential discrepancies arising from the translation process. To ensure that questionnaire is clear and understandable in the Chinese automobile industry, we incorporated the feedback of two industry experts and two academicians. The Chinese version of the survey instrument was administered in the data collection process. The independent variable knowledge management capability process factors based on the 13-items scale were adopted from Lin and Lee (2005). Knowledge management capability process factors are established on three aspects: Knowledge acquisitions (four items), knowledge sharing (four items), and knowledge application (five items). The dependent variable firm-level new product development performance based on the five-items scale was adopted from Liu and Tsai (2007). To measure the mediating effect of organizational agility, the five-items scale was adopted from the study of Hoonsopon and Puriwat (2019). Lastly, the scale of moderating variable business model innovation measured by four items was derived from Huang et al. (2012). All the indicators were measured on a five-point Likert scale, 1 = Strongly disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, and 5 = Strongly agree.

Results

Measurement model assessment

The measurement model was estimated in the partial least squares-structural equation model (PLS-SEM) using Smart PLS version 3.0 (Schlittgen et al., 2016). It was used to measure the inner consistency of constructs by factor loading, Cronbach's alpha, composite reliability (CR), and average extracted variance (AVE) (Henseler, 2017). Discriminant validity was also evaluated by using a measurement model. The results of the measurement model are shown in Figure 2 and Table 1.

Table 1 indicates alpha's value, composite reliability, and value of AVE. These values measure the convergent validity of the constructs, and all the values of this study meet the threshold level. According to the instructions of Gliem and Gliem (2003), Cronbach's alpha's value should be more than 0.6, and the value of Cronbach's alpha for all items of every variable is well above

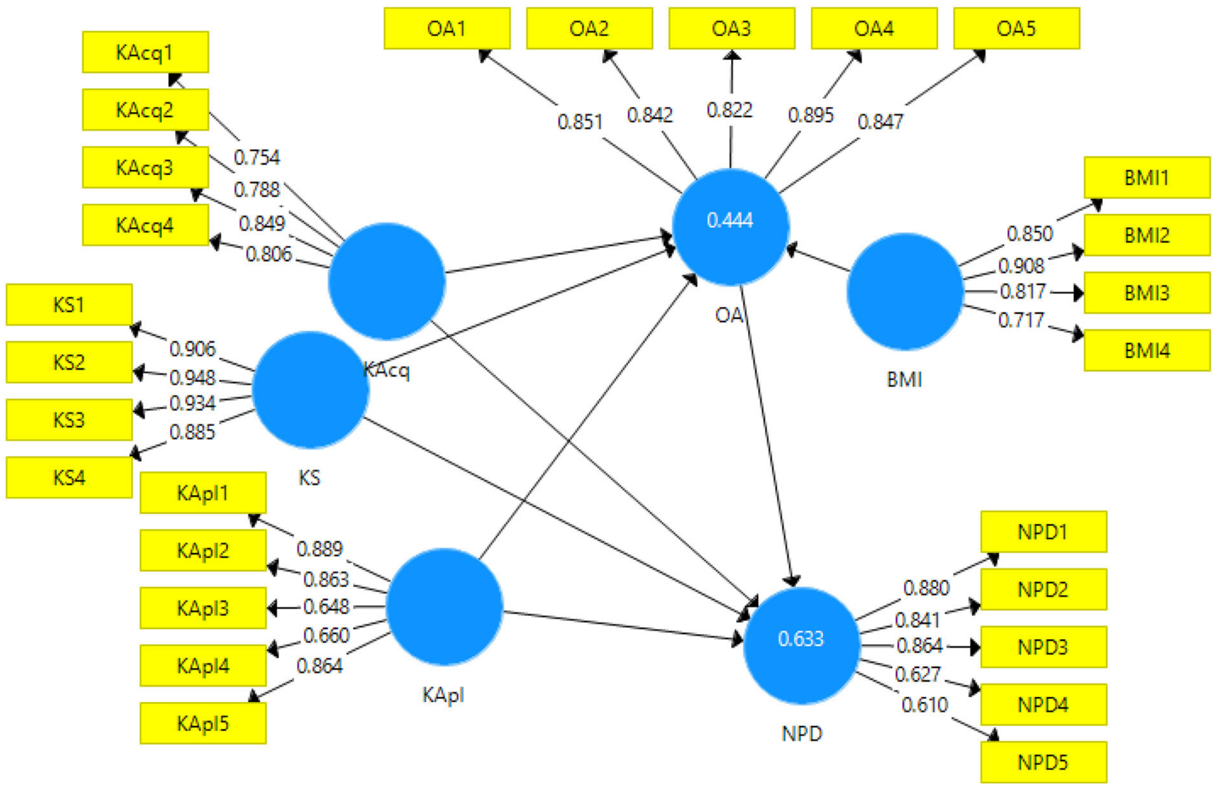

FIGURE 2
Measurement model assessment.

0.6. Moreover, Fornell and Larcker (1981) recommended that the value of AVE should be more than or equal to 0.5, and the composite reliability value should be equal or 0.7 or above. The values of this study fall within the acceptable range of AVE and composite reliability.

Table 2 indicates the value of the HTMT ratio, which is another effective and alternative method to access the discriminant validity. Kline (2011) recommended an HTMT ratio of <0.85 to confirm the discriminant validity. Accordingly, all the values are higher than the benchmark level, which shows this study fulfills discriminant validity criteria.

Structural model assessment

To examine the relationship within the variables, a structural model analysis was conducted. This study adopts the bootstrapping method to examine the significance of path coefficients (see Figure 3). Results indicated that knowledge acquiring capability has no significant association with the performance of new product development. Therefore, H1 is not accepted. Moreover, results revealed that knowledge sharing is significantly and positively related to new product development performance (β = 0.272, t = 3.242), and H2 is supported. Moreover, knowledge application and organization agility are significantly and positively related to job new product development performance, and H3 and H4 are supported. The bootstrapping process specified the mediation effects. The findings show that organizational agility significantly and partially mediates the relationship between knowledge acquiring new product development performance (β = 0.169, t = 3.458), and H5 is supported. Results also indicate that organizational agility significantly and fully mediates the relationship between knowledge sharing and new product development performance (β = 0.105, t = 2.109), and H6 is supported. Results revealed that organizational agility significantly mediates the relationship between knowledge application and new product development performance (β = 0.087, t = 2.544), and H7 is supported.

Table 3 indicates the results of the moderation analysis. The findings revealed that business model innovation significantly and positively moderates the relationship of knowledge acquisition with organizational agility (β = 0.232, t = 2.909), and H8 is supported. Furthermore, business model innovation has a significant moderation effect on the relationship of knowledge sharing with organizational

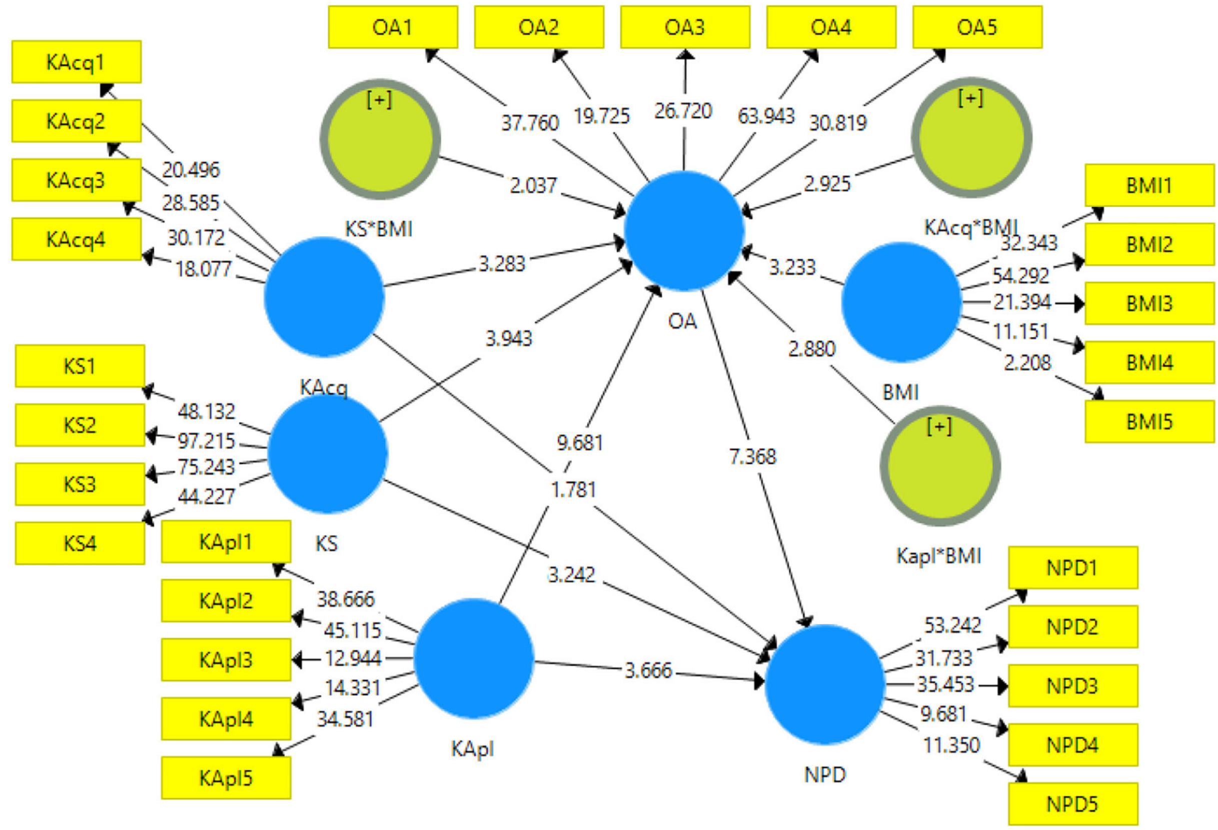

FIGURE 3
Structural model assessment (n = 5,000 bootstrapped samples).

agility ($\beta = 0.121$, $t = 2.037$), and H9 is accepted. Results also indicated that business model innovation significantly moderated the relationship of knowledge application with organizational agility ($\beta = 0.189$, $t = 2.880$), and H10 is supported.

Discussion

The intention of this research is to examine the effect of knowledge management capabilities based on three categories knowledge acquisition, knowledge application, and knowledge sharing on new product development project performance with mediating role of organizational agility and moderating role of business model innovation on the relationship of KMC with organizational agility. The results revealed that knowledge application, and knowledge sharing both positively influence new product development. However, knowledge acquisition is insignificant. The results of current research are in line with the prior studies by Liu and Tsai (2007) and Yildirmaz et al. (2018), who argued that sharing of knowledge by employees with their colleagues and its application in firm results in direct benefits during new product development. Moreover, knowledge sharing, and its application play an important role in planning and forecasting new products. Furthermore, the results of this study indicate that organizational agility positively and significantly mediates the relationship between knowledge management capabilities and new product development. According to Hoonsopon and Puriwat (2019), organizational agility helps organizations develop better teams that discover the needs of customers by using knowledge management capabilities. It also helps in selecting the appropriate technology for new product development that creates value for customers and increases the sustainability and profitability of the product. Lastly, the findings of this study also revealed that business model innovation positively and significantly moderates the relationship of knowledge management capabilities with organization agility. According to the findings, essential knowledge management capabilities for automobile companies that enable them to innovate their business model include the ability to acquire new external knowledge, convert it so that it is ready to use, and finally apply it for new product development.

TABLE 1 Measurement model.

Construct	Items	Loadings	Cronbach's alpha	CR	AVE
Business model innovation	BMI1	0.850	0.792	0.857	0.566
	BMI2	0.908			
	BMI3	0.817			
	BMI4	0.717			
Knowledge acquisition	KAcq1	0.754	0.812	0.876	0.640
	KAcq2	0.788			
	KAcq3	0.849			
	KAcq4	0.806			
Knowledge application	KApl1	0.889	0.844	0.892	0.627
	KApl2	0.863			
	KApl3	0.648			
	KApl4	0.660			
	KApl5	0.864			
Knowledge sharing	KS1	0.906	0.938	0.956	0.844
	KS2	0.934			
	KS3	0.948			
	KS4	0.885			
New product development	NPD1	0.880	0.824	0.879	0.598
	NPD2	0.841			
	NPD3	0.864			
	NPD4	0.627			
	NPD5	0.610			
Organization agility	OA1	0.851	0.905	0.929	0.725
	OA2	0.842			
	OA3	0.822			
	OA4	0.895			
	OA5	0.847			

TABLE 2 Heterotrait–Monotrait ratio (HTMT).

Constructs	BMI	KAcq	KApI	KS	NPD	OA
BMI						
KAcq	0.627					
KApI	0.628	0.807				
KS	0.557	0.788	0.716			
NPD	0.736	0.810	0.805	0.638		
OA	0.541	0.718	0.628	0.566	0.829	

KApl, Knowledge Application; KAcq, Knowledge Acquisition; BMI, Business Model Innovation; NPD, New Product Development; OA, Organization Agility.

Theoretical and practical implications

There are various ways in which the findings of this research theoretically support the literature. First, our research contributes to the growing body of literature on the internal factors that affect BMI. Moreover, Teece et al. (2016) and Clauss et al. (2019) indicated that previous research has focused on the ability to use and re-use resources in different ways, as well as on cultural values and a willingness to change. Therefore, we focus specifically on how the automobile sector's BMI is affected by their organizational KMC in this investigation. Internal facilitators have been hypothesized to have a positive impact on Business model innovation (BMI); however, no research has tested this explicitly (Foss and Saebi, 2017). Lastly, our empirical results support previous conceptual and case study-based research by directly correlating KMC to BMI. In terms of practical implications, current research offers significant implications for managers and policymakers in the automobile sector. The purpose of this study was to investigate the impact of organizational KMC strength on their NPD performance and explore how it enhances their ability to respond when an organization actively seeks to deliver value in innovative ways. Managers need to develop a modern competitive business environment for the implication of knowledge management capabilities. The research presented an all-inclusive view of KMC and its impact on NPD performance. Organizations need to leverage their knowledge-based capabilities and organizational agility to develop a knowledge-based environment. Moreover, organizations may improve the sustainability of their product and their overall performance. Managers may utilize knowledge-based resources to add value in the course of developing products.

Limitations and future directions

There are always ways to improve a study, as no study is perfect. This study also has some limitations. This study focused only on the automobile industry, where applications of knowledge management capabilities in new product development can be investigated further. This study was conducted in a shorter time in a geographically constrained area. A larger sample can generate better results that can add to the insight and generalization aspect of the findings. The data collection for the study was done at one specific point in time; however, for future research, it will be of great use to analyze the companies at various times to see the impacts of KMC, NPD, OA, and BMI implementation. The respondents of the study were managers, Team leaders, engineers, and supervisors of the company; however, future research sampling should involve numerous respondents in a business rather than only the top management to increase the validity of the findings. Only one mediator and one moderator were able to be investigated for this research because of time constraints. In light of this, further study

TABLE 3 Structural model assessment (direct effect results and decision).

Hypotheses	Relationship among constructs	β	S. D.	*T*-values	*P*-values	Remarks
Direct effect						
H1	KAcq -> NPD	0.166	0.093	1.781	0.071	NS
H2	KS -> NPD	0.272	0.084	3.242	0.000	S
H3	KApl -> NPD	0.238	0.065	3.666	0.001	S
H4	OA -> NPD	0.494	0.067	7.368	0.000	S
Mediating effect						
H5	KAcq -> OA -> NPD	0.169	0.049	3.458	0.001	S
H6	KS -> OA -> NPD	0.105	0.050	2.109	0.035	S
H7	KApl -> OA -> NPD	0.087	0.034	2.544	0.011	S
Moderating effect						
H8	KAcq*BMI -> OA	0.232	0.079	2.909	0.004	S
H9	KS*BMI -> OA	0.121	0.059	2.037	0.042	S
H10	KApl*BMI -> OA	0.189	0.066	2.880	0.004	S

KApl, Knowledge Application; KAcq, Knowledge Acquisition; BMI, Business Model Innovation; NPD, New Product Development; OA, Organization Agility; S.D, Standard Deviation.

may improve the model and investigate other mediators like absorptive capacity and employee knowledge-sharing behavior. Future studies can also check other moderators, such as the organization's culture and technological complexity. From this point forward, there are a number of potential paths that researchers might choose further in their investigations.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Impact of online convenience on generation Z online impulsive buying behavior: The moderating role of social media celebrity

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This research aims to determine which dimensions of online convenience influence generation z consumers' cognitive and affective attitudes and online impulsive buying behavior. The moderating effect of social media celebrity is also investigated to examine the attitude-behavior gap. A total of 348 responses from Chinese users who followed digital celebrities were received using purposive sampling. Data analysis and hypothesis testing were carried out using SmartPLS, version 3 (partial least squares). The results indicated that relationship convenience, possession convenience, post possession conveniences, transaction convenience, and evaluation convenience have a crucial impact on cognitive and affective attitudes. Similarly, cognitive and affective attitudes are significant and positive predictors of generation z consumers' online impulsive buying behavior. Moreover, empirical results supported the moderating role of social media celebrities that aid marketers in selecting a product endorser. The implications for marketers and policymakers are discussed based on the above research findings. Moreover, future research directions are suggested.

KEYWORDS

online convenience, impulsive buying, social media celebrity, Gen Z, SOR model

Introduction

An unexpected or non-essential purchasing action is known as impulse buying (Amos et al., 2014; Iyer et al., 2020; Bandyopadhyay et al., 2021; Cavazos-Arroyo and Máynez-Guaderrama, 2022; Nigam et al., 2022). It is rapid and spontaneous, with little consideration of the product or the repercussions of the purchase (Lin and Chen, 2013; Rezaei et al., 2016; Iyer et al., 2020). The phrase 'impulse buying refers to a person's proclivity to make unexpected, quick, and unreflective purchases (Sohn and Lee, 2017; Bandyopadhyay et al., 2021). Many scholars and practitioners have recently focused their attention on impulsive shopping behavior, which is sometimes referred to as "impulse shopping" (Aragoncillo and Orus, 2018; Kumar et al., 2020). Two-thirds of supermarket sales are accounted for by this category (Amos et al., 2014; Katakam et al., 2021). According to a recent study, an impulsive purchase may be classified into two thematic contexts: online and offline stores (Amos et al., 2014; Kimiagari and Malafe, 2021). Several investigations have shown that over 50% of internet purchases are done on impulse (Zheng et al., 2019). Impulsive buying is widespread around the globe (Bandyopadhyay et al., 2021). For example, It is claimed that 80% of American teens have made impulsive online purchases and that consumers in the United Kingdom (UK) spend around £1 billion each month on impulsive buying (Gulfraz et al., 2022). In emerging markets such as Pakistan (Miao et al., 2019), India (Ekambareswarar et al., 2021) and, more importantly, China (Gulfraz et al., 2022), impulsive purchasing is also on the rise. China's e-shopping population surpassed 1 billion in 2019, with a total expenditure of $636.09 billion compared to American shoppers, who spent 258.5 million (Ampadu et al., 2022).

It has been shown that impulsive purchasing is common among Generation Z (those born between the mid-1990s and the early-2010s) due to the rapid growth of social networking sites (SNS) like Facebook, Twitter, and Pinterest (Priporas et al., 2017; Djafarova and Bowes, 2021; Liu et al., 2021; Zafar et al., 2021). In addition, as social media usage has grown, a new breed of celebrity has emerged, referred to as social media celebrity, i.e., social media influencers, Instafamous, vloggers, and bloggers. Social media celebrities are more credible and influential than traditional celebrities, i.e., movie stars, artists, athletes, and TV stars (Djafarova and Rushworth, 2017). Many individuals follow such digital celebs due to their authenticity (Djafarova and Rushworth, 2017; Djafarova and Bowes, 2021). These digital celebrities may impact a user's impulsive buying behavior (Xiang et al., 2016). According to research, 41% of Generation Z customers are impulsive shoppers, followed by 34% of Millennials and 32% of Generation X (Djafarova and Bowes, 2021). Gen Z consumers are more persuasive while making purchases (Lee et al., 2022). They want new products faster (Agrawal, 2022). They are brand-less and fashion-hungry (Djafarova and Rushworth, 2017). Brands must build marketing tactics to reach this demographic (Djafarova and Bowes, 2021; Agrawal, 2022). Generation Z grew up on the Internet. Therefore they use social media for inspiration (Djafarova and Bowes, 2021).

One of the primary motivators driving impulsive consumer buying is online convenience (Gulfraz et al., 2022). As consumers devote less time to shopping and more to other activities, they want ease and turn to virtual shopping (Jiang et al., 2013; Duarte et al., 2018). Thus, it is necessary to understand the link between online convenience and impulsive buying to understand the consumer base and the e-commerce business. Academic research on online convenience as a stimulus for impulsive online shopping is rare, despite its expanding importance in consumer behavior (Jiang et al., 2013; Duarte et al., 2018; Shankar and Rishi, 2020; Jebarajakirthy and Shankar, 2021; Shankar, 2021; Shankar et al., 2021). An overview of the relevant studies may be found in Table 1.

The current understanding of consumer online impulse buying behavior and the contributing factors, i.e., Online Convenience (Duarte et al., 2018) or social media celebrities (Djafarova and Bowes, 2021), is limited. We developed a model based on the Stimulus-Organism-Response (SOR) model (Mehrabian and Russell, 1974) to fill this knowledge gap. Theorizing different dimensions of online convenience, i.e., Access convenience, search convenience, transaction convenience, evaluation convenience, relationship convenience, benefit convenience and post benefit convenience as stimuli (S), employing bi-dimensional attitudes, i.e., cognitive and effective as an organism (O) and online impulsive buying behavior as a response (R). Frank-Martin and Peattie (2009) discovered that the attitude-behavior gap is a discrepancy between what individuals assert and convey *via* their attitudes and how they act. More study

TABLE 1 Summary of notable studies in the literature that capture online convenience.

Author	Constructs	Study context	Findings
Jiang et al. (2013)	Access, Search, Evaluation, Transaction, Possession, and post possession Convenience	Online Shopping	The findings provide more evidence that the convenience of online shopping can be broken down into five distinct categories: access, search, evaluation, transaction, and possession/post-possession.
Duarte et al. (2018)	Access, Search, Evaluation, Transaction, Attentiveness, Possession, and post possession convenience	Online Shopping	According to the study findings, the dimensions of convenience associated with online shopping that are most strongly influenced are "Possession," "Transaction," and "Evaluation."
Shankar and Rishi (2020)	Access, Search, Evaluation, Transaction, Possession, and post possession Convenience	Mobile banking	The convenience regarding access, transactions, possession, and post-possession was the most critical factor in determining whether consumers intend to use mobile banking.
Shankar (2021)	Access, Search, Evaluation, Transaction, Benefit, and post benefit convenience	Webrooming	According to the findings, a consumer's intention to webroom is significantly influenced by the ease of access, search, benefit, and post-benefit convenience.
Jebarajakirthy and Shankar (2021)	Access, Search, Evaluation, Transaction, Benefit, and post benefit convenience,	Mobile banking	According to the findings, the ease of access, transactions, benefits, and post-benefit convenience significantly influence consumers' intentions to use mobile banking.
Shankar et al. (2021)	Decision, attentiveness, evaluation, Transaction, Possession, and post possession convenience	Showrooming	According to the findings, convenience dimensions such as attentiveness, evaluation, possession, and post-possession convenience play a key influence in the formation of customers' desire to engage in showrooming behavior.

is needed to close the gap between attitude and behavior, which prevents individuals from turning their attitudes into behavior (Wiederhold and Martinez, 2018; Sadiq et al., 2022). This research attempts to answer that call by studying the moderating role of social media celebrity on the relationship between attitude and behavior.

In light of this, our research makes the following distinct contributions: (a) It is one of the limited studies to examine the dimension of convenience. (b) It is the first study to examine Gen Z impulsive buying in the theoretical backdrop of SOR with bi-dimensional attitude approach. (c) It is among the limited studies that have examined the moderation effect of social media celebrity on the association of attitude and behavior.

The present research is organized as follows: The review of relevant literature and the development of hypotheses are presented in "Literature review." The research methodology is presented in "Materials and methods," and the study findings are presented in "Data analysis and results. discussion," theoretical and practical implications, limitations, and future research directions are all presented in "Discussion and implications."

Literature review

Impulse buying

Unplanned or non-essential purchasing behavior is known as impulsive buying (Muruganantham and Bhakat, 2013; Aragoncillo and Orus, 2018; Sen and Nayak, 2021). It happens instantly and without rigorous assessment of the goods and purchase's repercussions (Khachatryan et al., 2018; Lee et al., 2021; Bao and Yang, 2022). Impulsive buying is described by Beatty and Ferrell (1998) as any "sudden and instant purchase with no pre-shopping plans to purchase the particular product category or to complete a specified purchasing job." The phrase 'impulse purchasing propensity' refers to an individual's proclivity to make unexpected, quick, and unreflective purchases (Beatty and Ferrell, 1998; Khachatryan et al., 2018). Customers may quickly obtain information about goods or services *via* the Internet, which has become a fundamental part of everyday life. When compared to conventional shopping, internet shopping allows for greater impulsive purchases. The feasibility of social media, in particular, is a new way to boost marketing efforts considerably and may play a vital role in influencing customer purchasing choices, such as impulsive buying (Alalwan et al., 2017; Kapoor et al., 2018; Dwivedi et al., 2021). Understanding how people buy on impulse is essential for business. Sharma et al. (2010) argued that people shop online because of their emotions, spontaneous behavior, or lack of cognitive control. They also say that appealing objects cause people to act impulsively, making them buy things without thinking about financial or other aspects of online shopping. From this point of view, few scholars argue that people who buy products online are more impulsive than people who buy products in stores (Verhagen and Van Dolen, 2011; Park et al., 2012; Ozen and Engizek, 2014). Wu et al. (2015) stated that the online marketing stimuli make online buyers less risk-averse during their first search and make it easy for them to buy on the spot (Madhavaram and Laverie, 2004; Jeffrey and Hodge, 2007; Lo et al., 2016).

Online convenience

More and more consumers are turning to internet shopping for its convenience since they have less time to devote to shopping and more time to pursue other interests (Shaqman et al., 2022). Consumers' lack of free time encourages them to look for ways to save time and effort while making purchases (Gehrt et al., 1996). Copeland (1923) initially used the term "convenience" to describe the amount of time and effort required to purchase consumer goods. Consequently, the term "retail convenience" may be defined as customers' time and effort expenses when shopping in a retail setting. These consumer resources of time and effort are identified in marketing literature as non-monetary costs that impact purchase behavior (Herrmann and Beik, 1968; Jacoby et al., 1976). As a result, retailers have been concentrating on delivering services that expedite and simplify the purchasing experience for customers (Chang and Polonsky, 2012). Retailers raise the value of their market offer by enhancing customers' convenience to save time and effort through convenience improvements (Lloyd et al., 2014). Internet is presently a viable choice for customers who wish to save time and energy. People choose online retail formats because their lifestyles are often constricted due to rising professional responsibilities, limiting the amount of time available for everyday activities and prompting them to select retail formats that need the least time (Bhatnagar et al., 2000). Their priority is to complete the shopping process while using the least effort possible to receive the desired item (Lloyd et al., 2014).

According to existing empirical evidence, convenience is a critical factor in the interaction between consumers and service providers. Customers are more likely to stick around if there is an excess of convenience available (Lloyd et al., 2014; Lovelock and Patterson, 2015). In contrast, a lack of convenience has been a primary cause for them to leave (Keaveney, 1995; Seiders et al., 2007; Lovelock and Patterson, 2015).

Despite the significance of convenience, there is no widespread agreement on the factors that compose online convenience. Farquhar and Rowley (2009) argue that online convenience is merely a proxy for the resources customers are using rather than something inherent to their service. For others (Yale and Venkatesh, 1986; Berry et al., 2002; Seiders et al., 2007), convenience is a multidimensional notion. Even though convenience has multiple dimensions, no one agrees on what they are (Seiders et al., 2007; Reimers and Chao, 2014). Access, search, assessment, transaction, possession and post-possession convenience are the five dimensions of convenience defined by Jiang et al. (2013). Consumers are more likely to engage in impulsive online purchases if they can easily avail the abundance of service convenience in term of search, evaluation, transaction, relationship, possession, and post-possession convenience.

Conceptual background

By employing, Mehrabian and Russell (1974) SOR framework, researchers may better understand how consumers make impulsive online purchases (Hashmi et al., 2019; Zheng et al., 2019). This study employed it as a theoretical framework to investigate the associations between the convenience elements and online impulsive buying behavior. The basic SOR framework has three components: (1) a stimulus: "a trigger that stimulates the consumer," (2) an organism: "the internal assessment of the consumer," and (3) a response: "the consequence of the consumer's reaction to online impulse buying drivers and their interior assessments" (Chen and Yao, 2018; Zhang et al., 2018). In other words, the S–O–R proposes that an organism exposed to external stimuli would process and react to those stimuli uniquely. In the current study, elements of online convenience serve s stimuli influencing the consumers' cognitive and affective attitude (organism) and deriving consumers' online impulsive buying behavior (response). Stimuli are classified in the literature into two basic categories: object stimuli and social psychological stimuli. Complexity, consumption duration, and product qualities are all dealt with by object stimuli; social-psychological stimuli, on the other hand, are related to an individual's surrounding environment. The online service convenience (OSERVCON) multidimensional model is used to determine the most relevant object and social psychological stimuli for impulsive online purchases. Three emotional states are outlined in the stimulus organism response (S-O-R) model (Mehrabian and Russell, 1974): pleasure, arousal, and dominance (PAD), which represents the organism. Due to the limited scope of PAD dimensions, numerous alternative constructs associated with internal states such as emotive, evaluative, cognitive and affective have been proposed in the literature (Fiore and Kim, 2007; Lee and Yun, 2015). In addition, Eroglu et al. (2001) postulated two internal states: cognition and affect. These two states have higher explanatory power than the preceding ones. Research shows that attitude scales are helpful for capturing and operationalizing one's own internal states of cognition and emotion (Fiore and Kim, 2007). We use the bi-dimensional approach to operationalize attitude as either cognitive or affective.

Scholars argued that investigations that use attitude as an indicator of actual behavior should be taken care of (Wiederhold and Martinez, 2018). Misalignment between stated attitude and actual behavior implies that buyers' stated attitude and actual behavior are not always in sync at the time of purchase (Auger and Devinney, 2007; Wiederhold and Martinez, 2018). This phenomenon is known as the "attitude-behaviour gap." (Davies et al., 2002; Carrington et al., 2010, 2014).

Based on the above discussion, this study investigates the influence of service convenience dimensions, i.e., assess convenience, search convenience, benefit convenience, post-benefit convenience and relationship convenience on the two dimensions of attitude: cognitive and affective. Moreover, moderating the role of social media celebrities is also investigated to improve the attitude-behavior gap. This moderating effect is crucial because many consumers seek social media personalities' opinions before buying a product.

Access convenience

This dimension is defined as "the speed and convenience with which customers may approach a store" (Shankar and Rishi, 2020). Access convenience is a crucial aspect of retail convenience since if the customer cannot reach the shop, he/she cannot use the service. In conventional retail, access convenience might be improved by shifting the store location (Seiders et al., 2007). In the internet context, store location is immaterial (Jebarajakirthy and Shankar, 2021). King and Liou (2004) indicated that website accessibility is the most significant aspect of online shopping convenience. This may be achieved by employing more user-friendly and easy-to-remember URLs, automated bookmarking technologies, and strategically positioning adverts on social networking sites. On this basis, it is argued that:

> *H1*: Access convenience is positively associated with attitude towards online impulse buying behavior.

Search convenience

Katawetawaraks and Wang (2011) state search convenience as "how quickly and easily customers find and choose things to purchase." The Internet has provided numerous tools that have enabled retailers to enhance their communication with prospective customers by bolstering their ability to provide detailed information, either by integrating it into their website and using paid advertising to redirect traffic or by spreading information and generating buzz on social media, and hence assisting them in identifying and selecting the most suitable business partners (Beauchamp and Ponder, 2010). These upgraded technologies help customers avoid wasting time by avoiding crowds, minimizing waiting time, and going to physical shops (Katawetawaraks and Wang, 2011). Let us assume that a store's more successful is in enabling consumer product searches. The customer's trip through the purchasing experience will be faster and easier; the following hypothesis is proposed:

H2: Search convenience is positively associated with attitude towards online impulse buying behavior.

Evaluation convenience

The availability of extensive but easy-to-understand product descriptions utilizing different presentation techniques, such as text, images, and video, on the company's website is linked to evaluation convenience (Tankovic and Benazic, 2018). Consumers may acquire a sound vision of items, zoom and rotate them, alter colors, and declare how the products could match their requirements using these tools (Tran and Strutton, 2020). They may also compare costs and participate in online conversations with other shoppers (Shankar and Rishi, 2020). This form of product exposure helps consumers to compare products and make quick purchases. In recent years, the abundance of products and rich information has made online customers more sensitive than ever to the efforts connected with evaluation convenience (Jiang et al., 2013; Shankar and Rishi, 2020). So, here's the hypothesis:

H3: Evaluation convenience is positively associated with attitude towards online impulse buying behavior.

Transaction convenience

Transaction convenience is "how quickly and easily customers can make or change transactions" (Lovelock and Patterson, 2015). Online customers conduct transactions in "virtual checkout lines." stores with 1-Click checkouts and simple returns are transactionally convenient. Online shoppers never have to wait in line (Shankar and Rishi, 2020). Privacy issues and unsafe transactions may discourage internet purchases. Customers need secure, easy online payment solutions (Jebarajakirthy and Shankar, 2021). According to Shankar and Rishi (2020), the fear of losing money and financial information deters people from purchasing online. Hence, it is argued that:

H4: Transaction convenience is positively associated with attitude towards online impulse buying behavior.

Relationship convenience

Due to increased competition in online markets, merely exposing product or service catalogues on the Web is not enough to assure online business longevity. The relationship convenience relates to how many online retailers deliver individualized services and attention to their clients (Zahid et al., 2022). Online shoppers demand individualized services to decrease the time and effort required to seek information and make a purchasing choice (Lovelock and Patterson, 2015). Modern online retailers use personalization features to distinguish their goods and services from the competition (Zahid et al., 2022), boosting consumer experience and convenience. Customers may comprehend information more quickly and fluently using online personalization capabilities, which leads to increased purchasing experience (Lovelock and Patterson, 2015). Online merchants provide decision aids (i.e., suggestion agents or shopping bots) and even human assistants to ease purchasing choices and improve consumer experience (Christopher et al., 2013). Researchers hypothesize that:

H5: Relationship convenience is positively associated with attitude towards online impulse buying behavior.

Possession convenience

Possession convenience is the time and money customers expend to get what they want (Jiang et al., 2013). Possession convenience is the quickness and simplicity with which customers may receive desired items, including production planning, stoking policies, shipping, and delivery schedules. Traditional retailers have the benefit of allowing you to depart with the thing you want (McKinney et al., 2002; Ganesh et al., 2010). In online retailers, purchasers must wait for their goods to be processed, shipped, and delivered. Time spent completing all stages of the online purchase procedure and waiting for delivery might be considered a non-monetary cost of doing business online (Jiang et al., 2013). According to Islam (2015), worries regarding order delivery affect online shopping. So, here's the hypothesis:

H6: Possession convenience is positively associated with attitude towards online impulse buying behavior.

Post-possession convenience

Post-possession convenience is "the consumer's perceived time and effort expenditures when re-contacting a firm after acquiring the intended goods" (Lovelock and Patterson, 2015). In recent years, post-possession convenience has been stressed due to problems returning online purchases (Lovelock and Patterson, 2015). Post-possession convenience factors frequently relate to product repair, maintenance, or exchange (Rust and Oliver, 1993). Other factors, such as transaction issues, customer complaints, guarantee fulfilment, or faulty items or services, may cause consumers to adjust their online convenience rating (Jiang et al., 2013). Online convenience increases as users spend less time and effort dealing with broken services. So, here's the hypothesis:

H7: Post-possession convenience is positively associated with attitude towards online impulse buying behavior.

Attitude and online impulse buying behavior

Attitude is described as a broad, enduring, and ongoing assessment of a person, place, or thing. The term "attitude" refers to a person's positive or negative feelings towards an object. Attitude toward a behavior is the degree to which someone likes or dislikes the behavior in the question. Attitude is a multidimensional construct that includes cognition, affect, emotion, value, and awareness. Following Eroglu et al. (2001) taxonomy of attitude, we employed two dimensions of attitude in our study: cognitive attitude and effective attitude. Cognitive attitude is how much a person likes or dislikes an object based on how useful it is and what functions it performs (Fiore and Kim, 2007; Celebi, 2015). A person's affective attitude is made up of the feelings and sensations that come from using or experiencing an object (Fiore and Kim, 2007).

Novak et al. (2003) think both cognitive and emotional attitudes impact online impulsive purchases. Babin et al. (2004) and Zheng et al. (2019) verified that cognitive and emotional dimensions are complimentary and positively related. The previous study has also shown a link between cognitive and affective attitudes and impulsive online purchases (Kim and Eastin, 2011; Verhagen and Van Dolen, 2011; Zheng et al., 2019).

> *H8*: Attitude towards online impulse buying behavior is positively associated with online impulse buying behavior.

The moderating role of social media celebrity

Thanks to social media's infinite digital environment, individuals may freely create content and interact with enormous audiences. As user-generated content increased on social media, individuals' duties shifted from passive receivers to proactive generators/distributors of market information (Lee and Eastin, 2021). Furthermore, the interactive features of social media enable specific individuals to build massive networks through which they may influence other users. These individuals are known as social media celebrities (SMCs) and act as opinion leaders for a broad audience (Casaló et al., 2020). There are two types of celebrities: traditional and non-traditional. Traditional celebrities include actors, singers, sports, and T.V. personalities. Non-traditional celebrities include bloggers, YouTube stars, and social media personalities. Users want to follow such celebrities because they are authentic, and it has gotten more attention in the marketing world (Moulard et al., 2015; Audrezet et al., 2020). Online celebrities are considered more trustworthy than traditional celebrities (Djafarova and Rushworth, 2017; Djafarova and Bowes, 2021). According to Nouri (2018), the information provided by an online star is considered more genuine and impactful. Several fields have featured celebrities, including lifestyle, entertainment, and cuisine (Kumar and Mirchandani, 2012; Zoha, 2018; Bradri, 2019). These celebrities have accounts, groups, or websites on different social media platforms where they share their shopping experiences (Kawasaki and Fitzpatrick, 2014). According to previous studies, customers look up to celebrities and strive to replicate their lives, including cosmetics, clothing, fashion, restaurant choices, and even holiday locations. Businesses increasingly seek to include social media celebrities in their marketing strategies (Kumar and Mirchandani, 2012; Djafarova and Rushworth, 2017; Djafarova and Bowes, 2021). Fans of celebrities often seek advice. Consequently, it is thought that when celebrities post a message, the message's authenticity will inspire followers to buy on impulse since individuals are prone to mimic celebrities' actions (Wilcox and Stephen, 2013; Djafarova and Rushworth, 2017; Djafarova and Bowes, 2021). Homophily and attractiveness (i.e., social and physical) are characteristics of social media celebrities that establish attachment with followers.

Homophily is a sense of connectedness between relationship partners based on shared beliefs, interests, and memories (Chu and Kim, 2011; Kim and Kim, 2022). This notion refers to attitudinal similarity or shared subjective states toward a specific target, such as common interests, attitudes, and feelings (Kim and Kim, 2022). Celebrities may connect with fans by sharing commonalities. Similar lifestyles and personalities of social media superstars generate friendship and emotional connections (Ladhari et al., 2020; Kim and Kim, 2022). When social media superstars share personal stuff and get comments, fans feel closer to them. Followers are more engaged when they have comparable experiences, backgrounds, hobbies, value systems, or personal attributes. In this way, the homophily leads to more lively conversations, which creates emotional bonds (Chen et al., 2021).

In computer-mediated communication, social presence is "how much a medium permits the user to sense others as psychologically present" (Fulk et al., 1987). It means the ability to convey facial emotions, eye contact, nonverbal clues, and posture *via* a medium. Users' sense of friendliness, warmth, personal relatedness, and media sensitivity may all contribute to the social presence (Short et al., 1976). Social presence may improve information quality by minimizing ambiguity and equivocation (Straub, 1994; Webster and Trevino, 1995) and increasing online conversation frequency and closeness (Straub, 1994; Jung, 2003; Rau et al., 2008). Moreover, in online transactions, social presence is essential for establishing customers' confidence (Xu, 2014; Shan, 2016). Social presence is vital for social media superstars and fans. Social media superstars' passionate and engaged communication boosts followership, trustworthiness, envy, and brand attitude (Djafarova and Rushworth, 2017; Jin et al., 2019; Djafarova and Bowes, 2021).

Physical attractiveness serves as an inferential signal for preliminary evaluation. People who are physically appealing may be considered integral, clever, and friendly (Joseph, 1982; Ali et al., 2021). Physical appearance may be critical to social bonding. Consumers are more attracted to human brands that are visually attractive (Cole and Leets, 1999; Ali et al., 2021). Social media superstars should be appealing (Djafarova and Rushworth, 2017; Ladhari et al., 2020; Djafarova and Bowes, 2021). When social media superstars reveal personal lives and connect with followers as human brands, attractiveness may attract attention and likeability. Attractive social media personalities may readily attract more followers, leading to emotional attachment.

According to Xiang et al. (2016), interacting with celebrities triggers impulsive behavior. In a social commerce context, homophily and social or physical attraction may trigger impulsive buying. Despite the rise of social networking sites, a recent comprehensive literature review found a scarcity of studies on impulsive purchase in social commerce, especially with context-specific stimulators (Xiang et al., 2016; Djafarova and Bowes, 2021). The above findings necessitate research into the moderating influence of digital celebrities' phenomenon in impulsive buying on social commerce.

> *H9*: Social media celebrity moderates the relationship between attitude and online impulse buying behavior.

Materials and methods

We use a deductive approach in this research because hypotheses are developed based on previous research and theories (Saunders et al., 2007). The cross-sectional online survey was conducted to obtain data helpful in testing the model and examining the proposed hypothesis. This study has focused on China because China's social media ecosystem is massive and mobile-focused. China has one billion active mobile social media users, the most in Asia-Pacific. China's social media penetration rate increased to 68% in 2021, somewhat higher than the United States and Japan. Initially, data was gathered directly from the followers of digital personalities with a community of more than 75,000 members. Participants were asked to recall their most recent impulsive purchase prompted by digital celebrities on social media. A screening question was included to assure the process's efficiency (do you recall your previous impulsive buy?). Thus, individuals without impulse-buying experience were excluded from the final sample. All constructs were measured using scales from previous well-established studies, as mentioned in Table 2. A seven-point Likert scale was used to operationalize all dimensions, with 7 indicating "strongly agree" and 1 indicating "strongly disagree." The sample size is determined based on Comrey and Lee's (2013) recommended criteria, suggesting a sample size of 50 as a poor, 300 as a good, 500 as a very good, and 1,000 is considered excellent. The ideal response rate for a consumer study questionnaire is between 40 and 60%, as Nulty (2008) suggested. Accordingly, we distributed 400 questionnaires and received 265 (66.25%) responses. For data analysis, 226 useable responses were gained after initial screening yielding a response rate of 56.5%. Respondents' demographic profile is presented in Table 3.

Data analysis and results

A structural equation modelling – partial least square (PLS-SEM) approach was employed to analyze the data, and the SmartPLS (Ringle et al., 2015) software was used to do so. Osborne (2010) stated that statistical data in social science research generally have normality problems. PLS has a higher predictive ability while assessing complex theoretical models with small and big sample sizes and data that is not normally distributed (Hair Jr et al., 2017; Ali et al., 2021). In this study, data analysis is performed in two steps. The first step evaluates the measurement model, while the second step assesses the structural model. The measurement model examines the constructs' reliability and validity, while the structural model tests the proposed hypothesized relationship (Becker et al., 2012; Ringle et al., 2015). In addition, a bootstrapping approach with 5,000 sub-samples was used to examine the *t*-values and level of significance for the path coefficient, as suggested by Hair et al. (2011).

Measurement model

The measurement model is assessed by determining the constructs' reliability and validity. The reliability of the constructs is tested using composite reliability (CR). The results reported in Table 3 indicate that CR values lie between 0.757 and 0.883, showing that all constructs meet the threshold value criterion (i.e., 0.7; DeVellis, 2016). Similarly, constructs' validity is examined using factor loadings and average variance extracted (AVE). All item loadings are above the value of 0.4–0.7, as suggested by Hair Jr et al. (2016). AVE values for all constructs range from 0.518 (Attitude) to 0.732 (Discomfort) and are above the recommended value of 0.5 (Fornell and Larcker, 1981; see Table 4 and Figure 1).

Moreover, we employed the hetrotrait–monotrait ratios (HTMT) to evaluate the discriminant validity of instruments. The HTMT value must be below the suggested value of 0.85 or 0.9, as Kline (2015) recommended. All the constructs surpassed the threshold value (see Table 5). In addition, Variance inflation factor (VIF) values to examine the multicollinearity issues among constructs. Results showed that all the constructs have VIF values less than 3.3, indicating that multicollinearity is not a concern in this study (Kock and Lynn, 2012).

Structural model

The overall model fitness was measured before proceeding to test the hypothesized relationship. Standardized root means square residual (SRMR) was used to determine the overall model fitness. The results indicate that the SRMR value is below the threshold value of 0.8, as suggested by Hu and Bentler (1998), indicating that model is a good fit. After

TABLE 2 Measurement items.

Construct	Items	Code	Authors
Access Convenience	"Could shop anytime I wanted"	A-CON1	Jiang et al. (2013)
	"Could order products wherever I am."	A-CON2	
	"The website is always accessible."	A-CON3	
Search Convenience	"It was easy to navigate the website."	S-CON1	Beauchamp and Ponder (2010)
	"The website provided useful information."	S-CON2	
	"It was easy to get the information I needed to make my purchase decision."	S-CON3	
Evaluation Convenience	"Provides detailed product specifications."	E-CON1	Jiang et al. (2013)
	"Uses both text and graphics in the product information."	E-CON2	
	"Sufficient information to identify different products"	E-CON3	
Transaction Convenience	"Flexible payment methods."	T-CON1	Jiang et al. (2013)
	"My purchase was completed easily."	T-CON2	
	"It did not take a long time to complete de purchase process."	T-CON3	
Relationship Convenience	"The online retailer gave me personalized attention."	R-CON1	Jun et al. (2004); Zahid et al. (2022)
	"The website had a message area for customer questions and comments."	R-CON2	
	"I received a personal "thank you" note *via* email or other media after placing an order."	R-CON3	
Possession convenience	"I got exactly what I wanted."	P-CON1	Jiang et al. (2013); Beauchamp and Ponder (2010)
	"My order was delivered in a timely fashion."	P-CON2	
	"Received all items I ordered."	P-CON3	
Post possession Convenience	"It was easy to take care of returns and exchanges with the retailer."	PP-CON1	Seiders et al. (2007)
	"X takes care of product exchanges and returns promptly."	PP-CON2	
	"The retailer quickly resolves any after-purchase problems I experience."	PP-CON3	
Cognitive attitude	'Shopping on online shopping websites is effective."	C-AAT1	Voss et al. (2003)
	"Shopping on online shopping websites is helpful."	C-ATT2	
	"Shopping on online shopping websites is functional."	C-ATT3	
Affective attitude	"Shopping on online shopping websites is exciting.'	A-AAT1	Voss et al. (2003)
	"Shopping on online shopping websites is delightful."	A-ATT2	
	"Shopping on online shopping websites is enjoyable."	A-ATT3	
Physical attractiveness	"Unattractive–attractive"	P-ATT1	McCroskey and McCain (1974); Ohanian (1990)
	"Ugly–beautiful"	P-ATT2	
	"Plain–elegant"	P-ATT3	
Social presence	"The influencer has a sense of sociality."	S-PRE1	McCroskey and McCain (1974); Gefen and Straub (2004)
	"The influencer has a sense of human warmth"	S-PRE2	
	"The influencer provides a sense of human sensitivity"	S-PRE3	
Attitude homophily	"In general, the influencer who made the postings thinks like me"	A-HOM1	McCroskey and McCain (1974); Gilly et al. (1998)
	"In general, the influencer who made the postings behaves like me"	A-HOM2	
	"In general, the influencer who made the postings is similar to me"	A-HOM3	
Online Impulsive Buying Behavior	"During online shopping, I buy products without a lot of thinking."	O-IBB1	Park et al. (2012)
	"I tend to buy things I have no desire to buy during online shopping."	O-IBB2	
	"When I find something, I like on Instagram, I purchase it immediately"	O-IBB3	

determining the constructs' validity and model fitness, the bootstrapping technique was considered with 5,000 resamples to test the significance level for path coefficients. In addition, t-test criterion at 95% confidence interval is used to examine the proposed relationship between independent and dependent variables ($t > 1.645$ and $p < 0.05$). The results show

TABLE 3 Demographic information.

Variables	Categories	Number	Percentage
Gender	Male	121	53.54
	Female	105	46.46
Age (in years)	18–20	106	46.90
	21–23	81	35.84
	23–25	39	17.26
Monthly family	≤ 3,000	33	14.60
income (in RMB)	3,001–5,000	103	45.57
	5,001–10,000	59	26.11
	>10,000	31	13.72

that all hypotheses are accepted (see Table 5). There is a significant and positive association between access convenience and attitude ($\beta = 0.098$, $t = 3.147 > 1.64$, $p < 0.05$). Similarly, search convenience ($\beta = 0.079$, $t = 2.624 > 1.64$, $p < 0.05$), evaluation convenience ($\beta = 0.105$, $t = 3.338 > 1.64$, $p < 0.05$), transaction convenience ($\beta = 0.118$, $t = 3.222 > 1.64$, $p < 0.05$), relationship convenience ($\beta = 0.432$, $t = 13.555 > 1.64$, $p < 0.05$), possession convenience ($\beta = 0.176$, $t = 5.555 > 1.64$, $p < 0.05$), and post-possession convenience ($\beta = 0.130$, $t = 3.575 > 1.64$, $p < 0.05$) significantly influences attitude. In addition, attitude has a significant and positive relationship with online impulse buying behavior ($\beta = 0.542$, $t = 11.931 > 1.64$, $p > 0.05$). According to Henseler and Sarstedt (2013), the predictive power of dependent variables can be used to determine the quality of the research model. Measures including the significance of path coefficient (β), coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2) were used to evaluate the model quality. The R^2 score for online impulse buying behavior is 0.537, indicating that explanatory power is moderate, as per the suggestion of Hair et al. (2011). In addition, Q^2 is used to assess the predictive relevance of the model. According to Hair et al. (2016), that model with a Q^2 score above 0 is predictively relevant. The results demonstrate that the Q^2 value of the proposed model is 0.295, indicating that model has the best predictive relevance. Moreover, Cohen (1988) proposed that f^2 scores between 0.02, 0.15, and 0.35 have a small, medium, and large effect size. The proposed model's f^2 score justifies that the effect size lies between small and large (see Table 6).

The moderation effect of social media celebrity

The moderating effect of social media celebrity is investigated by testing its interaction effect on the relationship between attitude and online impulse buying behavior. The results demonstrate social media celebrity has a significant moderation effect on the relationship between attitude and online impulse buying behavior ($\beta = 0.144$, $t = 3.316 > 1.96$, $p < 0.05$), as mentioned in Table 6 and Figure 2. As a result of moderating effect of social media celebrity, R^2 has increased from 0.537 to 0.610. After including social media celebrity in the model, the model's the explanatory power has increased. However, the difference in change is small, but it is considered important in testing the moderation effect.

Discussion and implications

Discussion

By evaluating different dimensions of online service convenience, the recent research develops a comprehensive understanding of online service convenience as a stimulus for consumers' online impulsive buying. We looked at seven key dimensions of online service convenience: access convenience, search convenience, evaluation convenience, transaction convenience, relationship convenience, possession convenience, and post-possession convenience. The study demonstrates that online convenience is a multidimensional construct with several dimensions. Service quality, individual consumer differences, and firm-related factors impact consumer perceptions of service convenience. Marketers can do much to enhance customers' sense of convenience. They may often reduce customers' time and effort costs and increase their happiness.

The examination of path coefficients showed that relationship convenience is the most critical factor influencing online convenience perception. Relationship convenience (=0.86; $p = 0.001$) has emerged as the most important driver of online shopping convenience and is the primary reason people purchase online. The results are consistent with earlier research (Lin and Lu, 2010; Zahid et al., 2022).

Customers who shop online expect to get personalized attention and services that are better suited to their needs. This makes it easier and faster for them to find the information they need and decide what to buy. Possession has a significant influence on perceived online convenience. According to the present research, convenience is linked to "the speed and ease with which consumers can obtain desired products," including production planning, stoking policies, shipping, and delivery timings. These results align with previous research (Islam, 2015; Aw, 2019). According to the findings, post-benefit convenience has a considerable impact on online impulsive purchase behavior. Because customers have had difficulty returning products acquired over the Internet in recent years, the results highlight the significance of post-possession ease. Retailers must handle refunds and exchanges. Retailers swiftly fix post-purchase issues.

Furthermore, the findings show that search convenience does not play a significant role in impulsive online purchases. These results align with (Shankar and Rishi, 2020; Jebarajakirthy and Shankar, 2021). Because all online retailers

TABLE 4 Measurement model.

First order constructs	Second order constructs	Items	Loadings	CR	AVE
Access convenience		A-CON1	0.678	0.828	0.618
		A-CON2	0.860		
		A-CON3	0.810		
Search convenience		S-CON1	0.810	0.826	0.614
		S-CON2	0.821		
		S-CON3	0.714		
Evaluation convenience		E-CON1	0.763	0.829	0.619
		E-CON2	0.764		
		E-CON3	0.830		
Transaction convenience		T-CON1	0.810	0.836	0.631
		T-CON2	0.749		
		T-CON3	0.822		
Relationship convenience		R-CON1	0.797	0.826	0.613
		R-CON2	0.732		
		R-CON3	0.816		
Possession convenience		P-CON1	0.829	0.820	0.610
		P-CON2	0.893		
		P-CON3	0.589		
Post Possession convenience		PP-CON1	0.532	0.815	0.606
		PP-CON2	0.891		
		PP-CON3	0.862		
Cognitive-attitude		C-AAT1	0.817	0.883	0.716
		C-ATT2	0.811		
		C-ATT3	0.778		
Affective-attitude		A-AAT1	0.834	0.846	0.648
		A-ATT2	0.786		
		A-ATT3	0.774		
	Attitude	C-ATT	0.847	0.849	0.737
		A-AAT	0.870		
Social presence		S-PRE1	0.816	0.850	0.655
		S-PRE2	0.754		
		S-PRE3	0.855		
Physical attractiveness		P-ATT1	0.666	0.757	0.511
		P-ATT2	0.692		
		P-ATT3	0.780		
Attitude homophily		A-HOM1	0.812	0.813	0.593
		A-HOM2	0.730		
		A-HOM3	0.766		
	Social media celebrity	S-ATT	0.864	0.803	0.579
		P-ATT	0.664		
		A-HOM	0.741		
Impulsive buying Behavior		O-IBB1	0.809	0.828	0.616
		O-IBB2	0.744		
		O-IBB3	0.799		

provide similar products and services, therefore search convenience does not affect buyers' decisions. Furthermore, the findings show that access convenience has no impact on online impulsive purchase behavior. Previous research results contradict the findings of this study (Duarte et al., 2018; Jebarajakirthy and Shankar, 2021). Consumers may access internet services 24 h a day, 7 days a week, from any place, which might explain this finding.

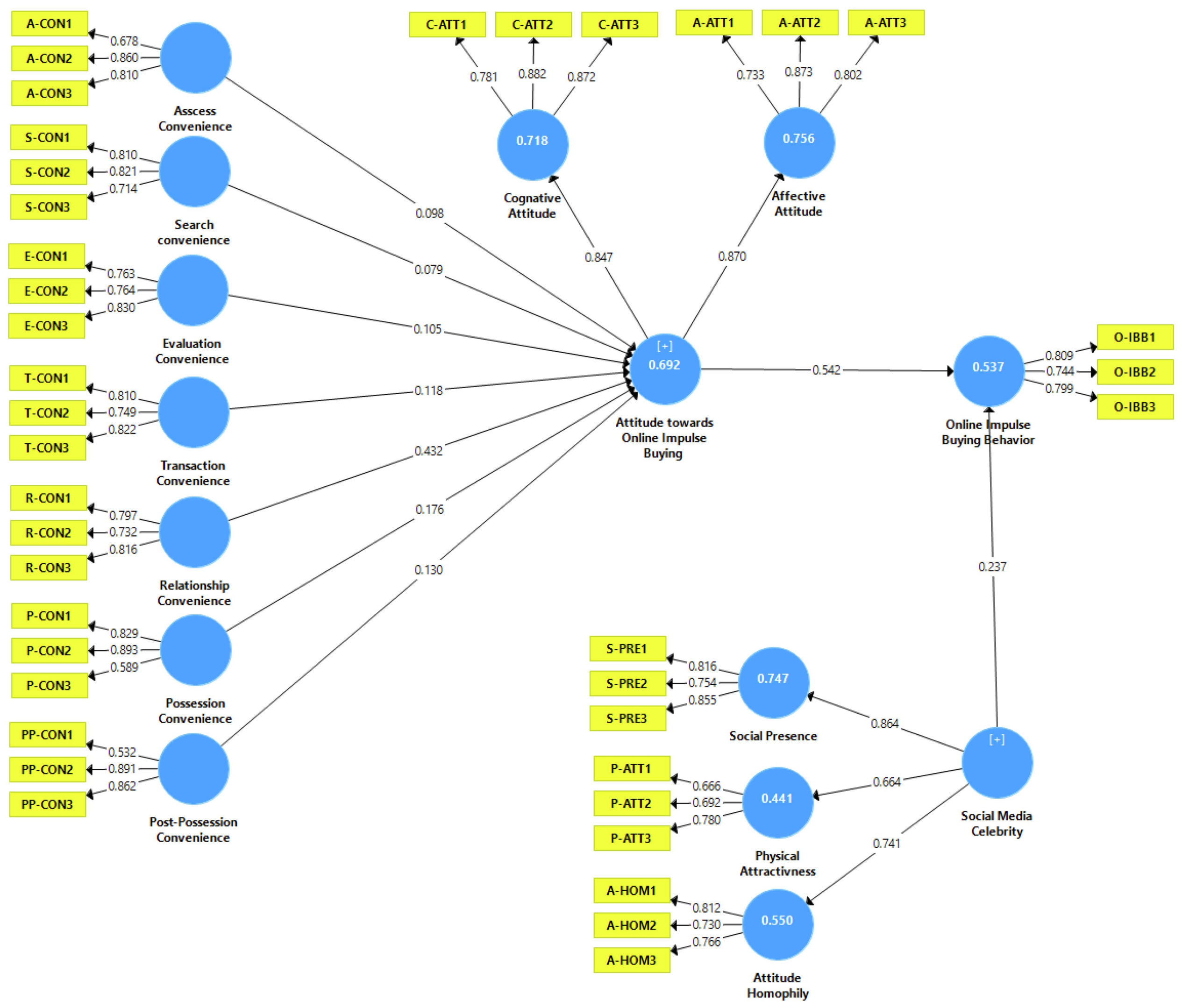

FIGURE 1
Measurement model.

The findings revealed a link between consumer attitude and behavior regarding impulsive online shopping. Other scholars have proposed a similar association (Kimiagari and Malafe, 2021). The results show that both dimensions of attitude impact online impulsive purchase behavior. Furthermore, the results show that consumers' online impulsive purchase behavior is more closely linked to emotive rather than cognitive judgements. Consumers depend more on emotive judgments than cognitive judgments when making an online purchase choice. These results align with Kimiagari and Malafe's (2021) findings. Finally, the moderated results show that social media superstars have a considerable impact on the attitude-behavior gap. Consumers are influenced by social media personalities, who encourage them to make impulsive purchases. The research findings show the effects of digital celebrities' communities on impulsive behavior. The use of social media celebrities as influencers to reach customers outside of typical marketing tactics is supported by this research.

Theoretical implication

From a theoretical standpoint, we make several additions to the existing literature. Providing excellent online services necessitates online convenience. As a result, various attempts have been undertaken to investigate the effect of online convenience on customer behavior (Jiang et al., 2013; Duarte et al., 2018; Pham et al., 2018). However, the influence of online convenience on customer response is still in its infancy in the online retailing context, and a comprehensive framework does not exist. Thus, investigating online

TABLE 5 Discriminant validity.

	A-ATT	A-CON	A-HOM	C-ATT	E-CON	O-IBB	P-ATT	P-CON	PP-CON	R-CON	S-CON	S-ATT	T-CON
A-ATT													
A-CON	0.566												
A-HOM	0.564	0.669											
C-ATT	0.623	0.543	0.578										
E-CON	0.599	0.493	0.580	0.560									
O-IBB	0.896	0.509	0.632	0.610	0.517								
P-ATT	0.537	0.410	0.384	0.409	0.443	0.432							
P-CON	0.621	0.465	0.424	0.626	0.455	0.434	0.641						
PP-CON	0.830	0.570	0.558	0.616	0.520	0.666	0.647	0.803					
R-CON	0.896	0.509	0.632	0.610	0.517	0.640	0.432	0.434	0.666				
S-CON	0.590	0.586	0.640	0.621	0.734	0.681	0.344	0.400	0.464	0.681			
S-ATT	0.863	0.581	0.606	0.692	0.606	0.839	0.566	0.600	0.641	0.839	0.566		
T-CON	0.791	0.534	0.512	0.612	0.591	0.694	0.668	0.680	0.804	0.694	0.557	0.865	

convenience in the online retailing context is necessary. This research adds to the body of knowledge on how convenience influences customer behavior in a general and online retailing context in particular.

This research also proposes online convenience as a multidimensional first-order construct and investigates the relative influence of each dimension on impulsive buying. However, most studies in the existing literature addressed online convenience as a unidimensional or second-order construct, and its impact on consumer behavioral intention was investigated (Berry et al., 2002; Duarte et al., 2018; Wang et al., 2019). This research expands the online convenience literature by considering online convenience as a first-order construct.

Applying the classic S-O-R model to describe the influence of convenience factors on customer behavior is another scholarly contribution to this study. Previous studies lacked good theoretical foundations; this work adapts the S-O-R model to give a robust theoretical basis. By considering the stepwise process of predicting impulsive buying behavior, where online convenience dimensions were considered stimuli, attitudes as an organism, and buying behavior as the response, the operationalization of the S-O-R model provides better insights into online retailing literature. Second, this research reveals customers' impulsive purchase behavior by incorporating a bi-dimensional attitude approach into the structural model. The study helps to better understand customers' rational and emotional judgments of impulsive online shopping by integrating cognitive and affective attitudes.

Finally, the moderating effects of social media celebrity on the relationship between attitude and behavior were explored, which is uncommon in the current research on online impulsive purchase behavior. As a result, this study proposes a thorough moderated model to investigate the influence of online convenience on customer behavior toward impulsive buying.

Practical implications

Online merchants may use the online shopping convenience model as a diagnostic tool to determine which convenience dimensions and associated aspects are most important to their consumers. From a management standpoint, the results give managers a better understanding of which aspects of convenience they should concentrate on to improve total online convenience. Hence, they enhance customer satisfaction and e-WOM. The results also help retailers in online shopping convenience management. Customers participate in online shopping for relationship, possession, and post-possession convenience. Retailers should be aware of these three factors.

Complementary activities should next be considered since Chinese online shoppers are worried about the difficulty of returning an item or receiving a refund. Investing in new methods to earn online consumers' confidence and compensate them for a bad deal might be crucial in enhancing online convenience,

TABLE 6 Hypotheses testing.

Hypothesis	Relationship	Path coefficient	Std. error	*t*-values	*p*-values	Results	R^2	F^2	Q^2
H1	Assess Convenience → Attitude	0.098	0.031	3.147	0.001	Supported	0.692	0.023	0.335
H2	Search Convenience → Attitude	0.079	0.030	2.624	0.004	Supported		0.013	
H3	Evaluation Convenience → Attitude	0.105	0.031	3.338	0.000	Supported		0.024	
H4	Transaction Convenience → Attitude	0.118	0.037	3.222	0.001	Supported		0.022	
H5	Relationship Convenience → Attitude	0.432	0.032	13.555	0.000	Supported		0.380	
H6	Possession Convenience → Attitude	0.176	0.032	5.555	0.000	Supported		0.067	
H7	Post-Possession Convenience → Attitude	0.130	0.034	3.757	0.000	Supported		0.029	
H8	Attitude → Online Impulse Buying behavior	0.542	0.045	11.931	0.000	Supported	0.537	0.295	0.314
	Moderating effect								
H9	Social media Celebrity*Attitude → Online Impulse Buyingbehavior	0.144	0.043	3.316	0.001	Supported	0.610	0.021	

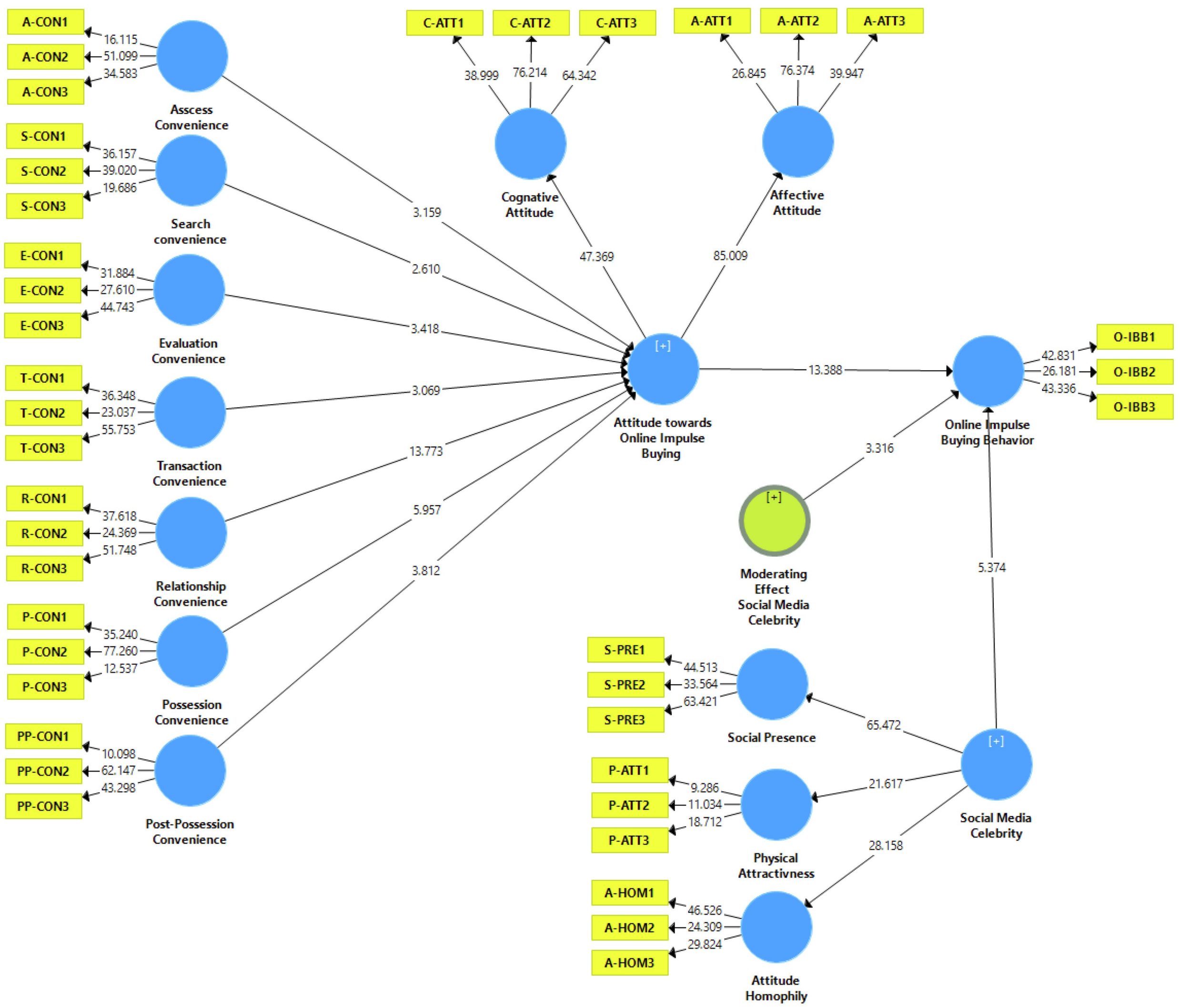

FIGURE 2
Moderating effect of social media celebrity.

contentment, and readiness to use and refer to the service. These may be achieved by paying particular attention to the packaging of products to prevent damage during transit and the delivery location and time, warranty, and return policy. The present results point to the necessity for firms to ensure that expectations and actual performance are consistent. Other tips for Chinese online shopping companies include offering thorough product information and delivering effective customer service during and after the online transaction.

Furthermore, due to the enormous power of social media superstars, companies should use them for marketing their products. For example, Marketers may provide complete product information to digital superstars and invite them to do a live product review. Aside from that, the current research gives valuable results that show social media celebrity as a relevant channel for advertising and promoting a business and a marketing communication tool that impacts the shopping process.

Limitations and future research directions

The study includes a few flaws that might be addressed in future research. Because the investigation is confined to China, future studies might replicate it in other countries to further generalize the results. Furthermore, technology is constantly evolving, leading to technophobia. Therefore, longitudinal research is necessary to investigate the influence of online convenience. Furthermore, the proposed model might be used to examine the impact of online convenience on purchasing behavior in different online shopping situations, such as online shopping for luxury goods.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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How do popularity cues drive impulse purchase in live streaming commerce? The moderating role of perceived power

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A significant characteristic of live streaming commerce is that popularity cues are tactically created and utilized to improve product sales, as atmospheric cues. However, research on live streaming commerce that investigates the effects of popularity cues is scarce. This study aims to reveal the role of popularity cues, including streamer popularity and product popularity, in promoting consumers' impulse purchase. Following the stimulus–organism–response paradigm, this study reveals the underlying mechanism. This study surveyed 402 customers and empirically demonstrates that streamer popularity and product popularity can trigger consumers' impulse purchase by enhancing perceived streamer reputation and perceived competition, respectively. Meanwhile, perceived power, as an inherent factor of consumers, plays a moderating role that only attenuates the effect of streamer popularity on perceived streamer reputation. This study contributes to a better understanding of the working mechanism of popularity cues and offers practical insights into how to effectively utilize these atmospheric cues in live streaming commerce.

KEYWORDS

live streaming commerce, popularity cues, impulse purchase, perceived power, perceived streamer reputation, perceived competition

Introduction

Live streaming, as a new technology that enables users to interact with each other over the internet in real time, has been used to facilitate streamers (broadcasters) to fully display and introduce products to persuade consumers—this is termed live streaming commerce (Park and Lin, 2020; Lu and Chen, 2021). Most prominent e-commerce (e.g., Taobao) and social media (e.g., Facebook) platforms have adopted such live streaming commerce, in an effort to expand their reach and improve their business performance. Compared with traditional e-commerce, live streaming commerce has two unique characteristics: (1) streamers interact closely with consumers (viewers) by showing different characteristics of products, answering customer questions in real time, and organizing live activities that entertain and encourage customers to buy on the spot (Sun et al., 2019; Wongkitrungrueng and Assarut, 2020); and (2) consumers can more readily interact with streamers through a public scrolling text screen, by asking questions, liking, commenting, or even rewarding the streamer with virtual gifts (Li R. et al., 2021; Li Y. et al., 2021). These significant advantages have made live streaming commerce a mainstream online shopping channel. According to eMarketer (2021), China has 824.5 million online shopping consumers, of which more than 371 million will make at least one purchase from a live streaming commerce platform by the end of 2023. Another industrial report published by Statista (2021) reveals that the live streaming commerce has exploded in China with sales revenue expected to reach 3.5 trillion Yuan by the end of 2022.

In line with its growing use in practice, live streaming commerce is gaining substantial research attention, in efforts to explore how it works (e.g., Sun et al., 2019; Park and Lin, 2020; Wongkitrungrueng and Assarut, 2020; Kang et al., 2021; Lu and Chen, 2021; Zhang et al., 2022). Considering its relative newness though, this research stream still lacks evidence related to several relevant topics. In particular, a prominent feature of live streaming commerce is the presence of visible, real-time information about the number of viewers, viewers' engagement behaviors (i.e., liking, commenting, sharing, subscribing, or rewarding), and product sales information on a scrolling text screen (Fei et al., 2021). Such information only appears because the marketers responsible for the live streaming provide it. Why might they do so? This study posits that marketers send such signals, which relate to both the streamer and the product, to stimulate internal and behavioral reactions among viewers (consumers). In particular, these data could provide signals of streamer popularity and product popularity (Jin and Phua, 2014; He and Oppewal, 2018; Kao et al., 2021). Popularity signals in turn might evoke impulsivity, which could have beneficial or detrimental effects. According to prior research (Liu et al., 2013; Chan et al., 2017), approximately 40% of all online consumer expenditure is attributed to impulse purchase, which suggests that online impulse purchase has become an epidemic. Since impulse purchase contributes significantly to firms' product sales (Jeffrey and Hodge, 2007; Lo et al., 2022), it is relevant, for marketing practitioners, consumers, and policy makers, to understand whether and how popularity cues might trigger consumers' impulse purchase.

Prior impulse purchase research tends to adopt the stimulus–organism–response (S-O-R) paradigm to explain how consumer characteristics, store characteristics, product characteristics, or situational stimuli affect impulse purchase (e.g., Liu et al., 2013; Chan et al., 2017; Wu et al., 2021; Lo et al., 2022). By applying this paradigm, this study predicts that streamer popularity and product popularity represent situational and environmental stimuli, associated with live streaming commerce. Regarding the organism-related factors, this study suggests that consumer perceived streamer reputation and perceived competition could duly represent consumers' internal states while encountering such popularity cues, respectively. Meanwhile, Wells et al. (2011) and Chan et al. (2017) suggest that consumer characteristics might moderate the effects of situational stimuli on consumers' reactions. Thus, to maximize the significant benefits that popularity cues can offer, it is necessary to uncover which factor of consumer characteristics has potential interaction effects with popularity cues. As a ubiquitous, inherent characteristic, this study posits that consumers' perceptions of their own power might influence their individual thoughts, feelings, and actions in response to social and environmental stimuli (Anderson et al., 2012; Jiang et al., 2018; Wei et al., 2020). Specifically, this study investigates whether consumers' perceived power interacts with popularity cues to influence consumers' internal states, as a boundary condition. To do so, this study (1) identifies cues of streamer popularity and product popularity; (2) investigates how streamer popularity and product popularity might trigger impulse purchase through enhanced perceived streamer reputation and perceived competition; and (3) verifies a moderating role of consumers' perceived power. In addition to expanding the nascent stream of live streaming commerce literature, by integrating the impacts of popularity cues, this study thus offers insights to help firms, streamers, and consumers to use live streaming commerce effectively.

Literature review

Live streaming commerce

Through the integration of traditional e-commerce and streaming technology, live streaming commerce provides consumers with richer interactions in online shopping experience. Its rapid growth became especially intense during the COVID-19 pandemic (Zhang et al., 2022). In a sense, live streaming commerce comprises two modes: e-commerce integrated into live streaming and live streaming embedded in e-commerce (Lu and Chen, 2021). Existing research has focused on these two modes and explored their working mechanisms from different perspectives. To better understand the academic community's impetus regarding live streaming commerce research, this study systematically reviews the relevant literature, whereof the similarities and differences are summarized in **Table 1**.

TABLE 1 Summary of related research in live streaming commerce.

Study	Theory	Model summary				Data source(s)	Major finding(s)
		Independent variable(s)	Mediator(s)	Dependent variable(s)	Moderator(s)		
Sun et al. (2019)	IT affordance perspective	Visibility, Metavoicing, Guidance shopping	Immersion, Presence	Purchase intention	–	Taobao Live, JD Live, Mogujie Live, Sina Weibo Live	Visibility, metavoicing, and guidance shopping enhance consumers' purchase intentions through immersion and presence.
Park and Lin (2020)	Fit theory	Wanghong (source)-product fit, Live content-product fit, Self-product fit	Wanghong trustworthiness, Wanghong attractiveness, Utilitarian attitude, Hedonic attitude	Intention to buy	–	Taobao Live	Source-product fit affects perceived source attractiveness and trustworthiness; product-content fit affects utilitarian and hedonic attitudes toward the content. Source trustworthiness, hedonic attitude, and self-product fit increase intention to buy.
Wongkitrungrueng and Assarut (2020)	Value theory, Trust theory	Utilitarian value, Hedonic value, Symbolic value	Trust in products, Trust in sellers	Customer engagement	–	Facebook Live	Symbolic value has direct and indirect effects on customer engagement through trust in sellers; utilitarian and hedonic values have indirect effects on customer engagement through trust in products and trust in sellers.
Gao et al. (2021)	ELM	Central route factors (e.g., information completeness), Peripheral route factors (e.g., streamer attractiveness)	Perceived persuasiveness	Purchase intention, Response intention	Mindfulness	Taobao Live, JD Live, Tiktok Live	Both route factors exert significant effects on viewers' perceptions of the persuasive message and then lead to purchase and response intentions. Mindfulness positively moderates the relationship between perceived persuasiveness and response intention.
Kang et al. (2021)	S-O-R framework	Interactivity (responsiveness, personalization)	Tie strength	Customer engagement behavior	Popularity, Tenure of membership	Sina Weibo Live	Responsiveness and personalization have inverted U-shaped relationships with tie strength and customer engagement behavior. Membership tenure and popularity moderate (strengthen and weaken, respectively) the relationships between interactivity and tie strength.
Li Y. et al. (2021)	Socio-technical perspective, Attachment theory	Interaction, Identification, Synchronicity, Vicarious expression	Emotional attachment to streamers, Platform attachment	Visit duration, User retention	–	Taobao Live	Interaction, identification, synchronicity, and vicarious expression positively affect emotional attachment to streamers and platform attachment, which increase user stickiness.
Lu and Chen (2021)	Uncertainty reduction perspective	Physical characteristic similarity, Value similarity	Product fit uncertainty, product quality uncertainty, Trust	Purchase intention	–	Taobao Live, JD Live, Douyin Live, Kuaishou Live	Streamers' physical characteristic similarity enhances consumers' purchase intention through decreasing product fit uncertainty. Streamers' value similarity enhances consumer trust, which then decreases product fit uncertainty and product quality uncertainty and ultimately promotes purchase intention.
Guo et al. (2022)	Source characteristic perspective	Beauty, Warmth, Expertise, Humor, Passion	Perceived utilitarian value, Perceived hedonic value, Streamer popularity	Watching intention, Purchase intention	–	Taobao Live, JD Live, Douyin Live, Kuaishou Live	Beauty, expertise, humor, and passion enhance perceived hedonic value; both warmth and expertise increase perceived utilitarian value. Perceived utilitarian value and perceived hedonic value promote watching and purchase intentions. Perceived hedonic value increases streamer popularity.

(Continued)

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TABLE 1 (Continued)

Study	Theory	Model summary				Data source(s)	Major finding(s)
		Independent variable(s)	Mediator(s)	Dependent variable(s)	Moderator(s)		
Zhang et al. (2022)	Socio-technical perspective	Active control, Synchronicity, Two-way communication, Personalization, Visibility	Trust in streamers, Trust in products	Continuance intention	Live streaming genre	Taobao Live	Active control, two-way communication, synchronicity, personalization, and visibility enhance trust, which increases continuance intentions. In addition, live streaming genre moderates the impacts of trust on continuance intention.
This study	S-O-R framework	Streamer popularity, Product popularity	Perceived streamer reputation, Perceived competition	Impulse purchase	Perceived power	Taobao Live	Streamer popularity and product popularity can trigger consumers' impulse purchase by enhancing perceived streamer reputation and perceived competition, respectively. Consumers' perceived power attenuates such relationships.

Live streaming commerce research is necessarily interdisciplinary. The development of technology is a prerequisite of live streaming commerce. Thus, some prior studies have focused on the technical perspectives to reveal the working mechanism of live streaming commerce. For example, Sun et al. (2019) adopt the information technology affordance theory to demonstrate the effects of technical characteristics on consumers' purchase intention. Kang et al. (2021) focus on the technology-enabled interactivity characteristics of live streaming and confirm its effects on customer engagement behavior, based on the S-O-R paradigm. Li Y. et al. (2021) and Zhang et al. (2022) further adopt the socio-technical perspective to investigate the impacts of social and technical characteristics on consumers' stickiness and continuance intention.

Meanwhile, to optimize the marketing strategies of live streaming commerce, some prior studies have concentrated on the impacts of marketing stimuli on consumers' internal and behavioral reactions. For instance, Wongkitrungrueng and Assarut (2020) integrate the value and trust theories to examine the effects of customer value on customer trust and customer engagement. Park and Lin (2020) use the fit theory to investigate the effects of keeping fit between source and product, content and product, as well as self and product on consumers' internal evaluation and intention to buy. Gao et al. (2021) apply the elaboration likelihood model (ELM) to explain the central and peripheral factors that influence consumer perceived persuasiveness and behavioral response. Further, Lu and Chen (2021) and Guo et al. (2022) reveal the impacts of streamers' characteristics on consumers' psychological and behavioral responses from the uncertainty reduction perspective and source characteristic perspective, respectively.

Previous research presented in **Table 1** reveals that technology- and marketing-related characteristics can lead live streaming commerce to become a mainstream online shopping channel. Given the importance of live streaming in promoting consumption, this study further explores the working mechanism of live streaming commerce from a new perspective. **Table 1** shows that the current study differs from prior research in the following three aspects: (1) as the live streaming commerce platform is especially adept at creating and sending popularity signals to facilitate streamers to introduce products, this study focuses on streamer popularity and product popularity as marketing stimuli and aims to explore their effectiveness; (2) considering that prior studies have not yet explored the impulse purchase issue in the context of live streaming commerce, this study attempts to link the relationships between popularity cues and consumers' impulse purchase; and (3) consumers' perceptions of their own power influence their information processing, this study therefore intends to examine whether the high (low) degree of power perceptions could enable consumers to make judgment relying less (more) on popularity cues.

Popularity cues

Marketers are adept in creating and communicating popularity cues to exert influences on consumers' evaluations and behaviors. Dean (1999) proposes that brand popularity with third-party endorsement and event sponsorship are three major marketing cues designed to positively influence consumers' brand perceptions. A brand's product market share is referred to brand popularity that signals a product having superior quality and carrying a high value for consumers, following the signal theory (Dean, 1999; van Herpen et al., 2009). Similarly, Magnini et al. (2013) and Kim (2018) define brand popularity as the degree to which a brand is widely bought by consumers, and they propose that using the popularity cue (e.g., No. 1 in sales) in advertisement could enhance consumers' brand evaluations.

In the social media marketing field, an increasing number of research has addressed the role of popularity cues, wherein popularity cues are divided into three components, namely, product popularity, celebrity (streamer) popularity, and post (content) popularity. With respect to product popularity, it plays an increasingly important role in consumers' purchase decisions because most consumers are affected by how other consumers think and feel about a product in the online shopping context (Ahn, 2007). Luo et al. (2014) define deal popularity as "the visually displayed information of the cumulative number of deals sold to other consumers" (p. 20), and further propose that deal popularity could influence a focal consumer's purchase through signaling the deal worth. Mou and Shin (2018) use the term "social popularity" to refer to the degree of consumers liking or purchasing a product and confirm that social popularity could enhance consumer trust, perceived product quality, and perceived value. In addition, Kao et al. (2021) find interesting results that while high online deal popularity could increase individualistic (Australian) consumers' psychology risk, which in turn lowers their purchase intention, it could decrease collectivistic (Taiwan) consumers' risk perception, which then enhances their purchase intention. Celebrity popularity refers to the number of followers a celebrity has, which has the potential to improve source credibility, social identification, and buying intention (Jin and Phua, 2014). Ladhari et al. (2020) demonstrate that homophily and emotional attachment have positive effects on vloggers' popularity, which in turn enhances viewers' purchase intention. With regard to post popularity, the number of likes and comments could be indicators of post popularity, whereof the higher degree suggests that brand fans share more enthusiasm about the brand (Swani and Milne, 2017). Chang et al. (2015) confirm that post popularity could lead to users' usefulness perception of and preference for posts, which then enhances users' contribution behaviors. Similarly, Yang et al. (2020) demonstrate that post popularity could enhance consumer trust, which in turn promotes consumer attitude and purchase intention.

The popularity cue studied in prior research includes many typologies depending on the research setting. Notwithstanding the important role of popularity cues, they have not been given much attention in live streaming commerce research. Given that streamer popularity and product popularity cues are the most visible stimuli in the live streaming commerce (Fei et al., 2021), they are worth investigating to achieve a better understanding of the occurrence of impulse purchase.

Impulse purchase

Impulse purchase refers to consumers' unplanned, compelling, and hedonically complex product buying behavior, whereby consumers fail to carefully consider all the relevant information and quickly make purchase decisions (Stern, 1962; Rook, 1987; Chen et al., 2019; Gulfraz et al., 2022). Impulse purchase was first studied in the brick-and-mortar store consumption context. Kotler (1973) proposes a concept of atmospherics, implying that marketers could promote consumers' purchase via the creation of a suitable shopping environment and atmosphere. Based on this foundation, psychology and consumer behavior researchers have arrived at a consensus on impulse purchase via suggesting that in-store stimuli could generate consumers' impulse purchase. For example, discount promotion (Blattberg et al., 1995), background music (Milliman, 1982), and olfactory cues (Spangenberg et al., 1996) could induce impulse purchase via affecting consumers' internal reactions.

With the tremendous growth of e-commerce, it is quite common for consumers to perform online impulse purchase because shopping online frees consumers from the constraints that they might experience in physical stores (Liu et al., 2013; Huang, 2016; Chan et al., 2017; Andronie et al., 2021). On the one hand, technology-related website cues are important antecedents of impulse purchase. For example, Koufaris (2002) and Wu et al. (2016) integrate the technology acceptance model and flow theory to explain how online impulse purchase occurs. Meanwhile, website characteristics, including task- and mood-relevant cues could stimulate consumers' internal reactions and impulse purchase (Parboteeah et al., 2009). Similarly, Liu et al. (2013) adopt the S-O-R paradigm to examine the effects of website attributes (i.e., product availability, visual appeal, and website ease of use) on consumers' internal evaluations and impulse purchase. One the other hand, marketing-related cues could also lead to impulse purchase. For instance, the information quality of advertisement and the number of "Like" in Chen et al. (2016); recommender- and product-related signals in Chen et al. (2019); Instagram advertisement, opinion leader, and user-generated content in Djafarova and Bowes (2021); and limited-quantity and limited-time scarcity in Wu et al. (2021) have been confirmed to have effects on consumers' online impulse purchase.

The abovementioned studies suggest that factors related to e-commerce's technology and marketing cues can elicit impulse purchase. As a new online shopping mode, live streaming commerce is evidently believed to be conducive to impulse purchase. As little live streaming commerce research has investigated impulse purchase (Lo et al., 2022), this study aims to reveal how consumers' impulse purchase occurs after being exposed to streamer popularity and product popularity cues based on the S-O-R paradigm.

Hypothesis development

Activating internal reactions: Stimuli of popularity cues

Combining the definitions of popularity in prior research with live streaming commerce characteristics, this study identifies popularity cues that include streamer popularity and product popularity. Streamer popularity refers to the visually displayed information of consumers' behaviors of positively interacting with a streamer, such as viewing, liking, commenting, sharing, subscribing, rewarding, and so on. Product popularity refers to the visually displayed information of the cumulative number of products sold to consumers. Regarding internal reactions, this study establishes perceived streamer reputation and perceived competition as organism-related constructs. The reasons are twofold: first, the streamer in live streaming commerce has been facing increasingly fierce competition because of the increase in streamer volume, such that streamer reputation could be considered as one of the most important intangible assets for survival and success in a competitive environment (Su et al., 2016). Second, competition refers to a purchase situation where one would need to compete with other consumers to achieve the goal of buying a product (Aggarwal et al., 2011; Nichols, 2012), thereby suggesting that competition is a situation-dependent transitory state that may exist in a live streaming commerce context owing to the popularity of the product. Thus, perceived streamer reputation and perceived competition are deemed to be closely related to streamer popularity and product popularity, respectively. To establish such relationships, this study adopts signal theory as a specific theoretical foundation within the S-O-R paradigm. The signal theory is developed under the condition of asymmetric information, which addresses the role of signals sent out by one party who has information advantage in reducing market uncertainty and promoting market efficiency (Spence, 1973). Based on the signal theory, product or service providers may invest in useful signals that convey some meaningful and relevant information (cues) to consumers to affect their internal states, consequently facilitating transactions (Chen et al., 2019; Yang et al., 2020; Jang and Chung, 2021).

The reputation concept has been well developed in previous research. For instance, supplier reputation refers to the extent to which a supplier is honest and concerned about its customers (Doney and Cannon, 1997; Pera et al., 2016). Brand reputation refers to the extent to which a brand has the ability to provide high quality services (Sengupta et al., 2015). Based on prior research, this study defines perceived streamer reputation as consumers' confidence level of a streamer who is honest and concerned about them. Reputation is a relative concept, and it depends on the comparison between different competitors and their performance (Deephouse and Carter, 2005). This statement suggests that the perceived streamer reputation could be enhanced by streamer popularity through two ways. First, following the signal theory, popularity cues could be used to signal that a product has superior quality (Dean, 1999; Jang and Chung, 2021), a deal is worthy (Luo et al., 2014), and a brand post is useful (Chang et al., 2015). In the same way, streamer popularity could signal that a streamer has an ability and willingness to serve consumers well to promote their shopping performance, which has the potential to enhance consumer perceived streamer reputation. Second, popularity cues could be represented by consumers widely buying a brand (Magnini et al., 2013; Kim, 2018) and consumers positively rating a product (Ahn, 2007; Mou and Shin, 2018), suggesting that a brand or product is more superior than competitor brands or products. Similarly, a streamer with a high level of popularity indicates that they are more superior than other streamers, which is likely to make consumers perceive more reputation. In addition, popularity cues are confirmed to improve consumer trust (Jin and Phua, 2014; Yang et al., 2020), and consumer trust is demonstrated to have a positive effect on reputation perception (Singh et al., 2020). Therefore, streamer popularity has the potential to enhance consumers' reputation perception. Taken together, this study proposes the relationship between streamer popularity and perceived streamer reputation as follows:

Hypothesis 1: Streamer popularity has a positive effect on perceived streamer reputation.

Following Nichols (2012), perceived competition refers to one's belief that one would need to compete with other buyers to achieve a goal of buying products in the live streaming commerce situation. According to the signal theory (Dean, 1999; He and Oppewal, 2018), the product popularity can be a diagnostic cue that influences consumer perceived competition through indirect and direct ways. Regarding the indirect way, product popularity can signal a product with superior quality and value for consumers (Dean, 1999; Luo et al., 2014; Jang and Chung, 2021), and it has the potential to not only make consumers believe this product is worth buying but also stimulate them to infer that others would also want to buy it. In other words, the product popularity cue can be referred as a demand-based cue indicating high current or expected demand for a high-quality product with superior value, leading to competitive consumption (Teubner and Graul, 2020). Concerning the direct way, product popularity, as the term suggests, signals that a product is liked and widely bought by many consumers (Mou and Shin, 2018; Kao et al., 2021). Consequently, product popularity, which provides social validation for many consumers buying the same product, is likely to stimulate a consumer to perceive that they are endeavoring to gain what others are attempting to gain simultaneously. Accordingly, this study has the following hypothesis:

Hypothesis 2: Product popularity has a positive effect on perceived competition.

Effects of perceived streamer reputation and perceived competition on impulse purchase

Chaiken (1980) proposes a heuristic vs. systematic information processing model for decision-making, in which the systematic information processing involves detailed assessments of information and related cognitions, and the heuristic information processing instead avoids detailed analyses and relies on simple rules. From this perspective, impulse purchase likely reflects heuristic information processing, because this purchase process is simple and involves little cognitive effort (Stern, 1962; Gulfraz et al., 2022; Lo et al., 2022). Chen et al. (2016, 2019) reveal that advertising information quality and interpersonal trust can provide heuristic cues that minimize consumers' cognitive decision-making efforts and trigger more impulse purchases online. Because impulse purchase is characterized by a lack of cognitive deliberation (Rook, 1987; Chan et al., 2017; Chen et al., 2019), this study proposes that the effects of perceived streamer popularity and perceived competition on impulse purchase might be explained by heuristic information processing theory.

Online seller reputation is a strategic resource for consumers toward reducing concerns and uncertainty (Karimov and Brengman, 2014) and building trust (Meilatinova, 2021). Accordingly, a streamer who has high reputation is generally considered to be reliable and honest. Meanwhile, as Chaiken (1980) suggests, when people employ a heuristic information processing strategy, source characteristics might generate greater impacts on persuasion than information characteristics. Combining these logics, when consumers perceive a streamer to have good reputation, they may relinquish the thoughtful process of deliberating product-related information and instead thoughtlessly decide to buy a product by trusting the streamer. In other words, perceived streamer reputation can help consumers reduce the amount of cognitive effort required and simplify the decision-making process, consequently facilitating the occurrence of impulse purchase. Accordingly, this study has the following hypothesis:

Hypothesis 3: Perceived streamer reputation has a positive effect on impulse purchase.

The presence of rivalry, scarcity, and win–lose performance anxiety are three major elements of competition (Nichols, 2012). While little research has addressed the effects of competition on consumers' behavior, extensive research has explored the impacts of rivalry, scarcity, and performance anxiety information on consumers' reactions. For example, scarcity information has been confirmed to raise the urgency of buying because it could lead consumers to employ a heuristic information processing strategy rather than the systematic information processing strategy to make a quick judgment (Aggarwal et al., 2011; Lo et al., 2022). Furthermore, limited-quantity scarcity accompanied by perceived rivalry could make consumers feel that they are in direct competition with other consumers, thereby making an impulse purchase decision simply and immediately under pressure (Wu et al., 2021). Meanwhile, time restrictions could make consumers experience a performance anxiety about wasting opportunities, whereof a possible consequence is buying relevant products impulsively (Swain et al., 2006). Based on the heuristic information processing theory and relevant prior studies, this study posits that perceived competition is likely to increase a sense of urgency which impedes consumers' cognitive decision-making. Accordingly, this study proposes the following hypothesis regarding the relationship between perceived competition and impulse purchase:

Hypothesis 4: Perceived competition has a positive effect on impulse purchase.

Moderating role of perceived power

Power considerations are ubiquitous and closely related to one's social status, education, income, age, gender, and so on. Galinsky et al. (2003) propose that power is a psychological state, namely, a perception of one's capability to influence others because of the control over resources or social position. Correspondingly, perceived power is defined as "the perception of one's ability to influence another person or other people" (Anderson et al., 2012, p. 316). Prior research has increasingly focused on the role of power in affecting consumers' reactions and suggests that high power fosters an agentic orientation, which is associated with an increased need for control, dominant

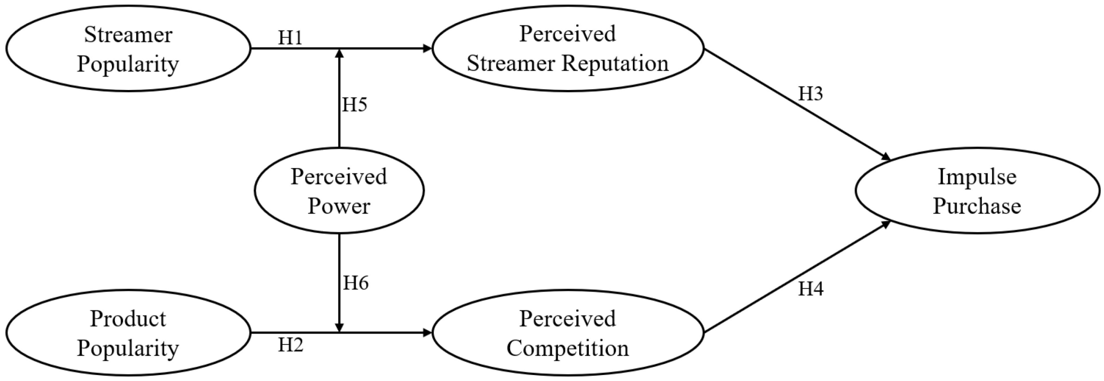

FIGURE 1
Research model.

behaviors, and independence; conversely, low power is linked to a communal orientation reflecting submissive behaviors, lack of control, and dependence on others (Rucker et al., 2012; Wongkitrungrueng et al., 2018). On this foundation, Bellezza et al. (2013) confirm that high-power consumers are more capable of behaving as they deem appropriate and are less affected by other people's judgments. Further, Lee et al. (2020) demonstrate that high-power consumers are more likely to use tipping as a monitoring system based on service quality received from a server rather than image protection.

The aforementioned prior research contributes toward expounding the interaction effects of perceived power and popularity cues on consumers' internal reactions in the current study. On the one hand, considering the nature of streamer popularity and product popularity, they respectively reflect other consumers' supports and preferences for the streamer and product, thereby embodying forms of social influence (Mou and Shin, 2018; Guo et al., 2022). As people with more power have more resources, they tend to be more dominant and less concerned with other people's judgments (Rucker et al., 2012; Bellezza et al., 2013; Lee et al., 2020). Based on these statements, consumers who perceive more power will perceive less streamer reputation and competition when viewing the streamer popularity and product popularity cues because they seldom make judgments depending on social cues. On the other hand, power reflets an individual's capability, which helps individuals make judgments following their own experience and knowledge rather than third-party and contextual information (Whitson et al., 2013; Wei et al., 2020). Taken together, this study puts forth the following hypotheses regarding the moderating role of perceived power:

> **Hypothesis 5**: The relationship between streamer popularity and perceived streamer reputation is weaker for consumers with high perceived power than it is for consumers with low perceived power.

> **Hypothesis 6**: The relationship between product popularity and perceived competition is weaker for consumers with high perceived power than it is for consumers with low perceived power.

This study seeks to reveal the working mechanism of popularity cues in a live streaming commerce context, grounded in the S-O-R paradigm. **Figure 1** depicts the conceptual model for this study.

Research method

Measurement

This study conducts an empirical study using an online survey method for data collection and hypothesis test. The unit of analysis is at the individual level (i.e., consumers who view live streaming and purchase products impulsively). A survey instrument is designed to obtain data on six research variables. Measurement items are drawn from prior studies and slightly modified to ensure their appropriateness for this study. All constructs are measured with multiple items based on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). The measurement items and related sources are presented in **Table 2**.

Data collection

Regarding the data collection source of live streaming commerce research, **Table 1** shows that some research collect data from one platform, while some obtain data from more than one platform. As each platform has its unique characteristics, consumers may experience different stimuli of popularity cues; therefore, this study establishes Taobao

TABLE 2 Measurement items for the constructs.

Constructs	Items	Sources
Streamer popularity	1. This streamer has many fans.	Jin and Phua, 2014;
	2. Many people list this streamer.	Guo et al., 2022
	3. There are many audiences watching this streamer.	
	4. Based on the number of fans, this streamer is popular.	
	5. Based on the number of audience, this streamer is popular.	
Product popularity	1. This product is popular.	van Herpen et al., 2009
	2. This product is sold well.	
	3. Many people want to buy this product.	
Perceived streamer reputation	1. This streamer has a reputation for being honest.	Doney and Cannon, 1997; Su et al., 2016
	2. This streamer is known to be concerned about customers.	
	3. This streamer has a good reputation.	
	4. This streamer is a successful person.	
Perceived competition	1. I will have to compete with others to buy this product.	Nichols, 2012
	2. I will be seeking out something that others are also seeking out.	
	3. Other potential buyers are "rivals" of mine.	
	4. If I am able to buy this product, it means that I "won."	
	5. Trying to buy this product means a competition.	
	6. It means I succeeded if I am able to buy this product.	
Perceived power	1. I think I have a great deal of power.	Anderson et al., 2012
	2. I can get others to listen to what I say.	
	3. I can get others to do what I want.	
	4. If I want to, I can make the decisions.	
Impulse purchase	1. My purchase is spontaneous.	Huang, 2016
	2. My purchase is unplanned.	
	3. I did not intend to do this purchase before this shopping trip.	
	4. I could not resist to do this purchase.	

Live as the research setting. Taobao Live is the leading live streaming commerce platform in China, wherein a large number of streamers endeavor to introduce a variety of clothing, cosmetics, food, electronic products, and so on, suggesting an intense competition.

This study utilizes the Sojump data gathering platform[1] to implement online surveys. A Web link of the Chinese questionnaire is forwarded to potential respondents via WeChat, one of the most popular social media in China. The data collection is conducted from November 2020 to December 2020. To ensure that the respondents have the experience of watching Taobao Live and buying products, this study adds three screening questions (i.e., Have you had the experience of watching Taobao Live recently? Which streamer did you view? Have you had the experience of buying a product while watching the live streaming?). The respondents are first asked to answer these three questions. If they cannot answer them, they have to terminate the questionnaire. The respondents who have answered the abovementioned questions are asked to complete the questionnaire. Within a month, a total of 438 questionnaires are collected, whereof 36 questionnaires are excluded due to incomplete response with missing the three screening questions or aberrant responses lacking justification. Consequently, 402 valid samples are collected and subsequently analyzed.

Table 3 displays the demographic statistics of respondents in detail. Specially, regarding the gender of respondents, 32.8% are male and 67.2% are female, which is similar to Sun et al. (2019), Gao et al. (2021), and Li Y. et al. (2021), confirming that females account for the vast majority in live streaming commerce.

Data analysis and results

Statistical analysis technique

Partial least squares structural equation modeling is not only suitable for handling non-normally distributed data (Chin et al., 2003), but also duly accommodates samples smaller than 500 (Hair et al., 2014). Therefore, this study decides to employ Smart PLS 3.0 to assess reliability, convergent validity, and discriminant validity of the constructs, as well as to test the hypotheses.

Reliability and validity

A confirmatory factor analysis (CFA) is performed to investigate the reliability and validity. Table 4 shows the CFA results. According to Fornell and Larcker (1981), the Cronbach's α value and the composite reliability (CR) value for all constructs are higher than the threshold value of 0.7, which suggest acceptable internal consistency

1 http://www.sojump.com

TABLE 3 Demographics of respondents (n = 402).

Category		Frequency	Percent (%)
Gender	Male	132	32.8
	Female	270	67.2
Age	<20	52	12.9
	20–29	298	74.1
	30–39	49	12.2
	>39	3	0.7
Education	High school or lower	26	6.5
	Bachelor's or college degree	325	80.9
	Graduate degree	51	12.7
Income (Monthly, CNY)	<5,000	293	72.9
	5,001–10,000	79	19.7
	10,001–15,000	12	3.0
	15,001–20,000	7	1.7
	>20,000	11	2.7
Most frequently viewed streamers	Jiaqi Li	106	26.4
	Viya	89	22.1
	Others	207	51.5
Total	–	402	100

and scale reliability. Regarding convergent validity, following Fornell and Larcker (1981), this study confirms that the standardized factor loadings of indicators for all constructs are significantly greater than 0.7, and the values of average variance extracted (AVE) for all the constructs exceed the recommended minimum of 0.5, suggesting that the convergent validity is acceptable.

Meanwhile, following Fornell and Larcker (1981), this study compares the square root of AVE for each construct with the inter-construct correlation estimates to check the discriminant validity. **Table 5** reports the square roots of AVE (the diagonal elements in bold) for constructs and construct correlation estimates. Each AVE square root is greater than its corresponding row and column elements, indicating the acceptable discriminant validity of the instruments. In addition, following Hair et al. (2017), this study assesses the heterotrait–monotrait (HTMT) ratio of correlations to establish more rigorous discriminant validity. As shown in **Table 6**, all the HTMT values are significantly different from 1, and the largest HTMT value is 0.652, which is lower than the cut-off value of 0.90, thereby showing evidence of adequate discriminant validity.

Common method bias test

Self-reported data from a single source may have a common method bias (CMB), which threatens the validity of the study. Therefore, this study conducts a Harman's one factor test to verify the CMB following MacKenzie and Podsakoff (2012). The analysis results indicate that there are six latent factors exceeding 1.0 of the eigenvalues, with the first factor accounting for less than 40% of the total variance (i.e., 39.72%), suggesting that the CMB is not a significant threat in this study.

TABLE 4 Results of reliability and convergent validity tests.

Construct	Indicators	Standardized factor loadings	Cronbach's α	CR	AVE
Streamer popularity	SP1	0.920	0.950	0.962	0.834
	SP2	0.877			
	SP3	0.912			
	SP4	0.926			
	SP5	0.931			
Product popularity	PP1	0.861	0.854	0.911	0.773
	PP2	0.882			
	PP3	0.895			
Perceived streamer reputation*	PSR1	0.960	0.897	0.936	0.830
	PSR2	0.942			
	PSR3	0.930			
Perceived competition	PC1	0.856	0.946	0.957	0.788
	PC2	0.813			
	PC3	0.918			
	PC4	0.919			
	PC5	0.934			
	PC6	0.881			
Perceived power	PPow1	0.835	0.869	0.908	0.714
	PPow2	0.919			
	PPow3	0.885			
	PPow4	0.729			
Impulse purchase*	IP1	0.942	0.920	0.949	0.862
	IP2	0.943			
	IP3	0.899			

*The fourth item of perceived streamer reputation (PSR4) and the fourth item of impulse purchase (IP4) were deleted, on the basis of the CFA results.

Hypothesis test

To test the presented hypotheses, this study utilizes Smart PLS 3.0 to perform a path analysis. The hypothesis test results are presented in **Figure 2**. First, regarding the relationships between stimuli and organisms, streamer popularity and product popularity are proven to have positive effects on perceived streamer reputation and perceived competition, respectively (β = 0.289, p < 0.001; β = 0.412, p < 0.001, respectively), indicating that H1 and H2 are supported. Second, with respect to the relationships between organisms and response, both perceived streamer reputation and perceived competition are confirmed to have positive effects on impulse purchase (β = 0.235, p < 0.001;

TABLE 5 Results of correlation analysis and discriminant validity tests.

Construct	Mean	SD	1	2	3	4	5	6
1. Perceived competition	5.070	1.583	**0.888**					
2. Impulse purchase	4.347	1.541	0.487	**0.928**				
3. Product popularity	5.629	1.205	0.488	0.267	**0.879**			
4. Perceived power	4.848	1.165	0.368	0.399	0.339	**0.845**		
5. Streamer popularity	6.137	1.258	0.326	0.180	0.591	0.221	**0.913**	
6. Perceived streamer reputation	5.454	1.252	0.465	0.411	0.489	0.342	0.409	**0.911**

The diagonal numbers in bold are the square roots of the AVE.

TABLE 6 Heterotrait–monotrait (HTMT) ratio of correlations.

Construct	1	2	3	4	5	6
1. Perceived competition	–					
2. Impulse purchase	0.520	–				
3. Product popularity	0.540	0.303	–			
4. Perceived power	0.385	0.436	0.387	–		
5. Streamer popularity	0.343	0.193	0.652	0.232	–	
6. Perceived streamer reputation	0.506	0.447	0.560	0.364	0.443	–

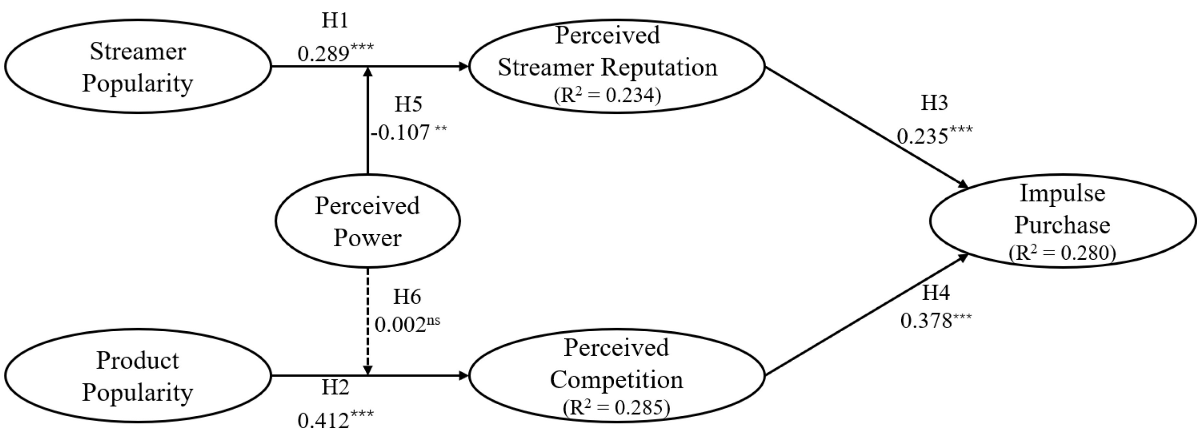

FIGURE 2
Hypothesis test results. ** $p < 0.01$, *** $p < 0.001$, ns, no significant at the 5% significance level.

β = 0.378, $p < 0.001$), supporting H3 and H4. Finally, regarding the moderating effect of perceived power, this study adopts the two-stage PLS approach for testing the interaction effects (i.e., streamer popularity × perceived power and product popularity × perceived power) on perceived streamer reputation and perceived competition, respectively. Results of bootstrapping on 1,000 subsamples indicate that perceived power could significantly weaken the relationship between streamer popularity and perceived streamer reputation (β = −0.107, $p < 0.01$), whereas it could not significantly weaken the relationship between product popularity and perceived competition (β = 0.002, $p > 0.05$), implying that H5 is supported while H6 is not.

This study further attempts to understand the mediator roles of perceived streamer reputation and perceived competition. Following Hair et al. (2017), this study finds that the relevant direct effects are significant (i.e., H1—H4) and the relevant indirect effects (i.e., streamer popularity → perceived streamer reputation → impulse purchase; product popularity → perceived competition → impulse purchase) are also significant (β = 0.096, $p < 0.001$; β = 0.184, $p < 0.001$, respectively) and in the same directions, thereby suggesting that perceived streamer reputation and perceived competition play partial mediator roles.

Although the focus of this study is on impulse purchase that results from the combined effects of live streaming commerce features, identifying which path (i.e., streamer popularity or product popularity) is more impactful might provide interesting insights as well. As suggested by Yi et al. (2013), this study thus compares the perceived competition → impulse purchase path (i.e., H4) with the perceived streamer reputation → impulse purchase path (i.e., H3), using Smart PLS to calculate the path difference. The findings show that the path coefficient of H4 is not significantly larger than the path coefficient of H3 ($\Delta\beta = 0.140$, $p > 0.05$). That is, perceived streamer reputation and perceived competition can equivalently stimulate impulse purchase. Finally, as illustrated in **Figure 2**, the model explains 23.4% of the variance in perceived streamer reputation, 28.5% of the variance in perceived competition, and 28.0% of the variance in impulse purchase.

Discussion

Key findings

This study investigates how streamer popularity and product popularity elicit consumers' impulse purchase through affecting consumer perceived streamer reputation and perceived competition, respectively. Additionally, the moderating role of perceived power is also examined. The results support five hypotheses and reject one, generating valuable findings and implications as presented below.

Focusing on the distinctive social cues in the context of live streaming commerce, this study develops the concepts of streamer popularity and product popularity and demonstrates their effects on consumers' impulse purchase using a survey method, which is compared with Fei et al.'s (2021) study addressing the impacts of interaction text and herding message on live streaming commerce consumers' purchase intention through a within-subject eye-tracking experiment. Although impulse purchase differs from rational purchase, they both contribute to improving product sales in live streaming commerce. Concerning impulse purchase, this study reveals the significant main effects of streamer popularity and product popularity via emphasizing the mediating roles of perceived streamer reputation and perceived competition, respectively. More specifically, this study testifies streamer popularity can drive impulse purchase through enhancing perceived streamer reputation, while Lo et al. (2022) indicate that streamers' parasocial interactions can elicit impulse purchase by strengthening consumers' affective reactions. Both the cognitive process of impulse purchase in the current study and the affective process of impulse purchase in Lo et al. (2022) show strong evidence that the streamer plays a critical role in live streaming commerce. Meanwhile, this study demonstrates that product popularity can significantly enhance perceived competition that consequently stimulates impulse purchase. Compared with previous studies (e.g., Aggarwal et al., 2011; Teubner and Graul, 2020; Wu et al., 2021) that confirm the role of creating a cue of limited-quantity products in promoting product sales, this finding stresses the role of creating a cue of a large number of potential buyers in promoting product sales. Therefore, this study also shows that the product-related factors such as product popularity can play a pivotal role in live streaming commerce.

Regarding the moderating effects of perceived power, research findings confirm that perceived power can weaken the relationship between streamer popularity and perceived streamer reputation, whereas it has no such effect on the relationship between product popularity and perceived competition. A possible explanation accounting for this interesting finding is that perceived power exists and works well in an interpersonal setting (Lee et al., 2020; Wei et al., 2020). In other words, perceived power generally comes into play during consumers' interactions with other people, since individuals possess power aiming to control or influence others' evaluations or actions (Anderson et al., 2012; Wongkitrungrueng et al., 2018). In this study, consumers encountering streamer popularity implies consumers' interactions with a streamer, whereas consumers encountering product popularity refers to consumers' interactions with a product. Considering the essential role of an individual's power in influencing others rather than being influenced by others, consumers with high power perception are likely to produce psychological reactance when they realize a streamer is very popular, thereby leading to a lower streamer reputation evaluation. In contrast, since consumer-product interaction falls outside interpersonal setting, there might be no conditions for the functioning of perceived power, implying that perceived competition can be affected by product popularity regardless of whether consumers perceive more power or not.

Theoretical implications

This study enriches the existing literature on live streaming commerce primarily in three ways. First, although impulse purchase is likely to occur more frequently in a live streaming context, prior research has not sufficiently addressed this issue. To fill this research gap, this study follows the S-O-R paradigm to reveal the formation mechanism of impulse purchase. As the S-O-R framework is more sophisticated than the input–output framework (Jacoby, 2002; Barbu et al., 2021), Chan et al. (2017) recommend that the S-O-R paradigm could be duly used to validate the relationships regarding marketing stimuli–internal reactions–impulse purchase. This study's findings provide evidence that the S-O-R paradigm can work well in expounding impulse purchase in a new research context, namely, live streaming commerce. Thus, this study advances the application of the S-O-R paradigm and extends the impulse purchase research setting.

Second, following Kotler (1973), popularity cues can be considered as marketing atmospherics, which include many typologies depending on the specific marketing actions. Previous research addresses the effect of either streamer popularity (e.g., Jin and Phua, 2014; Ladhari et al., 2020) or product popularity (e.g., Mou and Shin, 2018; Kao et al., 2021) on consumers' internal and behavioral reactions. This study advances the research on popularity cues by analyzing streamer popularity and product popularity together, based on the characteristics of live streaming commerce. Furthermore, following the signal theory (Spence, 1973; Dean, 1999) and heuristic information processing theory (Chaiken, 1980), this study demonstrates that impulse purchase can be simultaneously stimulated by emphasizing the effect of streamer popularity on perceived streamer reputation as well as highlighting the role of product popularity in promoting perceived competition. These findings provide a richer understanding that the streamer and product are both equally important components in live streaming commerce.

Third, prior research on live streaming commerce that investigates moderator(s) is limited. This study is the first, to the best of our knowledge, to adopt perceived power as a moderator to better reveal the boundary condition of popularity cues playing their roles, especially as the perceived power is ubiquitous and powerful in affecting an individual's internal reactions (Rucker et al., 2012; Wei et al., 2020). The research findings suggest that perceived power can dampen the effect of streamer popularity on perceived streamer reputation, which provides a starting point for relevant future research avenues and consequently improves the effectiveness of creating popularity cues.

Practical implications

This study establishes that firms can embrace live streaming to increase their business performance via enhancing consumers' impulse purchase. Results from this study provide valuable practical implications to businesses engaged in live streaming commerce primarily in three aspects. First, streamer popularity is proven to enhance perceived streamer reputation, which in turn promotes impulse purchase. This is in consistent with Guo et al. (2022) who suggest that the streamer plays a core role in affecting consumers' psychology and behavior. Therefore, to increase product sales, an effective approach is for firms to ask celebrities (Jin and Phua, 2014) and/or online influencers (Ladhari et al., 2020) to act the role of streamers because they have large fan bases and their reputations are readily perceived by consumers. Additionally, streamers should develop skills and capabilities to effectively interact with viewers to improve their enthusiasm, which ultimately makes them complete more engagement behaviors, such as liking, commenting, sharing, and rewarding.

Second, product popularity is demonstrated to enhance perceived competition, which then elicits impulse purchase. This emphasizes that the product is another important component in promoting live streaming commerce performance, which is similar to Park and Lin (2020) and Fei et al. (2021). Drawn from this point, this study suggests that firms should cooperate with streamers to offer products that are much more in vogue. Moreover, the frequently used price-off promotion (Blattberg et al., 1995) is suggested to be used to promote product popularity. Summarily, appropriate marketing tactics that are helpful for creating product popularity cues should be used to make consumers believe that they should compete with others to buy relevant products. It is important that marketers should strategically leverage both the streamer popularity and product popularity cues.

Third, the interaction effect of streamer popularity and perceived power on perceived streamer reputation is verified to be negative. This implies that streamer popularity could lose some effects in the high-power consumer segments. Moreover, though the firms cooperating with the top streamers (e.g., Jiaqi Li, a mega-influencer in China) can significantly promote product sales, they have to pay expensive commissions. Taken together, marketers are recommended to make different consumer segments based on analyzing consumers' personal power in terms of consumers' social status, income, education, age, and so on (Anderson et al., 2012; Wongkitrungrueng et al., 2018). On the basis of consumer segments, firms can ask some macro- and micro-influencers who charge considerably less to act as streamers to interact with high-power consumers, ultimately leading to greater reputation perception and more impulse purchase. By embracing the data-driven retail intelligence (Klieštik et al., 2022), firms are able to maximize the effect of streamer popularity, optimizing the investment in streamers.

Limitations and future research directions

This study has the following limitations and directions for future research. The first limitation lies in the external validity, as the current research context is limited to Taobao Live—the best-known customer to customer e-commerce platform in China. Therefore, future research can develop this research model on other live streaming commerce platforms, such as JD Live, Tiktok Live, and Amazon Live, to cross-validate the results. Second, although CMB is not a serious issue in this study, the survey conducted online might lead to some bias. Future research that uses experiment (Jin and Phua, 2014; Wu et al., 2021), eye-tracking (Mou and Shin, 2018; Fei et al., 2021), or machine learning (Hopkins, 2022; Nica et al., 2022) is highly recommended to cross-validate the findings of this research. Third, this study does not consider the impacts of product characteristics (e.g., product involvement, product type) and other consumer characteristics (e.g., familiarity with live streaming commerce, self-construal) on consumers internal reactions and impulse purchase. To better reveal how popularity cues work, it is recommended that future research investigates the effects of such factors. Fourth, this study focuses on the cognitive process to reveal the effects of popularity cues on impulse purchase, while Guo et al. (2022) and Lo et al. (2022) suggest consumers' affective characteristics are critical in triggering impulse purchase. In this vein, future research might apply the pleasure-arousal-dominance (PAD) model (Mehrabian and Russell, 1974) in enriching understanding of relationships between popularity cues and impulse purchase. Finally, there is an increasing trend to apply human-like artificial intelligence (AI) service agents in improving consumers' experience quality (Pelau et al., 2021), which suggests the anthropomorphized virtual streamers can be used in the live streaming commerce. Thus, future research that investigates the impacts of virtual streamer on consumers' psychology and behavior will be highly interesting.

Conclusion

Given the explosive growth of live streaming commerce, it is imperative for firms and retailers to recognize this new trend of consumer shopping journey to improve business performance. Even if live streaming commerce managers are adept in creating and communicating various social cues to exert influences on consumers' evaluations and behaviors, there is still no sufficient theoretical explanations for the effectiveness of such social cues. Following the S-O-R paradigm, this study elucidates how the streamer popularity and product popularity elicit impulse purchase by incorporating the perceived streamer reputation and perceived competition as mediators, respectively. Meanwhile, this study demonstrates that consumer perceived power can be regarded as a boundary condition, under which the streamer popularity may fail to maintain its impact. This study contributes to enriching the live streaming commerce literature and offers guidelines for marketers to achieve business goals.

Data availability statement

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

LL, YJ, M-SJ, and JK contributed to the conception and design of the study. LL organized the database. LL and YJ performed the statistical analysis, wrote the first draft of the manuscript and the sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Impact of internet usage on consumer impulsive buying behavior of agriculture products: Moderating role of personality traits and emotional intelligence

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E-commerce has led to a significant increase in internet purchases. The marketing sector is very competitive these days, and marketers have a difficult task: understanding the behavior of their customers. Strategic marketing planning relies heavily on consumer behavior since the consumer acts as the user, buyer, and payer in that process. Consumers' behavior changes in response to shifts in the factors that influence it. The purpose of this research is to show how Internet usage influence on consumer impulsive buying behavior of agriculture products through moderating role personality traits and emotional intelligence in China organic market. The data gathered in three months from January to March 2022, due to COVID-19 pandemic data was gathered through an online survey questionnaire sent by Chinese social media platforms including WeChat and an email address. The PLS-SEM technique and the SmartPLS software version 3.2.8 were used for data analyses. The result revealed that internet usage positively and significantly influences consumer impulsive buying behavior. Also, both moderator personality trait and emotional intelligence positively and significantly moderate the relationship between internet usage and consumer impulsive buying behavior. Lastly, theoretical and practical implications, and future directions were discussed.

KEYWORDS

internet usage, consumer impulsive buying behavior, personality traits, emotional intelligence, agriculture products

Introduction

Due to the fast growth of the Internet and e-commerce over the last almost two decades, online purchasing has become an increasingly essential channel for consumers to acquire agricultural goods (Richards and Rickard, 2020). According to the 2014–2015 China Agricultural Products E-Commerce Development Report, agricultural product sales on Alibaba's e-commerce platform increased from ¥3.7 billion in 2010 to over ¥80 billion in 2014 (Huang et al., 2022), achieving an average annual growth rate of 115.64% over the past five years and demonstrating the strong momentum of online agricultural product purchases (Li, 2022). Despite the significant rise in online agricultural product purchases, China's online agricultural product buying system is still in its infancy (Liu and Walsh, 2019). It is hampered by various causes, such as the immature online buying sector and logistical and security concerns, which has led to a reluctant and watchful attitude among many buyers (Wang et al., 2022). Numerous agricultural firms are unable to properly comprehend the aspects that impact customers' desire to acquire agricultural goods online, resulting in the lack of relevant and effective marketing tools and approaches (Al Amin et al., 2020; Liu and Wang, 2022). Despite this, the majority of current research focuses mostly on general commerce such as apparel, books, digital products, etc., demonstrating a lack of interest in agricultural products (Truong and Truong, 2022; Zhang, 2022). Therefore, there is an immediate need to research the internet purchasing patterns of agricultural product customers (Richards and Rickard, 2020). This research vacuum will be filled by the present study, which will investigate the variables that impact the propensity to buy agricultural goods online.

Year 2020 was an exceptional year because of a pandemic. In the words of the World Health Organization (WHO), the COVID-19 pandemic "presents an unprecedented threat to public health, food systems, and the world of work." Extreme poverty, job losses, trade and border closures, and incarceration were just a few examples of how the pandemic had a devastating impact on the economy, as well as the lives of millions of individuals. They contend that COVID-19 caused significant psychological, social and professional changes such as physical and mental health difficulties, job losses and poor savings as well as anxiety and tension during out-of-town travels (Naeem, 2020). This crisis has profoundly impacted people and their lives in many ways. All of these factors were influenced by the various constraints imposed by the governments and authorities on people's lives. People were unable to leave their houses because of limitations on mobility and lockdowns, thus they were confined to their homes. They were able to stay in touch with family, friends, classmates from school, and even former professors and coworkers thanks to social media. They also provided a way for individuals to have fun, occupy themselves, and enjoy their auxiliary time. COVID-19's social media channels have also played an important part in disseminating information and have been a rich and beneficial resource for COVID-19 information.

Consumer behavior has been influenced by the outbreak as well. "The period of contagion, self-isolation and economic uncertainty have altered the way consumers behave," according to a McKinsey and Company study. These new consumer behaviors include everything from how people work, learn, communicate, travel and shop and consume to how they live at home and how they deal with health and well-being (Kohli et al., 2020). A PwC (a worldwide network of organizations supplying assurance, tax, and consulting services) poll found that COVID-19 quickly impacted consumer behavior, such as customers purchasing more basics (non-perishable grocery, housekeeping and cleaning goods, frozen meals, etc.) and using the internet shopping. Online shopping saw a significant spike in popularity during the epidemic. Because of the rise of online shopping, many businesses have turned to promotional activities on social media platforms to raise awareness of their brands and boost sales by enticing customers to share information and invite online friends (Lv et al., 2020; Haider and Tehseen, 2022). E-commerce turnover in Italy increased by 20% in the first quarter of 2020, according to Sabanoglu (2020). "Italy's e-commerce sales climbed significantly during February and March 2020 compared to the same period of 2019. The coronavirus epidemic had a significant effect on online sales, especially over the weekend (COVID-19). Thus, the adoption of the contemporary technology tools using internet has shown a significant importance in changing consumer behavior in China (Ali Taha et al., 2021).

Impulsive buying drives consumers to purchase goods without hesitation (Kacen and Lee, 2002). The focus of impulsive buying behavior research has been on both external and internal causes. Consumers' impulsive emotions are aided by external variables such as shopping festivals (Habib and Qayyum, 2018), the quality of shopping websites, and so on. Internal aspects always relate to personal situations and qualities, rather than being impacted by organized facilities and packaged items. Consumer buying behavior is defined as all psychological, social, and physical conduct of potential consumers as they become aware of, assess, purchase, consume, and tell other people about items and services (Lee and Yi, 2008). The impulsiveness of a customer is a unique type of consumer buying behavior. It is known as impulsive purchasing.

According to the Global Mobile Consumer Survey, 96% of Chinese people own a cellphone, making it a vital part of their lives. 93% of waking users check their phones in less than an hour. The generation born in the late 1980s and after is the primary consumer group; they spend more time on Internet usage and are thus more likely to be influenced by WeChat moments with friends and other social media "opinion leaders." About 40% of internet purchases are impulsive. Although China has the fastest expanding organic sector, customer views about organic food items *via* social commerce are less well understood. Nowadays, customers are rather active in social groups in which they communicate with others to get other people's ideas and comments on items, and then evaluate those products to understand how well they perform. China's fast socioeconomic growth has been aided by the modernization and industrialization of agricultural food production. Chinese agriculture is increasingly reliant on modern agricultural pesticides, posing increased health and environmental risks (Zhang, 2022). Food manufacturing has been shown to include dangerous quantities of chemicals and food safety issues (Akbar et al., 2019). By taking into account the generally established significance of personality in determining consumer behavior, this study will examine that internet usage has utmost effect on consumer impulsive buying behavior with moderating effect of personality trait and emotional intelligence.

The word "personality" comes from the Latin word "persona," which means "to speak through." This Latin phrase refers to the theatrical masks used by performers in ancient Greece and Rome. As a result, personality is employed to influence people through their exterior appearance. However, only the outside appearance. Although significant for personality traits, it does not make up the entire personality. Gangai and Agrawal (2016) define personality traits as "relatively persistent qualities of individuals that exhibit consistency across their lifetimes and across a wide range of settings." The current research looks at the link between personality factors and Internet usage. Because there are so many different personality qualities to pick from in the larger psychological literature, it's crucial to think about what personality traits to explore in connection to Internet usage first. Fortunately, the Big Five model is widely accepted as a unified, cost-effective conceptual framework for personality.

Impulse buying is characterized by subjective bias and quick decision-making for instant acquisition. Impulse buying behaviors accounted for a significant share of consumer purchases, therefore academics and practitioners are constantly considering such unreflective and unplanned purchases. According to Wang et al. (2022), 30–50% of retail transactions are impulsive purchases. Haider et al. (2022) stated that the online shopping environment is more conducive to impulsive spending than its physical equivalent, claiming that 40% of online consumer expenditures are the consequence of impulsive purchases. For these reasons, impulsive buying behavior provides a wide range of opportunities for academics interested in consumer behavior research, as well as practitioners interested in investigating this phenomenon because it accounts for a major portion of a company's earnings. The theory of reasoned action (TRA) and the theory of planned behavior (TPB) and its descendants (i.e., UTAUT and TAM) are widely used theoretical frameworks under these schools of thought (Toh and Selvan, 2015), and they cover a wide range of consumer behavior and decision-making processes (Cheng and Huang, 2013).

According to Liu and Walsh (2019), impulsive online shopping has become an epidemic due to the rapid expansion of e-commerce and advances in information technology. In 2015, sales of social commerce, also known as one type of e-commerce that uses consumer engagement, customer participation, and social networks to enable online selling, totaled \$5 billion, with a significant growth projected in the future (Chung et al., 2017). Consumers today are more likely to engage in hedonic and experimental consumption, such as impulsive buying, since they like shopping more than they need it. The 21st century is the era of computers and the Internet. The Internet is becoming an increasingly vital part of people's life as time and society progress. People also have a range of instruments for using interconnectivity, like mobile phones, computers, and so on. They may access necessary knowledge and information on the Internet at any time and from any place. Students, for example, may utilize the Internet to gain access to a greater range of extracurricular information and broaden their perspectives; office employees can acquire what they need with a mouse click, and the entire globe can be viewed.

Three of the Big Five personality qualities: agreeableness, conscientiousness, and extraversion—were shown to be inversely connected to Internet usage in the current study. In other words, students who were more introverted, less pleasant, and less conscientious used the Internet more. Future studies on individual Internet usage tendencies might potentially look into a range of specialized personality qualities that are too many to list here. Furthermore, using personality traits contextualized to computer and Internet usage may be effective in expanding validity correlations in this field of research. It will be interesting to see if the influence of other conceptions and determinants on Internet usage can be measured after personality traits have been taken into consideration.

Literature review

Supporting theory

Theory of planned behavior predicted that behavioral control and subjective norms would be the means of influencing one's attitude and behavior (Toh and Selvan, 2015). The three components of TPB are attitude formation, perceived behavioral control, and subjective norms (Yang et al., 2018). Because of this, one's actions and attitude may be anticipated. According to this theory, people's intentions to carry out a given behavior are influenced by their attitude (i.e., their attitude toward organic food purchasing in this research), their perception of behavioral control, and their subjective norms (i.e., the value of other people's views) (Cheng and Huang, 2013). Consumer attitudes regarding organic food have been studied using this idea. It is via the preservation of social norms that the impact of other people's social pressure on adopting or not adopting a certain behavior is maintained. If you're not careful, these societal influences might have a greater impact on your behavior than you realize. Both the United Kingdom's and Greece's intentions to purchase environmentally friendly items have been noted by Yang et al. (2018). Social standards and environmental awareness, have forced environmental conservation (Brandão and da Costa, 2021). Pro-environmental behavior has been shaped by society and personal values. Purchasing environmentally friendly items was found to be influenced by these considerations. Kim and Chung (2011) used this TPB to analyze the purchasing choices of organic personal care items and discovered that other people's experiences with organic goods had an impact. Studies on students in China, the United States, and South Korea have shown that organic apparel purchases were made based on personal significance. Peer and social effect on organic product purchases was shown to be considerable by Pandey and Khare (2017). They used the TPB to describe their organic purchasing selections.

Consumer impulsive buying behavior

Impulsive buying behavior is defined as a spontaneous response to a stimulus that results in a persistent desire to purchase a certain product or brand despite having no prior intention or necessity to do so (Badgaiyan and Verma, 2014). It is also not seen as a reminder or a habitual response. This sudden and overwhelming desire to acquire has been linked to a variety of causes that may be divided into two categories: individual-driven factors and market-driven ones (Tendai and Crispen, 2009). The first looked into consumer psychology and how it influences behavior. Shanks et al. (2010) define impulse buying as "a quick, hedonically complicated purchase behavior in which the speed of the impulsive purchase prevents any careful, intentional assessment of alternative or future ramifications." In line with the aforementioned definitions, Truong and Truong (2022) have supplied a more detailed description, indicating that impulsive purchasing is defined as a one-time purchase made without any prior planning to buy a certain product category or complete a specified task.

It is essential to analyze the components or factors, such as characteristics, attitudes, behaviors, and participation, in light of their influence on buyer behavior (O'leary, 2017). With study factors such as increased technology, the digital revolution, aging, income levels, lifestyle changes, environmental concern, etc. influencing various components, consumer behaviors vary. In a similar vein, prior research (Zwierzyński, 2018) found that the COVID-19 pandemic will result in considerable continuous innovations across society, with many of these inventions having the potential for long-term social effects. Digital technologies are considered to be a component of these massive systemic transformations.

Customer engagement also relies on the amount of service convenience provided by organizations; when businesses increase the level of service convenience, this influences the channel switching behavior of customers. In the context of the Omni channel retailing business, both offline search convenience and online purchase convenience influence customers' showroom behavior (Shankar et al., 2021). In addition, these components of convenience may assist identify motivations, hurdles, personality characteristics, and the influence of culture in consumer adoption, so facilitating the identification of facilitators and inhibitors (Jain et al., 2022). A meta-analysis done by Jayawardena et al. (2022) revealed that gamification-based online engagement tactics help merchants increase consumer engagement and participation. This strategy can help improve online education, online brand engagement, and information system engagement.

Kacen and Lee (2002) published an article in Marketing and Branding Research called Effects of Personality on Impulsive Buying Behavior: Evidence from a Developing Country. Openness, Extraversion, Conscientiousness, and Neuroticism were found to have a substantial influence on Impulse Buying Behavior, but Agreeableness had no effect. Many studies on impulse buying behavior look at website-related elements and their influence on the development of impulsive buying behavior. Adelaar et al. (2003), for example, evaluated and explored the influence of several media types (video, still pictures, and text) on impulsive buying behavior. Furthermore, Wells et al. (2011) found that personal characteristics and website quality has a substantial impact on the desire to buy impulsively.

When evaluating a product, younger consumers interact with others as members of a social group and solicit their opinions. This social engagement boosts user interactions and user-generated information in several ways, such as product suggestions, customer reviews, and discussion forums. These actions enable online shoppers to make more educated and precise purchasing choices, influencing their behavior toward a particular product. According to the notion of planned behavior, individuals' thoughts influence their intentions to behave in a certain manner (Toh and Selvan, 2015). For instance, attitude is a strong predictor of organic food purchase intent, with a considerable positive correlation between the two. According to a recent consumer study, individuals do not regard their specific purchases as incorrect and, in fact, retroactively give a good opinion of their activity. Interestingly, Rook (1987) finds that while a small percentage of informants (only 20%) report feeling "terrible" about their impulsive purchases, an amazingly significant percentage (41%) report feeling "good" about them, which is hilarious given that the definition does not allow for such conduct.

Internet usage and consumer impulsive buying behavior

Purchasing behavior is influenced by consumers' unique personalities; each individual behaves and purchases differently based on their own personality (Yang et al., 2018). In their quest for knowledge, the Chinese rely heavily on the Internet, which has been shown to be their preferred resource. Quality signals such as nutritional content, production process, natural and animal welfare, shopping experiences, and online reviews help to shape customer attitudes that influence purchase decisions. E-commerce activities have pushed people to participate in online impulse purchasing, which is an unplanned purchase based on strong feelings for a product (Lim et al., 2017). Decisions on organic food purchases are also influenced by subjective and personal norms.

There is evidence that social commerce use is increased by peer consumers' information sharing, rating, recommendations, reviews, and referrals (Huang et al., 2022). Marketing firms use the Internet to produce and disseminate important information since it enables customers with similar interests to communicate with one other. The benefit of organic food may be shown via these personal networks, and the consumption of organic food can be increased, as well as consumer loyalty increased. As China's better internet technology has expanded internet users and the mobile internet has revolutionized consumption patterns and consumer attitudes, the social shopping phenomena reflects this. Consumers in China are becoming more health-conscious and conscientious about their eating habits, such as include more whole grains and vegetables in their diets. Genetically modified organisms (GMOs) and synthetic chemicals (such as fertilizers) are not permitted in organic food. As a consequence, internet usage has a positive impact on customers' impulsive purchasing habits.

> H1: Internet usage has a positive influence on consumer impulsive buying behavior.

Personality traits as moderator

Individual buying behaviors vary; each consumer acts and consumes differently depending on his or her personality (Kacen and Lee, 2002). Some people are interested in how societal well-being influences their diet and health choices. Impulsive buying is an unexpected purchase that occurs as a result of comparing alternative purchase intents with actual outcomes. Consumers can communicate product comments and additional information through information sharing, suggestions, and referrals (Liu and Walsh, 2019). Furthermore, the internet is the most common method via which Chinese individuals search for information. The internet, in particular, plays an important role in Chinese organic consumption, and prior buying experiences of organic product customers may be found online through reviews. The number of product reviews can have a big impact on new customers' purchase decisions since it boosts their confidence in making a selection.

Individual features that may be utilized to separate two people are referred to as traits. When the preceding literature analysis is taken into account, it is feasible to conclude that the impulsive purchasing study is focused on customer characteristics. A trait, according to Ajzen (2005), is a cross-situational individual difference that is temporally stable. It describes the traits of individuals that may be utilized to differentiate two people. The investigation of personality traits may be seen in the literature on impulsive purchase behavior (Gangai and Agrawal, 2016). Irrationality has long been regarded as a personality feature in psychological theory and study (Brandão and da Costa, 2021). McCrae and Costa Big Five model is recognized as one of the most important benchmarks in the trait theory of personality. Individuals can display all five aspects, although they may score well in one or more of them while scoring poorly in others. Extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience are the Big Five Dimensions.

Extraversion describes an extroverted, extremely sociable, forceful, energetic, and thrill-seeking personality. Extraverts are drawn to interpersonal relationships. Openness to experience is associated with being creative, curious, and imaginative, as well as being unusual. They seek out new experiences and like experimenting with new concepts. Low-scoring individuals can be described as traditional and unanalytical, with a propensity for the known and routine. Agreeable individuals are usually trustworthy, forgiving, kind, warm, cooperative, and selfless. They regard interpersonal ties highly. Achievement, hard effort, responsibility, and reliability are all traits associated with conscientiousness. They are more risk-averse and want to develop long-term relationships. Finally, neuroticism is associated with anxiety, fear, depression, and poor emotional adjustment (Sinha et al., 2014). Neurotic persons do not have a socialistic outlook and avoid circumstances that need control. Because personality traits are used to predict consumer behavior, they'll likely have an impact on online impulse purchases. As a result, personality factors have been shown to modulate the relationship between Internet use and Consumer Impulsive Buying Behavior.

> H2: Personality traits moderate the relationship between Internet usage and consumer impulsive buying behavior.

Emotional intelligence as moderator

Impulse buying is the spontaneous, instant action of purchasing a product unsupported by any previous plan, intent or decision of owning the product. Emotions play a significant influence in all of these decisions since every purchase event is an experience for the customers involved (Park and Dhandra, 2017; Ran et al., 2021). The area between a desire to buy something and the actual purchase is where emotions, among other things, play a significant influence. The stimulation of desire, as well as the procedures that lead to the final act of purchasing the object, is reliant on the individual's emotion management mechanisms (Habib and Qayyum, 2018). Handling emotions, managing emotions, regulating emotions, and even sensing emotions all become essential factors in purchasing decisions (Soodan and Pandey, 2016). However, from the standpoint of the marketer, it is a critical instrument for provoking the client to satisfy his transitory needs. Understanding the influence of Emotional Intelligence on impulse buying behavior has been a major topic of debate.

Marketers and psychologists have differing perspectives on impulsive buying. Marketers typically believe that impulse buying occurs primarily as a result of a market impact on customers. However, the primary reason for such purchases is dictated by external variables. The emotional intelligence of a person is one of the areas of human difference (Sinha et al., 2014). Most people's shopping experiences are defined by their affective capacity to be self-aware, recognize emotions in others, and handle emotional signals and information. Different methods for defining Emotional Intelligence have been developed, and there is controversy about how the word should be used. Darwin's study on the need for emotional expression for survival and second adaptation may be traced back to the beginnings of emotional intelligence. Several notable academics in the intelligence field of study began to notice the relevance of non-cognitive characteristics in the 1900s, even though conventional definitions of intelligence emphasized cognitive aspects such as memory and problem-solving. Not much research has been conducted to determine how emotional intelligence impacts or influences consumer purchasing behavior. Because impulse purchasing affects all product lines and is a significant area where organizations try to focus to entice clients, it is particularly interesting to investigate whether this crucial behavioral attribute has any significance from both the individual's and marketer's perspectives.

Emotion is a significant antecedent that influences decision-making. People are prone to regret, and they will go to great lengths to avoid future regrets and current regrets. Counter-factual reasoning can be used to foresee the emotional implications of hypothetical decision-making. In the context of marketing and consumer-based research, Kidwell et al. (2008) created a consumer emotional intelligence measure and concept. Amos et al. (2014) argued that the interaction of socio-demographic, situational, and dispositional characteristics might create a favorable environment for boosting impulsive buying in a meta-analysis of consumer buying behavior. Moreover, contend that psychological functioning, particularly as a type of self-regulation, might be valuable in explaining impulsive purchase behavior. Consumers frequently make unexpected and unanticipated purchases in an online setting, according to Jones et al. (2003); their intentions may be derived from the complexity or simplicity of the website. Consumer buying behavior is influenced by impulsive reactions, inadequate cognitive control, and emotions in this situation (Soodan and Pandey, 2016). As a result, EI helps to control the relationship between internet use and consumer impulse buying (see **Figure 1**).

> H3: Emotional intelligence moderate the relationship between Internet usage and consumer impulsive buying behavior.

Research methodology

Sampling and population

The suggested model hypothesis was empirically examined by means of a quantitative research technique (**Figure 1**; Barnham, 2015). Therefore, a cross-sectional data collecting method using an online questionnaire that was most suitable for this setting was utilized to determine the structural relationship between contemplative latent components. It is not only congruent with this research, but also geographically unrestricted and has the lowest survey cost and fastest response rate. The online survey questionnaire was divided into two sections to obtain data on organic food impulsive purchases made online. The purpose of the first component of the questionnaire was to ensure that respondents had experience purchasing organic food goods online. In the first segment, a screening question with a nominal scale (yes/no) was implanted for this purpose. If the respondent had not purchased any organic food online, they were forwarded to the survey's conclusion page. In reality, respondents who

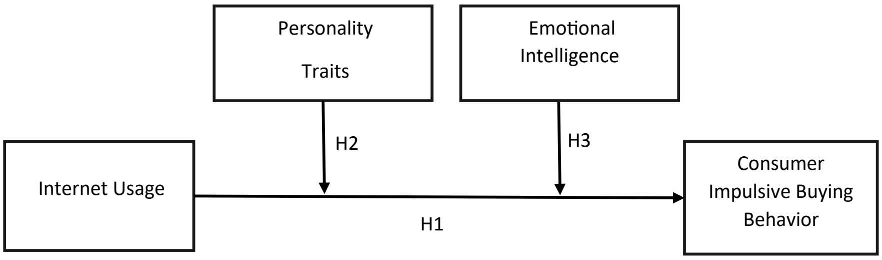

FIGURE 1
Conceptual model.

lacked organic purchasing expertise were voluntarily excluded from the research; hence, the study sample consists of experienced online purchasers of organic food. The majority of respondents bought organic milk, organic grains, organic veggies, and organic eggs. The following part was intended to capture demographic information such as age, gender, education, and income, along with Internet usage use and time spent on social media. The purpose of the last segment was to evaluate the structural relationship between latent hypotheses.

In China, the research was carried out. During the months of January–March 2022, due to COVID-19 pandemic data was gathered through an online survey questionnaire sent by Chinese social media platforms including WeChat and an email address. The questionnaire was translated from English to Chinese for this study's Chinese participants, and both English translations were compared to identify and correct any inconsistencies to ensure the intended meaning of the questions to be answered by respondents were accurately conveyed in both translations. A total of 360 respondent were requested to fill out an online survey questionnaire, however only 285 valid replies were obtained (response rate = 79.16%) with 145 Male (49.1%) and 140 females (50.9%) responding as presented in **Table 1**. Females were more likely than men to use social media and choose organic food, according to the gender ratio. The majority of respondent were 20- to 30-year-old (42.8%) and 31 to 40 (42.1%) year old. The conclusions of this research are based on a large sample of well-educated individuals, with 39.3.% of those who participated holding a Bachelor degree, Masters (37.2%) or above. One-half of the samples make more than 1,500–8,000 yuan every month.

TABLE 1 Descriptive statistics.

Demographics	Categories	Frequency	Percent
Gender	Male	140	49.1
	Female	145	50.9
Age	20–30	122	42.8
	31–40	120	42.1
	41–50	43	15.1
Education	Bachelor	112	39.3
	Masters	106	37.2
	MS/MPhil	51	17.9
	PHD	10	3.5
	Any other	6	2.1
Experience	<1	18	6.3
	1–3	146	51.2
	4–6	73	25.6
	>6	48	16.8
Monthly income	<1,500 yuan	22	7.7
	1,500–4,000 yuan	94	33.0
	4,001–8,000 yuan	98	34.4
	>8,000 yuan	71	24.9

Instrument

The scale developed by Deane et al. (1998), which included 8-items scale, was used to measure independent variable Internet usage. Furthermore, the 7-items scale was used for dependent variable consumer Impulsive buying behavior adopted from Karbasivar and Yarahmadi (2011). The two moderating variables were used in current study, personality traits the 44-items scale developed by John and Srivastava (1999) and emotional intelligence based on 16-items adopted from Wong and Law (2002). According to the Five-points Likert scale, responses ranged from 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5(strongly agree). Analysis of survey data is carried out utilizing Smart PLS and SEM (Structural Equation Model) software. This is because SEM is one of the most common approaches among marketing researchers for assessing new conceptual models with many complicated social structures, and PLS-SEM is a tool for more extensive statistical analysis. This research is acceptable for applying PLS-SEM since the complexity of the present model includes two variables as moderators, for a total of four variables. The subsequent section will include data analysis and interpretation of the findings.

Research results

Measurement model

The partial least squares- structural equation modeling (PLS-SEM) technique and the SmartPLS software version 3.2.8 were used in this study (Hair et al., 2017). PLS-SEM offers the benefit of being more adaptable while also having a better level of statistical strength (Hair et al., 2019). The PLS-SEM statistical analysis then proceeds to two stages: the evaluation of the measurement model and the evaluation of the structural model. Validity and reliability requirements for the measurement model must first be met before data can be used to determine relationships between variables (see **Table 2**). While evaluating measurement models, the reliability and validity of each concept are taken into consideration. In terms of construct reliability, the emphasis is on indicator loading values that indicate indicator reliability values and composite reliability, which displays the construct's dependability and internal consistency (Memon et al., 2021).

Based on the bootstrapping method (T-tests for 5,000 subsamples), Hair et al. (2017) evaluated the statistical significance of factor loadings, weights, and path coefficients for each variable. In addition to factor loadings analyses, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) analyses were conducted (Memon et al., 2021). The validity of explicit indicator hypotheses may be assessed by their factor loadings, which suggest that loadings larger than 0.50 on two or more variables are substantially reflected in the hypotheses. Wong (2013) developed a strategy for excluding items with factor loadings between 0.40 and 0.70 from assessment if excluding observed variables increases AVE and CR values in reflective scales. It can be shown in **Table 2** that the Internet usage (IU), consumer impulsive buying behavior (CIBB), personality traits (PT), and emotional intelligence (EI) all have CR values more than or equal to the minimum limit value of 0.70. In other words, the validity of the study concept has been proven. Meanwhile, the question of construct validity is being examined in terms of convergent and discriminant equivalence, respectively. Each of the constructs has an AVE value of 0.617 (IU), 0.703 (CIBB), 0.669 (PT),and 0.612 (EI), indicating converging validity in AVE. The convergent validity value of each construct surpasses the minimal limit value of 0.50, in other words. As with concept discriminant validity, the HTMT value for each correlation must be less than 0.85 in order to ensure heterotrait-monotrait correlation (HTMT) validity (Sarstedt et al., 2020). **Table 2** reveals that HTMT values are generally recognized and have a good degree of discriminant validity, which leads us to draw the following conclusion: Thus, it may be determined that all of the data meets the requirements of the measurement model. Thus, its validity and reliability are accepted.

Structural equation model

After determining that the measurement model is adequate, the following step is to evaluate the structural model (Hair et al., 2019). In a structural model, each hypothesis is assigned a causal link, and the hypothetical relationship in a structural model is often evaluated using a route coefficient. Such as the coefficient of determination (R^2), effect size (f^2), and predictability relevance (Q^2) Cohen (1998).The statistical significance of a coefficient is often determined by its t value. The *t*-value 1.65 (significance level = 10%), *t*-value 1.96 (significance level = 5%), and t-value 2.57 (significance level = 1%) are the crucial values usually employed in two-sided testing. In this research, if the hypothesis's *t*-value (relationship between variables) was larger than the cut-off value of 1.96, then the hypothesis was validated. When the hypothesis t-value (relationship between variables) falls below the 1.96 cut-off, the hypothesis is considered invalid. **Table 3** presented that internet usage has positive and significant influence on consumer impulsive buying behavior ($\beta = 0.694$, $p < 0.001$) also t-value is equal to 22.148 > 1.96. The value of β demonstrates the percentage change, illustrating that a one-unit change in internet usage results 0.694 unit change on CIBB. The results reveal that around 69.4% of the change in the dependent variable CIBB is seen, and a *p*-value < 0.001 implies a higher degree of significance, giving strong grounds for accepting hypothesis H1. The Coefficient of Determination (R^2) quantifies a model's prediction accuracy. Its value ranges from 0 to 1 and represents the cumulative effect of external latent factors on endogenous latent variables. Stronger explanatory power was indicated by higher R^2 values. R^2 values of 0.75, 0.50, and.25, according to Cohen (1998), are categorized as large, moderate, and low. **Figure 2** illustrates the values of R^2 for Consumer Impulsive buying behavior was 0.572, which is considered high and indicated that Internet usage, personality traits and emotional intelligence explained 57.2% of the variance in CIBB.

A measure of the effect size (f^2) is the amount by which the value of R^2 fluctuates when a specific exogenous construct is removed from a model to determine whether or not the exclusion has an influence on the endogenous constructs. A f^2 value larger than 0.35 implies a considerable influence. A range between 0.15 and 0.35 suggests a moderate impact size, while a result between 0.02 and 0.15 indicates a small effect size (Cohen, 1998). According to **Table 3**, the independent construct Internet usage has a significant impact size on CIBB, whereas the combined constructs Internet usage (independent) and PT (moderator) have a medium effect size CIBB, Internet usage (independent) and EI (moderator) have a high effect size on CIBB. To assess the predictive significance of the inner model, Q^2 (predictive relevance) is used. Q^2 was calculated using the blindfold technique, whereas D was found to be 7. Utilizing a cross-validated redundancy approach, predictive significance was determined. If a value greater than zero implies

TABLE 2 Measurement model and HTMT.

Constructs	Cronbach's alpha	CR	AVE	CIBB	EI	IU	PT
CIBB	0.891	0.921	0.703				
EI	0.789	0.863	0.612	0.425			
IU	0.866	0.903	0.617	0.830	0.359		
PT	0.835	0.890	0.669	0.403	0.337	0.295	

AVE, average variance extracted; CR, composite reliability; IU, internet usage; CIBB, consumer impulsive buying behavior; PT, personality traits; EI, emotional intelligence.

TABLE 3 Structural equations model results.

Hypotheses	Relationship among constructs	β	Mean	S. D.	T values	F^2 values	*P*-values	LLCI 2.5%	ULCI 97.5%	Remarks
	Direct effect									
H1	IU → CIBB	0.694	0.694	0.031	22.148	0.531	0.000	0.628	0.753	Supported
	Moderating effect									
H2	IU × PT → CIBB	0.445	0.441	0.042	10.583	0.346	0.003	0.357	0.522	Supported
H3	IU × EI → CIBB	0.853	0.856	0.045	19.105	0.423	0.000	0.764	0.941	Supported

IU, Internet usage; CIBB, consumer impulsive buying behavior; PT, personality traits; EI, emotional intelligence; SD, standard deviation; LLCI, lower limit confidence interval; ULCI, upper limit confidence interval.

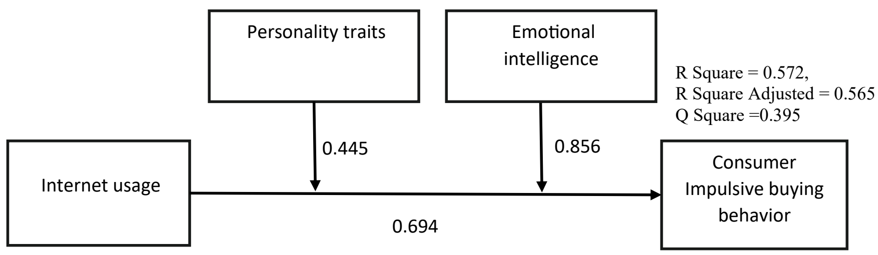

FIGURE 2
Path analyses, coefficient of determination in the PLS method.

predictive relevance, a value below zero suggests the model is not predictively relevant (Cohen, 1998). **Figure 2** displays the Q^2 value = 0.395 of endogenous components, which is greater than zero to illustrate the model's predictive relevance. Furthermore, the moderating impact of personality traits on the relationship between Internet usage and CIBB is positive and significant ($\beta = 0.445$, $T = 10.583$, $p < 0.05$). Also, emotional intelligence positively and significantly moderates the relationship between Internet usage and CIBB ($\beta = 0.853$, $T = 19.105$, $p < 0.05$). Hence, the Hypothesis H2 and H3 were accepted.

Discussion

This study investigated influence of internet usage on consumer impulsive buying behavior through moderating role of personality trait and emotional intelligence. The result revealed that internet usage positively and significantly influences consumer impulsive buying behavior. Also, both moderator personality trait and emotional intelligence positively and significantly moderate the relationship between internet usage and consumer impulsive buying behavior. The current study results related with prior studies; Zafar et al. (2020) indicated that consumer impulse buying has a very significant association with their emotional intelligence. Moreover, Chinese Internet usage has become the foremost source of information to gain food protection knowledge, an effective and delightful way to have more abundant product related information. Consumers often join social groups for the sole purpose of meeting their unique requirements; yet, viewing others' expertise and experience, as well as interacting with them, has the potential to influence their attitudes regarding goods and websites. Chinese customers are wary of buying food online because they distrust food providers, therefore they go for more information for a second opinion. People with higher emotional intelligence are better able to manage the euphoric want to buy because they can cope with the temporary misery of not having the object right now (Park and Dhandra, 2017). They are not ruled by their emotions. Understanding and regulating one's own emotions to make the best decision possible is a crucial mechanism of a highly emotionally intelligent person (Habib and Qayyum, 2018). As a result, those with higher Emotional Intelligence are less likely to feel guilty. It is critical to acquire customer trust by having items authenticated and validated by accredited institutions and the government. While technology has altered consumer behaviors, the COVID-19 epidemic has increased the rate of change. Ecommerce is a popular shopping trend that is fueled by the advantages of both traditional businesses and online platforms.

In general, emotional intelligence is thought to represent distinct differences in the ability to integrate emotional input and apply it to broader judgments. Since the (effective) operationalization of essential individual capabilities/assets is required for adapting forms, EI might well convey them, understood as either a collection of talents placed at the confluence of consciousness and feeling or as our emotional identity (Soodan and Pandey, 2016). In this sense, EI is less about feelings and more about how people successfully integrate emotions with cognition to lead to behavior, which can help to reduce adverse emotional encounters. Because, the internet can hold a large amount of data, Chinese consumers access information through online channels. As a result, the internet is the principal source of information. Consumers frequently join social groups to meet their requirements by watching others' expertise and experiences, and these interactions have an impact on their perceptions of goods and services. Consumer impulsive buying behavior is positively related to internet usage.

Conclusion

The Chinese government has made measures to ensure that domestic organic production meets high-quality requirements (see the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, 2012). Consumers may now buy impulsively more easily than ever before because of the Internet. Researchers should pay special attention to the enormous role that the Internet can play in making surfing more convenient and engaging, expanding the possibilities for instant satisfaction depending on mood states, and creating a hedonic buying environment. It was shown that consumer's personality trait toward organic food had a postive and significant moderating effect on their online impulsive purchasing behavior when employing social market (Lim et al., 2017). In other words, when consumers' sentiments toward organic food improve, online impulsive purchases likewise grow (Gangai and Agrawal, 2016). Chinese consumers get information online because the internet can store voluminous amounts of data (Liu and Wang, 2022). Internet is thus the key source of food safety information. Typically, consumers join social groups in order to meet certain requirements by examining the expertise and experiences of others, and these interactions eventually influence their opinions about goods and websites. By providing perspectives on product and vendor quality, social recommendations, ratings, and reviews have also contributed to the development of a satisfactory attitude toward organic consumption. This gives a more practical shopping experience, hence decreasing clients' indecision throughout the purchasing choice (Truong and Truong, 2022). Indeed, Chinese consumers are cautious because they mistrust food manufacturers; as a result, they seek further information in order to evaluate alternatives. Thus, internet evaluations, reviews, and the buying experiences of others play an important part in the organic food market. This is fundamental to social trade. The results for study were consistent with findings from western research. These research' results support the concept of a pro-environmental, organic-consumerist mentality that tries to please consumers.

Nevertheless, e-commerce is a rapidly expanding sector as a result of the COVID-19 epidemic. The findings of the present research indicate that customers are motivated if they are engaged online, which influences their behavior and attitudes. In addition, it has been reaffirmed that providing consumers with an engaging offline experience is one method to meet their demands and improve their purchasing habits. This study is essential since the business community must attract and keep consumers' interest. Such a distinct value proposition will differentiate rivals. In exchange, the image of the brand will generate positive reinforcement. As Internet use has become the standard for almost everyone with a focus on expanded consultation and customization and content marketing to attract an audience.

Theoretical and practical Implications

There are various ways in which this study adds to the body of information around organic food consumption. This new model for online impulsive purchases is based on consumer internet usage and includes the indirect moderating influence of personality trait and emotional intelligence in terms of media content. There has been an increase in the use of internet usage as a means of influencing purchasing decisions. However, the extent to which others have influenced has not been properly investigated. It is hoped that the findings of this study will serve as a foundation for further research on organic products sold online. Thus, a fuller knowledge of Chinese impulsive purchasing behavior is achieved by examining social attraction and media richness. This study's theoretical underpinnings, social appeal, reinforce the importance of organic food's influence on impulsive purchases. As a result of the rise of social commerce, consumers purchasing choices are more influenced by the opinions of others (Liu and Walsh, 2019). Using this approach, researchers may better understand how social attraction affects consumers' willingness to purchase impulsively. The level of scientific and technological literacy among consumers might increase demand for organic foods. Consumers are more likely to choose for organic products if they have a better grasp of how they are made. Referrals and reviews, product experience, and information gleaned from online forums and groups all play a larger role in organic food buyers' decisions than previously thought. Several key elements were found to influence organic purchasing, including precise and believable labeling, which builds confidence and a favorable attitude based on the number of organic components used, how it is cultivated and handled. Third, we looked at the influence of website personality on online impulsive purchases of organic food. The literature on social commerce websites' technological aspects has been uneven, despite the fact that few studies have examined them. This study has added to already existing research.

Results show that managers may safely establish a relationship between a product's identity and the identities of its customers in order to get preliminary market acceptability. Influential material such as important others, should be used by marketing managers in order to influence consumers' purchasing decisions. As a means of influencing the value proposition of organic customers, health communities may use social media. It is possible that creating knowledge communities might be a novel strategy to realize the value of consumer expertise. The establishment of trust, mutual benefit, and a sense of belonging would be enhanced in such long-term communities. Not only does this benefit the community by increasing and preserving its collective knowledge, but it also encourages its members to take an active role in it. Health community influence may be used by entrepreneurs in order to alter their consumer value offer. Post-purchase value is derived through social engagement, exchange of opinions and evaluations by others. This may aid in the acquisition of product knowledge. Using this process, customers are able to form an emotional connection with business owners and change their attitudes. Clear consumer advantages may leave a lasting impact on the general public, resulting in increased levels of customer satisfaction and retention. People's attitudes regarding organic food may be readily and swiftly changed by disseminating complete information through social media (Al Amin et al., 2020). People's cognition and purchasing intents are favorably influenced by social media marketing communications, which are regarded an outstanding medium.

For decades, the effect of technology has shifted customer preferences, which has led to an explosion of e-commerce. Due to the paucity of literature in the present research area, particularly concerning the Internet's influence on consumers' impulsive purchasing of agriculture products with the moderating role of personality traits and emotional intelligence, the present study is quite significant for decision-makers and industry stakeholders. In addition to the COVID-19 pandemic, consumer behavior has altered over the movement control period, and customer satisfaction will continue to influence online purchase activities and decisions. Therefore, the current research needed to address the current market circumstances. In addition, this research demonstrates that customers anticipate benefits from both online and offline purchases to optimize their purchasing benefits.

Online marketers must keep their websites up to date and attractive to keep clients coming back (Lim et al., 2017). It's a tremendous task for them to get through a tedious and infectious internet interface with only a single mouse click, Retailers that want to increase the number of impulsive purchases made on their sites should thus focus more on impulse purchasing, spending more resources in online shop design as a result. The website should be accessible and simple to use, with a nice variety of related items, such as an appetizing image for food. This will encourage impulsive purchases. Organic food websites should have more complete and rationalized web pages to attract and retain browsers with an influential interface that drives visitors to make impulsive purchases, according to the findings. As a consequence, consumers are more likely to make purchases after visiting a website that has high-quality images, appropriate typefaces, eye-catching color schemes, and detailed information about organic ingredients and farming. Consumer doubt may be lessened to some degree due to the tremendous media richness of internet items, which reduces the information asymmetry. Additionally, the answer to successful trigger of impulsive purchasing is to provide customers with appropriate exposure to the necessary sustaining stimuli with the least physical, mental, and time effort by constructing a courteous shopping experience. The research provides empirical evidence of the importance and relevance of social factors in the formation of organic attitude. According to the findings, successful websites have a strong personality that influences people's purchase decisions.

Limitations and future directions

In addition, several limits should be highlighted. Low external validity may be a shortcoming of the study, since participants may behave differently in real-world settings than they did during the experiment. In this study, the participants were inquisitive, but their actual purchasing behavior may alter if risks are considered more logically. We did not measure the actual amount of time spent in various areas of Internet use, which may indicate different patterns of association with personality characteristics than the percentage of overall time spent online. We were unable to determine if our measure of Internet use was range-restricted in our sample, which might have diminished the size of observed relationships. In the future, researchers will investigate the behavior of different age groups.

Due to the fact that impulse buying behavior was strongly related to emotional/affective reactions and behavior, despite the possibility that it was more likely influenced by external factors, it was somewhat challenging to distinguish between cognitive and affective impulses using survey questionnaires. If customers were aware of the phrase "purchasing," several factors/events may have been evaluated directly. In the future, it is proposed to combine quantitative and qualitative research methodologies (such as observational or experimental research methods). Also, future study might explore how internal elements (mood and affection) impact impulsive purchases of low-involvement clothing goods, as well as impulse purchases of high-involvement products. Other characteristics, such as the perceived dangers connected with online purchasing, self-efficacy, or fear toward technology, could be included in future study. The non-random selection of participants is a significant weakness of our research. Lastly, it will be intriguing to see if the effects of other constructs and determinants on Internet use may be evaluated once personality traits have been accounted for.

Consequently, experimental studies (for instance, experimenting with different retail web-sites with different stimuli to measure stimuli and explore implications for web-page layouts) and structured quantitative studies would greatly improve our overall understanding of impulse buying phenomena in both traditional retail stores and online. Due to China's significant usage of social media, this study's China-based sample was suitable for analyzing the phenomena of purchasing behavior. However, the sample population may restrict generality, a problem that might be resolved by duplicating this research with samples from different nations. Comparing various generations might also be a potential future study area, considering the increasing Internet use among the elderly. This research utilizes Chinese customers on purpose. However, investigating non-users might be intriguing. Future study should construct a more realistic simulation environment in order to better observe impulsive online purchasing behavior. Future study is expected to use a bigger sample size to increase the applicability of the findings.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

WJ: conceptualization and writing—original draft. SH: formal analysis, software, and resources. RS: supervision, writing—review and editing, and validation. PP: conceptualization, writing—original draft, and methodology. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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How consumer group communication influences brand memory during product injury crises

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Drawing on the social exchange theory, this study adopted a cross-level framework to investigate the influence of consumer group communication on consumer product image perception and brand memory. In addition, this paper examined the moderating role of consumer group involvement in the cross-level relationship between consumer group communication and consumer product image perception. Based on a sample of 116 groups and 530 consumers, results revealed that consumer group communication has a significant positive influence on brand memory formation across levels. Consumer product image perception plays a cross-layer mediated role between consumer group communication and brand memory. Group involvement plays a cross-level negative moderating role between consumer group communication and consumer product image perception, and moderates the mediating role of consumer product image perception between consumer group communication and consumer brand memory across different levels. Finally this paper discussed implications for research and practice.

KEYWORDS

consumer group communication, consumer product image perception, brand memory, consumer group involvement, consumer

Introduction

In market competition, brand is an important intangible asset for enterprises (Yorkston et al., 2010) which represents consumers' overall image of the enterprise (Feng, 2015). Brand is both an important bridge connecting consumers and the market and the core driving force for the survival and development of enterprises. Establishing a benign relationship between brands and consumers plays helps enterprises create solid positions in competitive market environments. However, with the continuous development of social economy, the competition among enterprises is increasingly fierce, and many enterprises ignore product quality and safety risks to seize the market, resulting in product injury crisis events. In addition, consumers' convenient access to information creates a much wider negative impact from product harm events, and can even directly affect brand loyalty and brand performance (Ma et al., 2010). This can cause a sharp drop in sales and market share, leading to bankruptcy, which can also spread to the operation and development of other industries or enterprises. Even if a quality inspection report is issued by an authoritative department, consumers' negative impression of the brand in crisis may remain. Influenced by the Country of Origin image and perception of quality (Islam and Hussain, 2022; Saeed et al., 2022), he first choice of consumers is still to buy imported products or find someone to help them purchase foreign products (Wang et al., 2020).

Otherwise, the product injury crisis events destroy the brand memory of consumers, and repeated crisis events will continue to deepen the destruction of consumer brand memory. Therefore, during a product injury crisis, one primary strategy for enterprises to get out of their predicament is by understanding the factors which influence the formation of consumer brand memory in order to reshape it.

In general, consumers lack trust in industries, enterprises, and products that have experienced crisis events. This is reflected in consumers' purchase process of consumers, and leads to a generally low brand reputation and consumer purchase intention (Zhou et al., 2021). Therefore, consumers will be more cautious in purchasing decisions, be more inclined to seek others' opinions and help, choose to communicate with other consumers about their purchasing experience (Yin and Poon, 2016), and continue to communicate and interact with their consumer groups after purchasing (Altinay et al., 2018). Even when consumers have a negative post-purchase evaluation, their original attitude will be changed through communication between groups, thus affecting their purchase behavior (Ding et al., 2021). Studies have shown that consumer-to-consumer interactions can both increase consumers' brand knowledge and enhance consumers' trust in brands and their products (Srivastava and Kaul, 2014). Research also shows that consumers' brand memory is the basis of brand cognition, and therefore the first step toward consumers making purchases (Wang et al., 2020). When the group communication between consumers helps them gather new product information about brand, their original cognition and attitude will change, and the new brand memory will affect the purchase decision behavior. However, existing studies have not explored the relationship between consumer group communication and brand memory. This study aims to explore that relationship.

Communication between consumers is based on the purchase of the same brand or category of products. If communication occurs between two or more people, it will generally encourage other consumers to respond. Under normal circumstances, the interaction between individuals and groups generally includes product information collection and interpersonal communication (Khler et al., 2011). When consumers communicate, an interactive relationship group of more than one person is formed. According to social exchange theory, the interaction between people in a society is an exchange process, which is dominated by rationality and tends to have the largest benefits and the smallest costs (Cook and Whitmeyer, 1992). This exchange behavior begins with social attraction brought by common interests. For consumers, common interest among consumers is mostly reflected in the exchange of their own consumption experience, experience with a brand product (Zhao et al., 2016), and word of mouth recommendation (Sun and Guo, 2016). Therefore, according to social exchange theory, it is reasonable to think that information obtained through consumer groups is more trustworthy to consumers, and will therefore affect the cognition and attitude of individuals toward information along with the processing of information by consumers. At the same time, existing studies have shown that the product information (Dorsey et al., 2016) and brand knowledge (Srivastava and Kaul, 2014) obtained by consumers through communication will not only change the individual's attitude and decision-making behavior (Patnaik et al., 2013), but also affect the individual's perceived functional value, which then affects the purchase intention (Gremler and Gwinner, 2000). Consumer group communication will affect some individual consumer's views and perceptions toward the brand or product across different levels, and then change their views and attitudes toward the brand. This study therefore aims to explore the cross-level mediating role of consumer product image perception between consumer group communication and consumer brand memory.

Both individuals and groups of consumers are part of the consumer market environment, so they are easily affected by the market environment, which then affects consumer psychology and consumer behavior during product injury crisis events and other situations. A product injury crisis refers to an event where a product is defective or dangerous to consumers, and this is widely publicized (Siomkos and Kurzbard, 1994). During product injury crisis events, consumers have anger and resistance to the brands or products involved. Scholars have examined the negative emotions generated by crisis events relating to their degree of involvement in negative publicity. Trump's (2014) research shows that consumers who are more closely related to the product may react negatively when they receive negative information about the brand or the brand violates an ethical code. Specifically, consumers have a high level of involvement, they spend more time and effort to understand the brand and product. However, when their degree of involvement is low, they will spend less time and energy and will make a quick purchase decision (Lyu et al., 2018). Different degrees of involvement create different consumer understandings of the product. Therefore, in group communication, product information sharing will change due to different involvement levels, and consumers' perception of product image will also change accordingly. This study aims to explore the cross-level regulatory role of consumer group involvement between group communication and product image perception.

At the same time, with the change in product image perception, brand memory will also change. Specifically, the communication atmosphere formed within the group differs with the involvement degree of different groups; as the perception of product image generated by information analysis and extraction of individual consumers also differs, the impact on brand memory also changes. This study explores the cross-level mediated effect of consumer group involvement on product image perception. To summarize, this paper takes product image perception as the mediating variable and group involvement as the moderating variable to build a moderated mediating model to study the mechanism of consumer group communication on brand memory.

Theoretical background and hypothesis development

Consumer group communication and brand memory

Consumer group communication refers to the process of information transfer from one individual or group to another individual or group, mainly focusing on various forms of verbal or non-verbal information transmission (Martin and Pranter, 1989). Brand memory refers to consumers' stored and accumulated memories of brands and products in terms of effect, emotion, value and symbolism under different situations (Wang et al., 2020). When a harm crisis occurs, consumers get large amounts of information from enterprises, public opinion media, and other consumers, which will affect the attitude and purchase intention toward products involved in the crisis.

Based on the social exchange theory, social exchange is the foundation of social life, and people will examine the behavior of both parties at the cost of rewards and expenses (Homans, 1958). As a valuable way of interaction, group communication is a social exchange behavior. When the two parties in the communication were shared information about the brand, they will get the greatest return at the least cost. But people do not like being used or taking advantage of others. For this reason, group communication will abide by the principle of mutual benefit (Shin et al., 2006). People will get satisfaction from their fair social relations, and trust will establish in many successful communication and exchanges.

According to social exchange theory, consumers tend to listen to and internalize the opinions of trusted parties. As Penley and Hawkins (1985) believed, the basic problem of "what to communicate," that is, the content of communication, must be involved in communication. According to the characteristics of rational consideration and frequent interpersonal interaction in dealing with things in Chinese society (Ji, 2008), compared with enterprises and public opinion media, consumers communicate more frequently, so it is easier to obtain information about brands and products immediately, generate group identity, listen to suggestions and opinions within the group, and create an impression. This promotes the generation of consumers' brand memory. Other studies have shown that consumer attitudes will ferment and amplify under group interaction, and then group members will have the same view, so group communication will affect group member behaviors (Xu and Su, 2015). Therefore, it can be speculated that consumer group communication will have an impact on consumer brand memory. Based on the above analysis, the following assumption is proposed:

> *Hypothesis 1*: Consumer group communication has significant positive influence on brand memory formation across levels.

The mediating role of consumer product image perception

Product is the concrete manifestation of brand. As a concrete thing, it forms a specific image through our perception system. As a dimension of brand image, product image is consumers' perception of product related information after understanding brand products (Keller, 1993). Therefore, "consumer product image" in this paper refers to the specific image left in the mind of consumers through their overall understanding of the product, including the internal and external characteristics of packaging, price, quality, safety, and word-of-mouth. Along with their own purchase experience, consumers' access to product information depends on communication with other consumers. Shen et al. (2016) believes that customer interaction will reduce customers' uncertainty about products, affect their attitudes, and then affect their purchase behavior. According to the social exchange theory, consumer group communication will enable consumers to share the brand and product information they know, which includes not only the objective information about the brand and product, but also their understanding and attitude toward the brand (Zhao et al., 2016). Communication will deepen consumers' understanding and trust with each other, which affects whether consumers trust the information they share and the perceived effect (Gremler and Gwinner, 2000). In communication, the speed of information feedback among consumer groups also affects consumers' trust in information sharing within their groups to a certain extent (Sun and Guo, 2016). When the information provided by the consumer group has a certain purchasing guidance effect on the consumer, the consumer will deepen the impression of the product. According to the social exchange theory, when members have high-quality social exchanges, it is conducive to the formation of positive interactions between the two parties. When consumers' product image perception is formed, consumers will also give back to their group members as a social exchange, improve consumers' trust in the group, and form a virtuous circle. Therefore, it can be inferred that under the effect of group communication, consumers will have an impact on the image perception of brands and products. Based on the above analysis, the following assumption is proposed:

> *Hypothesis 2*: Consumer group communication has a significant positive impact on consumer product image perception at different levels.

According to the associative network memory model, when consumers obtain information from the outside, an information node in their brain will be activated. When the information node spreads to its associated nodes and reaches a critical value, the information node will be recalled (Keller, 1993). Therefore, Keller

(1993) believes that in the brand knowledge map, the brand image is an information node that arouses consumers' memory, and when these information nodes are activated, the consumers will recall information about the brand or product, which promotes their purchase behavior. Studies show that brand cognition, brand name, quality, packaging and advertising are the main factors affecting brand memory (Joshua and Hurwitz., 2009; Jennifer et al., 2015). Among these factors, consumers' perception of product image is more intuitive, easier to share and communicate, and has a more lasting memory, which plays an important role in the formation of consumers' brand memory. When consumers mention or buy a brand's production again, the reactivated product image perception will make consumers recall the memory of the brand, and choose whether to buy or not according to the memory. According to social exchange theory, when consumers can recall more positive perceptions, they will have more trust in the brand, and the better the brand memory effect, the more likely they are to engage in consumption behavior. At the same time, when consumers have more brand memory of a certain brand, they will be more inclined to this brand in the selection of similar products because of trust. Based on the above analysis, the following assumption is proposed:

> *Hypothesis 3*: Consumers' perception of product image has a significant positive impact on the formation of brand memory.

To sum up, consumer group communication affects the brand and product itself and the emotional communication of consumers within the group, which will affect the product image perception of the brand and products among group members; the consumer product image perception promotes consumers' cognition, understanding, and attitude toward brand products, and effectively promotes the formation of consumers' brand memory. According to the social exchange theory, the positive interaction established between consumer groups will enhance the level of trust between consumers. Therefore, group communication will enable consumers to have a more comprehensive understanding of a brand and its products, and will also collect more information about products. Help consumers establish product image perception from multiple perspectives, and then form corresponding brand memory to help consumers make judgments. Good group communication will deepen consumer product image perception and enable consumers to form a more comprehensive brand memory. Based on the above analysis, the following assumption is proposed:

> *Hypothesis 4*: consumer product image perception plays a cross-layer intermediary role between consumer group communication and brand memory.

Cross-level moderating of group involvement degree

Consumers are in social groups. In addition to their own perception of brands and products and communication with consumers, the ways that both consumers and groups are involved with products will change how group communication affects product image perception (Chai, 2020). The degree of involvement is the correlation between oneself and an object perceived by individuals according to their own differentiated interests, needs, and values (Zaichkowsky, 1985).

For consumers, the involved object may be a product or brand, an advertisement or motivation. Zaichkowsky (1985) believes that there are three types of involvement: advertising, product, and purchase decision involvement. The last type of involvement refers to consumers' attention to a shopping object or behavior. Specifically, if consumers perceive that products or purchase activities are more important to them, they will invest more time in product or purchase activities for information collection and comparison; this is considered a high degree of involvement (Zhang and Chen, 2008). However, if a certain consumption process perceived by consumers is not important to them, they are generally unwilling to invest too much energy in collecting information and comparison, which is a low degree of involvement (Chai, 2020). Consumers with high involvement have a better understanding of the information required for products or purchase activities than consumers with low involvement, have a higher sensitivity to product characteristics (Melvin, 2020), have their own views and attitudes toward products, and are less affected by interference from external factors. When the degree of involvement is low, consumers are more likely to accept all kinds of external information because they pay less attention to product information, meaning they will not invest a lot of time and energy into understanding and selecting a product. Therefore, in groups, the effect of product image perception through group communication will also vary with the degree of involvement. This paper examines the degree of group involvement as it refers to the overall situation of all consumers of a product. Therefore, for consumer groups with low group involvement, it is easier for group communication to promote the formation of consumer product image perception. Consumer groups with high group involvement struggle more to use group communication to promote the formation of consumer product image perception. Based on the above analysis, the following assumption is proposed:

> *Hypothesis 5*: Group involvement plays a cross-level negative moderating role between consumer group communication and consumer product image perception.

Mediations that are mediated across levels

Group communication contributes to the formation of consumers' perception of product image, but whether consumers can transform the perceived product image into brand memory also depends on the degree of consumer group involvement. This is mainly because the formation of memory is relatively complex and stable. Consumers' willingness to collect information varies with their degree of involvement (Rokon et al., 2020), which leads to a deviation in consumers' internalized memory of product image perception after group communication. Specifically, for consumer groups with low group involvement, information shared within the group will directly affect consumers' perception of product image and thus form brand memory. In addition, the low involvement group will not extensively search for or consider the accuracy of information obtained from group communication. When information sharing within the group stimulates consumers, consumers will make direct judgments about products and brands and form memories. This also explains why, during a product injury crisis, some consumers will continue to hold negative brand memories no matter how many positive reassurances authorities give. In those with a high level of group involvement, however, although the group may have a good atmosphere for product and brand information sharing, members will continue to collect relevant information after they become interested to confirm the accuracy of the obtained information. Consumers' perception of product image is formed more directly from the information obtained through communication among consumer groups, which weakens the impact of product image perception on brand memory. Based on the above analysis, the following assumption is proposed:

> *Hypothesis 6*: Group involvement significantly negatively moderates the mediating role of consumer product image perception between consumer group communication and consumer brand memory across different levels. The lower the group involvement, the stronger the effect of group communication on consumers' brand memory through consumers' product image perception, and vice versa.

Based on the above discussion, a cross-level theoretical model of the impact of group communication on consumers' brand memory is constructed (see Figure 1).

Materials and methods

Sample and procedures

In order to study more generality, our research covers different work backgrounds and different types of consumers as much as possible when selecting samples. The sample is selected from consumers who have purchased dairy products. The specific criteria are as follows: (1) In China's product injury crisis events, dairy injury crisis events occur frequently and have a great impact on consumers (Wang and Li, 2016). Therefore, research samples were selected with this background in mind. First, we should confirm whether the sample is a dairy consumer, defined as whether they have purchased one or more dairy products. (2) The number of people in the group needs to be three or more. (3) The frequency of group communication should be more than five times a week. (4) Sample occupations should be as diverse as possible.

Before the official distribution of the questionnaire, first, the researcher got in touch with the target group and the relevant responsible persons in the group and explained the content and process of this investigation in detail. After obtaining the consent of the person in charge, the number of subjects who voluntarily participated in this survey was obtained, and the time and number of subjects were determined to issue questionnaires on site. Questionnaires of the individual affiliation group and individual are mapped one-to-one through implicit numbers, the subjects are informed in advance of the anonymity and confidentiality of the questionnaires, and the survey results are only used for academic research and other matters needing attention. To ensure data security after completing the questionnaires, the questionnaires were collected and sealed on site. For researchers who are unable to distribute the questionnaires in person, the questionnaires will be distributed online. To ensure the anonymity and confidentiality of the questionnaire, the content, statistical analysis, and detailed information of the questionnaire are set to be private so that the subjects can fill it out with confidence.

This study's field survey questionnaire primarily comes from the consumer groups in the three northeastern provinces. Major

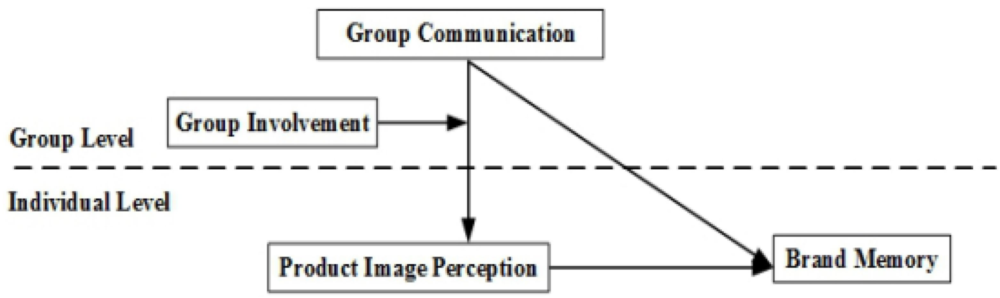

FIGURE 1
Conceptual model of how consumer group communication influences consumer brand memory.

TABLE 1 Basic situation of the sample.

Title	Options	Number	Percentage
Gender	Men	165	31.10%
	Women	365	68.90%
Education Level	Doctor's degree	6	1.10%
	Master's degrees	78	14.70%
	Undergraduates	391	73.80%
	Below undergraduate	55	10.40%
Age	Under the age of 18	35	6.60%
	19–30	397	74.90%
	31–45	73	13.80%
	45–60	22	4.20%
	over 60	3	0.60%
Occupation	Students	310	58.50%
	Company employees	81	15.30%
	Self-employed	49	9.20%
	Teachers	17	3.20%
	Civil servants	13	2.50%
	Senior managers	8	1.50%
	Other occupations or inconvenient disclosure	52	9.80%
Group Size	3–4 persons	65	56.04%
	5–6 persons	40	34.48%
	7–8 persons	10	8.62%
	more than 8 persons	1	0.86%
Group Communication Frequency	5–7 times a week	25	21.55%
	8–10 times a week	9	7.76%
	11–13 times a week	26	22.41%
	more than 13 times a week	56	48.28%

supermarket brand enterprises, such as Walmart, Yonghui, Carrefour, and other voluntary consumers, are mainly selected, and they are required to help researchers to provide group and member information. The researcher screened qualified consumer groups according to the group selection criteria and distributed questionnaires after obtaining the consent of the members of the group. Before the questionnaire was distributed, participants were told to fill in the questionnaire anonymously, and the results could only be viewed by researchers, and the data obtained were only used for academic research. Questionnaires were distributed with the consent of the participants. The online survey mainly selects social software such as WeChat group and QQ group that meet the group selection criteria, using anonymous questionnaire star software to fill in, choose a questionnaire in a different time, to provide exclusive within the group number (e.g., date + letters), to ensure the sample completed within the same group and then on to the next group to fill in, after complete set system random red envelopes, coupons, etc. as thanks.

A total of 600 questionnaires were distributed in this study, which was distributed at multiple time points. The individual questionnaire includes scales such as consumer basic information, product image perception, and brand memory, and the group questionnaire includes scales of group basic information, group communication, and group involvement. Individual questionnaires are distributed and returned 24 weeks after the group questionnaire is collected. Excluding the questionnaires that could not be paired, had too many multiple choices, too many omissions, obvious response tendencies, or did not meet the above collection principles, 530 valid questionnaires filled in by 116 groups of consumers were finally obtained, and the effective recovery rate was 88.3%. Specific information is shown in Table 1.

Measures

The measures of all constructs were adapted from previous researches. A Likert-type scale was used to assess the extent to which the respondents agreed with the 35 items in the questionnaire, where 1 = strongly disagree and 5 = strongly agree. The specific scale is as follows.

Group communication mainly refers to the scale compiled by Penley and Hawkins (1985) and modified in combination with the specific contents of this study, with a total of 13 items. In this study, the reliability coefficient of the scale is 0.894. Items include "when referring to a certain brand of dairy products, your colleagues, roommates or friends will give advice to each other," "when I ask questions, our colleagues, roommates or friends always try their best to give an answer,"

TABLE 2 Confirmatory factor analysis results.

Model		df		*RMSEA*	*IFI*	*TLI*	*CFI*
Three - factor model (X、M and Y)	1118.097	398	2.809	0.058	0.930	0.918	0.930
Two - factor model (X + M and Y)	2383.005	422	5.647	0.094	0.809	0.789	0.809
Two - factor model (X and M + Y)	3203.211	426	7.519	0.111	0.730	0.704	0.729
Two - factor model (X + Y and M)	3833.146	433	8.853	0.122	0.669	0.644	0.668
Single factor model (X + M + Y)	4489.008	434	10.343	0.133	0.605	0.576	0.604

X represents group communication. M represents product image perception. Y represents brand memory. The same below.

"our colleagues, roommates or friends will recommend dairy products to each other," etc.

Product image perception mainly refers to the scale compiled by Biel (1992) and modified in combination with the specific contents of this study, with a total of 6 items. Items include "you think the price of dairy brand products you currently buy is very affordable," etc. In this study, the reliability coefficient of the scale is 0.768.

Brand memory mainly refers to the scale compiled by Wang et al. (2020), with 12 items in total. In this study, the reliability coefficient of the scale is 0.913. Items include "I will generate positive views on a dairy product brand through the recommendation of my family, colleagues and friends," "I think the dairy product brand can attract the attention and respect of others to some extent," "if a dairy product brand promises a quality product and will assume social responsibility, I will buy the product with confidence," "When I buy products from this brand, I will pay attention to the consumption experience they provide," etc.

The degree of group involvement mainly refers to the scale compiled by Zaichkowsky (1985) and modified in combination with the specific contents of this study, with a total of 4 items. In this study, the reliability coefficient of the scale is 0.869. Items include "dairy products are important to me," etc.

From the perspective of individual consumers, because the demographic characteristics of each consumer are different, their gender, age, education and occupation may affect consumers' brand memory. From the perspective of consumer groups, since the samples of this study come from different consumer groups, the communication frequency and group size within the group will also affect consumer group communication and brand memory. Therefore, this study takes the gender, age, education level, and occupation of consumers as the control variables at the individual level, and the group communication frequency and group size as the control variables at the group level.

Data analysis methods

SPSS 25.0, Amos 23.0, Mplus 7.4 and R language programs were used for data analysis. (1) Using SPSS 25.0 and AMOS 23.0 software, the discriminant validity of the scale was tested by confirmative factor analysis. (2) SPSS 25.0 software was used for descriptive statistical analysis and correlation test between variables. (3) By calculating the data aggregation index, SPSS 25.0 software is used to determine whether the individual level data is suitable for aggregation to the team level. (4) Using Mplus 7.4 software, according to the theoretical model studied, the cross-level analysis method is used to test the theoretical hypothesis of this study to test the significance of cross-level mediating effect and moderating effect, because this method has more advantages in dealing with non-normal data. (5) The indirect effect of the adjusted cross-layer intermediary effect is tested by using the R language program. The 95% deviation corrected confidence interval is obtained by the bootstrapping method (repeated sampling 5,000 times) to test the significance of the regression coefficient. If the confidence interval (CI) does not contain zero, the corresponding effect is significant.

Results

Data analysis methods

Before distinguishing and confirming the convergent validity and discriminant validity of each variable, Harman single factor test showed that the variance explained by the first factor was 34.646%, less than 40% of the critical standard, indicating that there was no serious common method deviation in this study (Podsakoff et al., 2016). Therefore, factor analysis was used to test the structural validity of the scale. KMO = 0.929, Bartlett = 13201.667, which is significant at the level of $p < 0.001$, so factor analysis can be carried out. Then, the results of confirmatory factor analysis on group communication (represented by X), product image perception (represented by M) and brand memory (represented by Y) are shown in Table 2. Table 2 shows that the fitting index of the three-factor model is the best and far better than other competitive models. However, although this study uses a multi-level and multi-source data collection method, the answers to each variable are from the individual level. There may still be common method

TABLE 3 Descriptive and correlation analysis of main variables (n=530).

Variable		Mean	Standard deviation	1	2	3	4	5	6	7	8	9
1	sex	1.69	0.463									
2	age	2.17	0.626	−0.154**								
3	edu	2.07	0.541	0.060	−0.151**							
4	job	2.46	2.066	−0.090*	0.356**	−0.183**						
5	GCF	3.92	1.236	−0.017	0.032	0.028	−0.103*					
6	GS	2.73	0.759	−0.096*	−0.013	0.044	0.147**	−0.184**				
7	X	4.095	0.496	0.078	0.138**	−0.091*	−0.059	0.230**	−0.153**			
8	M	4.058	0.615	0.130**	0.056	−0.110*	−0.023	0.150**	−0.056	0.615**		
9	Y	3.960	0.615	0.012	0.159**	−0.098*	−0.026	0.278**	−0.096*	0.774**	0.604**	
10	W	3.877	1.107	−0.019	0.055	−0.033	0.101*	0.087*	0.011	0.055	0.067	−0.002

*p < 0.05; **p < 0.01.
the same below. GCF represents group communication frequency. GS represents group size. W represents group involvement.

deviation problems. Therefore, based on the three-factor model, We adds a common method deviation factor to construct a four-factor model. The results show that the four-factor fitting index is =2.813、RMSEA = 0.059、IFI = 0.931、TLI = 0.918、CFI = 0.931. Comparing the results of the three-factor model and the four-factor model, △RMSEA = 0.001, the difference between the two results is not more than 0.05, △IFI = 0.001、△TLI = 0、△CFI = 0.001, the difference between the two results is not more than 0.1. The four-factor fitting index is not significantly better than the three-factor model, indicating that there is no serious common method deviation problem in this study (Liu et al., 2015).

Descriptive statistical analysis of variables

Table 3 shows the descriptive and correlation among group communication, product image perception, group involvement, and brand memory. Among them, the correlation coefficients between group communication and product image perception and brand memory have reached 0.615 (p < 0.01) and 0.774 (p < 0.01), indicating that group communication is closely related to product image perception and brand memory, which is in line with the theoretical expectation.

Data aggregation

Group communication and group involvement are variables at the group level. Therefore, we first need to check the consistency of opinions among members within the team to aggregate the individual level data to the group level. This paper uses the intra group rater reliability Rwg(j) and intra group correlation coefficient ICC to judge whether the perceived degree of group communication and group involvement at the individual level can converge to the group level. The results showed that ICC(1) = 0.758 and ICC(2) = 0.935 were higher than the critical value of 0.500. The average Rwg(j) is 0.985, which is greater than the critical value of 0.700 (James et al., 1984). ICC(1) = 0.778 and ICC(2) = 0.941, which were higher than the critical value of 0.500. The average Rwg(j) is 0.823, which is greater than the critical value of 0.700 (James et al., 1984). Therefore, it is appropriate and effective to aggregate the group communication and group involvement perceived from the individual level to the group level.

Hypothesis test

Since the data used in this study include both the group and the individual level, group communication and group involvement are at the group level, and product image perception and brand memory are at the individual level, considering that the samples in the same group are not independent individuals to a certain extent. Therefore, the path of group communication affecting brand memory through product image perception involves a cross-level role. In this study, the cross-level analysis model is adopted, and the zero model is tested first to test the rationality of cross-level analysis.

Zero model test

Zero models with product image perception and brand memory as outcome variables were set to investigate the intra group and inter group variance. The results showed that the intra group variance and inter group variance of product image perception were 0.374 and 0.147 respectively, ICC(1) = 0.502, ICC(2) = 0.822. The intra group variance and inter group variance of brand memory were 0.096 and 0.361 respectively, ICC(1) = 0.758, ICC(2) = 0.935. The results showed that the values of ICC(1) and ICC(2) of product image perception and brand memory exceeded the critical value of 0.500. Therefore, the variation based on product image perception and brand memory can be explained by group level variables and multi-layer linear regression analysis can be carried out.

TABLE 4 Cross-level model test results (n = 530).

Variables/Model	M			Y				
	M1	M2	M3	M4	M5	M6	M7	M8
Intercept item	4.066***	4.059***	3.539***	3.963***	3.952***	3.975***	2.435***	1.191***
Individual level								
sex	0.060	0.072	0.063	−0.012	−0.018	−0.016	−0.027	−0.035
age	0.051	0.040	0.002	0.022	0.021	0.017	0.017	0.027
edu	−0.104*	−0.084	−0.060	−0.038	−0.028	−0.027	−0.019	−0.015
title	−0.019	−0.017	−0.002	−0.005	−0.005	−0.003	−0.003	−0.002
M						0.116**	0.105*	0.107*
Group level								
GCF	0.073	0.010	0.005	0.110	0.030	0.108*	0.028	0.033
GS	−0.040	0.043	0.051	−0.063	0.059	−0.063	0.047	0.043
X		0.820***	0.604***		1.150***		0.837***	0.670**
W			0.097**					−0.099**
X × W			−0.274***					0.184*
Variance decomposition								
σ^2	0.188***	0.189***	0.189***	0.063***	0.063***	0.061***	0.061***	0.061***
T_{00}	0.194**	0.053**	0.023*	0.333***	0.050***	0.323***	0.043***	0.035**

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Main effect test

After controlling the gender, age, education level, occupation, group communication frequency and group size of consumers, group communication at the group level has an impact on brand memory (M5, $\beta = 1.150$, $p < 0.001$), had a significant positive effect, and the results are shown in Table 4. Thus, hypothesis 1 is supported.

Mediation test

According to Hypothesis 4, product image perception plays a positive mediating role in the relationship between group communication and brand memory. In this intermediary relationship, because only independent variables are defined at the group level, and intermediary variables and outcome variables are defined at the individual level, it belongs to the "2–1-1" intermediary model. According to the inspection procedure proposed by Baron and Kenny (1986), the "2–1-1" cross-level mediation model is divided into four steps. The analysis results are shown in Table 4.

(1) Step 1 and 2, respectively, test the zero model of brand memory and the main effect of group communication on brand memory, which has been supported. (2) In step 3, the impact of group communication on product image perception was tested. It was found that group communication (M2, $\beta = 0.820$, $p < 0.001$) had a significant positive impact on product image perception. Thus, hypothesis 2 is supported. (3) In Step 4, the product image perception was put into the equation, and the result showed that the product image perception (M6, $\beta = 0.116$, $p < 0.01$) had a significant effect on brand memory, and hypothesis 3 was supported. Then group communication and product image perception were put into the equation at the same time. The results showed that product image perception still had a significant impact on brand memory, and group communication (M7, $\beta = 0.837$, $p < 0.001$) had a significant effect on brand memory. To further verify the mediating effect of product image perception, this study uses the Monte Carlo method to repeat random sampling 20,000 times to calculate the confidence interval of mediating effect. The results show that the indirect effect of group communication on brand memory through product image perception is 0.312, and the 95% confidence interval is [0.03, 0.61], excluding 0. According to the above results, product image perception plays a mediating role between group communication and brand memory. Therefore, hypothesis 4 is supported.

Moderated mediating effect test

This step tested the moderating effect of group involvement. Table 4 showed that group communication had a significant positive effect on product image perception (M2). Group communication and group involvement had significant effects on product image perception, and the regression coefficients were 0.604 (M3, $\beta = 0.604$, $p < 0.001$) and 0.097 (M3, $\beta = 0.097$, $p < 0.01$), respectively. After the addition of the interaction term, the interaction term had a significant effect on product image perception ($\beta = -0.274$, $p < 0.001$), which indicates that group involvement plays a moderating role between group communication and product image perception. Hypothesis 5 can be verified.

To more intuitively reflect the moderated effect of group involvement, this paper draws the regulatory effect interaction diagrams of group involvement at the level of one standard deviation higher and lower than the mean (as shown in Figure 2). The results of simple slope analysis showed that the degree of group involvement was higher ($\beta = 0.330$, $p < 0.01$), the relationship between group communication and product image perception

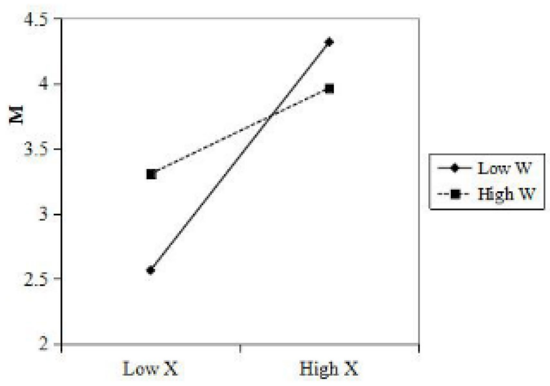

FIGURE 2
The moderating effect of group involvement on group communication and product image perception.

TABLE 5 Analysis results of cross-level moderated mediating effects.

Effect / Mediating path	Moderated variable	Coefficient	95% confidence interval	
			LLCI	ULCI
Indirect effect/ Product image perception	High group involvement	0.481***	0.051	0.78
	Group involvement	−0.278***	−0.363	−0.035
	Low group involvement	0.729***	0.087	1.046

***$p < 0.001$.

under the condition of low group involvement ($\beta = 0.878$, $p < 0.001$), hypothesis 5 was further verified.

Hypothesis 6 was tested based on Preacher and Selig (2012) and the results are shown in Table 4. Group communication had a significant positive effect on brand memory (M5). After the addition of mediating variables and interaction terms, product image perception had a significant positive effect on brand memory (M8, $\beta = 0.107$, $p < 0.05$). After these steps, the effect of interaction term on brand memory was still significant (M8, $\beta = 0.184$, $p < 0.05$).

To further verify the indirect effects of cross-level mediated effects, according to Edwards and Lambert's (2007) suggestion, this study used Mplus 7.4 to establish the path coefficient model, and added parameters on the basis of model 8, namely, high level of population involvement (+1SD) and low level of population involvement model (-1SD). Then, the R program was applied to perform 5,000 times of bootstrapping to obtain the confidence interval. The results are shown in Table 5. The results show that, in the case of high level of group involvement, the mediating effect of product image perception is significant, the coefficient is 0.481, 95% confidence interval is [0.051, 0.78], excluding 0. In the case of low group involvement level, the mediating effect of product image perception is also significant, with a coefficient of 0.729, 95% confidence interval of [0.087, 1.046], excluding 0. These results indicate that group involvement can moderate the mediating effect of group communication on brand memory through product image perception, so hypothesis 6 has been verified.

Conclusion

Discussion and conclusion

In response to the calls for additional research from previous studies, this study investigated why and under what circumstances consumer group communication had an impact on the formation of consumer brand memory in the context of product injury crisis (Wang et al., 2020). By introducing product image perception from the perspective of consumer perception as a mediating variable and consumer group involvement as a moderating variable, the results show that consumer group communication has a significant cross-level positive impact on the formation of brand memory. According to social exchange theory, this study found that consumer product image perception is an important mechanism connecting consumer group communication and the formation of brand memory, which indicates that consumer group communication can affect consumers' positive cognition and attitude about products, which can then affect consumers' brand memory. The results also show that consumer group involvement can moderate consumer group communication across levels and influence consumer product image perception, which can then affect consumer brand memory. When group involvement is low, group communication can play a more significant role and promote consumers to form positive brand memories. This shows that in the context of the injury crisis, the reasons that can ultimately influence consumers to change their brand memory are related to consumers themselves and consumer groups. When consumers or groups know a lot about a product or brand, consumers will use group communication as a channel to collect information to supplement their cognition of the product or brand. At this time, consumers are often loyal customers of the brand. Once the brand memory is formed, it is difficult to change; when consumers themselves or the group do not know a certain brand, because they have less information and compare with members outside the group, consumers are more willing to trust members in the group to reduce risks. At this time, consumers' cognition of the brand relies more on information sharing within the group, which leads to the content or results of group communication often making consumers directly remember the brand. This also further demonstrates the effectiveness of consumer group communication that is needed to take specific conditions (such as the degree of group involvement) as the premise and guarantee.

Theoretical implications

First, previous studies had primarily focused on the impact of enterprise products and behaviors on consumer brand memory at the individual level (Feng et al., 2019). This study began from the novel perspective of group communication at the group level and verified that group communication has significant cross-level positive impact on consumer brand memory. Both expand the consumer group communication relationship with brand memory theory. Additional research should continue to explore other groups of consumers level variables (e.g., group identification, group interactions, group emotions, etc.) and consumer brand memory or other activities (such as buying decision behavior, brand communication, brand switching behavior intentions, etc.) to provide a useful reference.

Second, although existing research does focus on the mediating role of consumer perception perspective between consumers and brands, most studies look at the perception of products based on consumers' personal characteristics, and few involve the impact of consumer groups on consumers' personal perception. From the perspective of social exchange theory, this paper takes product image perception as a mediating variable at the individual level and tests the cross-level mediating effect of product image perception between group communication and brand memory. It can not only more completely present the complex transmission mechanism of group communication affecting brand memory, but it also effectively makes up for the deficiency in previous studies, providing an enlightening idea for subsequent studies on the mediating mechanism of consumer brand memory based on the group and individual levels.

Third, this study found that the degree of group involvement negatively moderated the effect of group communication on product image perception, and further moderated the indirect effect of group communication on brand memory through product image perception. Rooted in China's local situation and product injury crises, it not only responds to the call of the academic community to examine China's local situation, it also provides a local empirical argument for the significant impact of consumer group communication on consumers' brand memory and cognitive behavior in the development of China's domestic brand marketing.

Managerial implications

First, enterprises can properly participate in the communication between consumers to improve consumers' brand memory. For example, online sales channels can invite consumers who have purchased products to join product exchange groups to understand consumer needs and suggestions through communication with consumers. They can also be encouraged to recommend the product to friends or family members who are interested in the group and have the same purchase demand in exchange for secondary purchase discounts and gifts. This can help promote a good group communication effect.

Second, enterprises should create a good communication atmosphere between consumers and between consumers and enterprises, should also and provide necessary conditions and guarantees. For example, enterprises and brands can optimize product performance, services, and improve product quality according to consumer feedback. Enterprises can build online and offline communication platforms to provide hardware support for communication between consumers. By providing brand or product related knowledge, they can help consumers better understand the brand and product concept and improve the intention of positive communication among consumers.

Finally, enterprises should make special plans for groups with different levels of understanding. For example, when the group has a high understanding of the brand and product, it can provide more features and highlights of the product, as well as the core competitiveness and competitive advantages of its own product compared with similar brand products. When consumers have little to no information about brands and products, companies can provide a more intuitive level of product information, such as the high-quality raw materials, the preferential benefit price, exquisite packaging information, and similar items to stimulate interest from consumers and potential consumers. This will help them understand why the brand is interesting and create the foundation of a good brand memory, promoting purchase behavior.

Limitations and directions for future research

Although this study tries to ensure the objectivity and scientificity of the research process, there are still some deficiencies.

Although the data sources are multi-time, multi-level and multi-reporter, it is still impossible to infer the potential causality. Future research can use combine data with experimental research to further explore the causal relationship between consumer group communication and brand memory.

This study mainly uses the questionnaire method to collect data, and the reporter makes a subjective evaluation of the items. Therefore, there is still a potential risk of common method deviation. To avoid this problem, future research can combine subjective evaluation with objective data, such as using objective indicators to evaluate consumer brand memory, to provide more effective data support.

This study verifies the restriction of involvement degree on the effectiveness of group communication. Future research can further explore other possible boundary conditions, such as group identity, to more systematically understand the factors influencing the formation of consumer brand memory.

In the process of data collection, this study also found that blockchain technology can provide a more secure and reliable data collection method, and provide technical guarantees of security, authenticity, and privacy for group communication effects and consumer behavior data. Therefore, in future research, it is possible to introduce blockchain technology to analyze consumers' consumption behavior in the context of past consumption and evaluation data, and to compare and analyze the impact of consumer group communication on brands in the context of differentiated group communication information authenticity perception.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

LW and YWu: conceptualization. YWu: methodology, software, validation, and formal analysis. YWu and YWa: data curation. LW, YWu, and YWa: writing-original draft preparation. LW: writing—review and editing and funding acquisition. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Hate the Sin, Love the Sinner: Examining the Role of Religiosity on Generation M's Attitude Toward Purchasing Luxury Counterfeiting Products in Social Commerce

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Counterfeiting has become a prevalent business worldwide, resulting in high losses for many businesses. Considerable attention has been paid to research an individual attitude toward purchasing luxury counterfeit products in the offline context. However, there is currently lesser-known literature on the given phenomenon in the context of social commerce. Moreover, researchers observed that counterfeiting consumption is associated with consumer ethical values or beliefs. Practitioners and researchers are keen to find those factors that affect consumers' ethical consumption behavior to reduce pirated products' demand. However, the role of religion in shaping ethical behavior is less documented in the counterfeiting context. Therefore, this study investigated the effect of religiosity on the counterfeiting of luxury products in Pakistan. A five-dimensional Islamic religiosity model was adopted to understand the consumption phenomena. For quantitative research, cross-sectional data were collected from the generation M of Pakistan through self-administrative questionnaires. A total of 394 valid responses from active online users were collected to empirically examine the conceptual model by employing the partial least square structural equation model (PLS-SEM). The results reveal that all five dimensions of religiosity negatively affect the attitude of generation M. Moreover, it is found that knowledge has the highest negative effect on attitude, followed by orthopraxis, experience, central duties, and basic duties. The study also explains the theoretical and practical implications of the research. Finally, limitations and future research were also discussed.

Keywords: counterfeiting, religiosity, attitude, generation M, Pakistan

INTRODUCTION

The virulence of the COVID-19 coronavirus pandemic has shaken the world (Omar et al., 2021). This pandemic hit hardly the world economies and societies. COVID-19 outbreak has volatility changed the working, communication, and buying behaviors (Di Crosta et al., 2021). The actions, attitudes, and purchasing patterns of the people differ in the pandemic situation from the normal times (Kamp et al., 2010). Accordingly, people have changed their buying behaviors in this COVID-19 pandemic situation around the globe especially in developing countries (Alhaimer, 2022). In this tough economic situation of COVID-19, the buying patterns of consumers toward necessities and non-necessities have changed. Therefore, the COVID-19 situation has increased anxiety, fear, and depression and also has an impact on spending and buying patterns (Di Crosta et al., 2021). According to Henderson and Schnall (2021), high intensity of fear, anxiety, and worry encouraged the harsher moral judgment toward buying behaviors as compared to the lower intensity of the individuals. Counterfeiting has arisen as a major thread in all product categories (Khan-Mohammad, 2020). Counterfeits are manufactured illegally and infringe on legal rights (Singh et al., 2020). Counterfeit is considered a dishonest practice, inferior in quality, without seeking legal authorization, and economically harms corporations around the globe (Yaakop et al., 2021). Counterfeiting is a growing problem and a hot topic for scholars, legislators, companies, and non-governmental organizations (NGOs) due to its enormous impact on economic development (Varela et al., 2021). According to the International Organization for Standardization ISO Report 2014, 5–7% of world trade accounted for counterfeit products, costing an estimation of 2.5 million jobs lost. In addition, 5% of the products imported by European countries were counterfeited (OECD/IEA, 2016). As per the report of the Executive Board (2020), counterfeit products have a worth of $1.7 billion in 2015 and a predicted $4.2 billion in the year 2022. Recent figures indicate that $4.5 trillion is traded in counterfeit products each year, with counterfeit luxury items accounting for 60–70% of the overall value (Fontana et al., 2019). According to the international black market figures, counterfeit shoes, clothing, and watch sales alone cost the industry $25 billion (Havocscope, 2022). The rising counterfeiting tendencies directly affect job losses, brand reputation, and national economies. For example, counterfeiting has resulted in the loss of nearly 2.5 million jobs globally (Davidson et al., 2019). Despite the enormous effort and resources committed to seizing counterfeit luxury products like handbags, watches, garments, jewelry, glasses, and shoes, the counterfeit industry continues to flourish in many developing countries, including Pakistan, due to low income and lack of law and order situation (Niaz, 2020). Furthermore, due to ineffective law enforcement, consumers in developing countries, such as Pakistan, are increasingly turning to counterfeit products (Niaz, 2020). Pakistan is among the top 10 nations globally from where counterfeit products originate, and counterfeit goods are readily accessible and marketed openly throughout the country (Saeed and Sadiq Paracha, 2019). The presence and spread of counterfeiting are directly linked to customer demand, which is the primary driving factor behind every market. To reduce the demand for counterfeit luxury products, anti-counterfeiting measures must explore the underlying consumer motives for purchasing them.

Religion plays an extremely important role in guiding human behavior. Although, the association between religion and buying behavior was already established (Yaakop et al., 2021). Despite extensive research in this area, there are still several gaps in the literature that this study aims to contribute. First, there is currently a lack of research on counterfeiting that focuses on the role of religiosity in that phenomenon. Previous researchers have also confirmed the relationship between individuals' religiosity and their attitudes toward various ethical and moral problems such as alcohol consumption (Russell et al., 2020), illicit drug use (Peltzer et al., 2016), viewing internet pornography (Perry and Whitehead, 2019), and tax evasion (Khalil and Sidani, 2020). However, few studies have looked at how religiosity influences counterfeiting behavior. Although there is no doubt that many researchers have studied the impact of religiosity on consumption behavior, the operationalization of the religiosity construct is still ambiguous (El-Menouar, 2014; Hassan, 2014; Ali et al., 2019a; Aslam et al., 2019). Moreover, a debate regarding religiosity as a unidimensional or multidimensional construct is discussed in several studies (El-Menouar, 2014; Islam and Chandrasekaran, 2015; Souiden and Rani, 2015; Felix and Braunsberger, 2016; Souiden et al., 2018), but the adoption of Glock (1972), multidimensional religiosity model, has been highly appreciated by most of the researchers (Niaz, 2020). Moreover, in the recent study of counterfeiting products, it is emphasized that researchers should use the multidimensional religiosity model in future studies for a better understanding of phenomena (Souiden et al., 2018). However, though researchers have found it useful and widely adopted, the Glock (1972) model has been criticized for its applicability in non-western or Islamic contexts (El-Menouar, 2014; Niaz, 2020). El-Menouar (2014) developed a multidimensional religiosity model in a non-western context by acknowledging this criticism. But, only a few studies have applied the El-Menouar (2014) multidimensional religiosity model in the Islamic and non-western contexts. So, the study's first objective is to empirically test the El-Menouar (2014) religiosity model in a counterfeiting context.

Second, past research has found various significant predictors accountable for luxury counterfeit buying intention in the offline context but few in the online context (Islam et al., 2021). The internet makes purchasing counterfeits simpler for customers, as around 70% of counterfeit transactions occur online (Mooij, 2018). Practitioners have noticed the impact of counterfeit purchasing intention as a result of the internet in the digital revolution era in developing countries, such as Pakistan (Niaz, 2020). In Pakistan, the sales of counterfeiting products have been rising for the last few decades. Fewer effects have been taken into account in investigating the association of purchase intention of counterfeiting products (Cordell et al., 1996; Nurhayati and Hendar, 2020; Yaakop et al., 2021). Nurhayati and Bandung (2019) strongly recommended investigating the impact of religiosity and purchase intention. Moreover, religion is considered a strength to determine the purchase intention response of the consumers (Bupalan et al., 2019). Pakistan has the 4th most internet users per capita in Asia and the 10th most globally (Data Reportal, 2020). Pakistan has 76.38 million internet users; of which 44.10 million are online shoppers (Data Reportal, 2020). Moreover, Pakistan has 46.00 million social media users, which climbed by 9.0 million between 2020 and 2021, emphasizing the relevance of excessive smartphone usage and social commerce (S-commerce) (Data Reportal, 2021).

Third, the research mainly focused on generation M's attitude toward counterfeiting products. Generation M refers to millennial Muslims of the new generation (Junaid et al., 2019). This Muslim generation has distinctive and unique needs, wants, and beliefs, making it a vital segment to study. Generation M is aware of Islamic preaching, portrayed in its consumption. They mainly focus on ethical consumption and avoid that behavior against Islam's basic rules (Ali, 2017). Pakistan is one of the world's youngest countries, having the largest population of generation M (Ali, 2017). Today Pakistan has the most significant percentage of young people recorded in history. According to research reports, with a 97% Muslim population, around 64% of the population's age is less than 30, and 29% lie between 15 and 29 years (Kundi, 2018). Hence, it is essential to study generation M's perspective regarding counterfeiting products in Pakistan, which is absent in the literature. So this study aims to fulfill this research gap.

LITERATURE REVIEW

Religiosity

Religion is an essential cultural value because it is unique, extensive, and dictates social institutes that profoundly affect the individual and society's perception, belief, and behavior (Mokhlis, 2006). Theoretically, religious values can encourage and influence the behavior of individuals (Williams, 1979). Religious values differ from personal values because religious values are moral concepts derived from scripture-based religious traditions, such as the Quran and Hadith for Muslims, deep-rooted in the individuals' lives (Choi and Dooley, 2009). Religious activities play an essential role in shaping peoples' approach to life, and religiosity is perceived as an essential factor that influences and motivates the beliefs, values, and practices of both individuals and society (Saroglou et al., 2004). Religiosity refers to "the religious belief a person practices in his life, and religiosity is the commitment to the religious practices" (Essoo and Dibb, 2004). Previous authors argue that religiosity is a continuous process (Beit-Hallahmi and Argyle, 1997) because religion may give meaning to the life of individuals, give a sense of achievements, security access to the social network and relationships, and also provides a set of standards for judging and guiding the actions of individuals (Rohrbaugh and Jessor, 1975). Previous researchers have confirmed the relationship between religiosity and attitudes of individuals toward different moral and ethical issues, such as the illegal use of the drug (Wagener et al., 2003; Mellor and Freeborn, 2011; Sanchez et al., 2011), viewing obscene internet materials (Rostosky et al., 2004; Stack et al., 2004), students cheating (Barnett et al., 1996; Allmon et al., 2000), business ethics (Conroy and Emerson, 2004) Insider trading (Terpstra et al., 1993), alcohol consumption (Brown et al., 2001; Brechting et al., 2010), and downloading (LaRose et al., 2005).

Nevertheless, there is still limited research addressing the role of religiousness in counterfeiting and digital piracy phenomena (Arli et al., 2017; Souiden et al., 2018). Previous studies measured religiosity through different scales and disagreed on religiosity as a unidimensional or multidimensional scale while measuring religiosity determinants (Souiden and Rani, 2015). But according to Glock and Huber, religiosity is measured multidimensionally, and the Glock religiosity model has an exploratory power for identifying different aspects of Muslim religiosity. These measuring instruments tend to have various problems, such as measuring religiosity through a unidimensional scale and interpreting research findings within Christian and western religiosity principles (Aji, 2018). Therefore, this study used (El-Menouar, 2014) model to measure religiosity because previous authors ignored the religiosity model which is developed by El-Menouar (2014), and this scale is more suitable and significant in the Muslim context, and the dimensions of this model are Basic Duties, Central Duties Experience, Knowledge, and Orthopraxy (Farrag and Hassan, 2015; Aji, 2018).

The Role of Counterfeiting According to the Quran

According to the Quran verses, counterfeiting is prohibitive in Islam because Islam said any activity leading to such action is considered a fraud. Islam forbids all kinds of cheating and all deceiving acts, whether in buying and selling fraud or between people in any other matter. All Muslims are urged to be honest and trustworthy in everything they do in all situations.

يَـٰٓأَيُّهَا الَّذِيْنَ اٰمَنُوْا لَا تَخُوْنُوا اللّٰهَ وَالرَّسُوْلَ وَتَخُوْنُوْٓا اَمٰنٰتِكُمْ وَاَنْـتُمْ تَعْلَمُوْنَ

"O you, who have believed, do not deceive Allah and the Messenger or deceive your trusts while you know (the consequences)" (Quran 8:27).

وَلَا تُجَادِلْ عَنِ الَّذِيْنَ يَخْتَانُوْنَ اَنْفُسَهُمْ ۗ اِنَّ اللّٰهَ لَا يُحِبُّ مَنْ كَانَ خَوَّانًا اَثِيْمًا ۙ

"And do not argue on behalf of those who deceive themselves. Indeed, Allah loves not one who is a habitually sinful deceiver" (Quran 4:107).

إِنَّ ٱللَّهَ يَأْمُرُكُمْ أَن تُؤَدُّوا۟ ٱلْأَمَٰنَٰتِ إِلَىٰٓ أَهْلِهَا

وَإِذَا حَكَمْتُم بَيْنَ ٱلنَّاسِ أَن تَحْكُمُوا۟ بِٱلْعَدْلِ ۚ إِنَّ ٱللَّهَ نِعِمَّا يَعِظُكُم بِهِۦٓ ۗ إِنَّ ٱللَّهَ كَانَ سَمِيعًۢا بَصِيرًا

"Indeed, Allah orders you to render the trust to their owners, and when you judge between people to judge with justice. Excellent is that which Allah instructs you. Indeed, Allah is ever Hearing and seeing" (Quran 4:58)

إِنَّ ٱللَّهَ يُدَٰفِعُ عَنِ ٱلَّذِينَ ءَامَنُوٓا۟ ۗ إِنَّ ٱللَّهَ لَا يُحِبُّ كُلَّ خَوَّانٍ كَفُورٍ

"Lo! Allah defended those who are true. Lo! Allah loved not each deceitful ingrate" (Quran 22:38).

وَأَوْفُوا۟ ٱلْكَيْلَ إِذَا كِلْتُمْ وَزِنُوا۟ بِٱلْقِسْطَاسِ ٱلْمُسْتَقِيمِ ۚ ذَٰلِكَ خَيْرٌ وَأَحْسَنُ تَأْوِيلًا

"And measure full when you measure. And weigh with an even balance. This is better, and its end is good" (Quran 17:35).

وَيْلٌ لِلْمُطَفِّفِينَ الَّذِينَ إِذَا اكْتَالُوا عَلَى النَّاسِ يَسْتَوْفُونَ وَإِذَا كَالُوهُمْ أَوْ وَزَنُوهُمْ يُخْسِرُونَ

"Woe to the defrauders who use short measures, who, when they measure [a commodity bought] from the people, take the full Measure, but diminish when they measure or weigh for them"(Quran 83:1,2,3).

يَٰٓأَيُّهَا ٱلَّذِينَ ءَامَنُواْ لَا تَأْكُلُوٓاْ أَمْوَٰلَكُم بَيْنَكُم بِٱلْبَٰطِلِ إِلَّآ أَن تَكُونَ تِجَٰرَةً عَن

تَرَاضٍ مِّنكُمْ ۚ وَلَا تَقْتُلُوٓاْ أَنفُسَكُمْ ۚ إِنَّ ٱللَّهَ كَانَ بِكُمْ رَحِيمًا

"O you who have believed, do not consume one another's wealth unjustly but only (lawful) business by mutual consent. And do not kill yourselves (or one another). Indeed, Allah is to you ever merciful" (Quran 4:29).

وَلَا تَأْكُلُوٓاْ أَمْوَٰلَكُم

بَيْنَكُم بِٱلْبَٰطِلِ وَتُدْلُواْ بِهَآ إِلَى ٱلْحُكَّامِ لِتَأْكُلُواْ فَرِيقًا مِّنْ أَمْوَٰلِ ٱلنَّاسِ بِٱلْإِثْمِ وَأَنتُمْ تَعْلَمُونَ

"And do not consume one another's wealth unjustly or send it [in bribery] to the rulers in order that [they might aid] you [to] consume a portion of the wealth of the people in sin, while you know [it is unlawful]" (Quran 2:188).

The Role of Counterfeiting, According to Hadith

Hadith is the saying of the Prophet Muhammad (PBUH). Hadith and Sunnah are both critical aspects of Islam. Hadith and Sunnah are two of Islam's key aspects. Hadith plays an essential role in everyone's life because it forms the person you are and who you have become along this life's journey. Following the Prophet Muhammad's (PBUH) Hadith or Sunnah, Allah's ways and the messages he sent down from the heavens will be followed to help us achieve our goals.

Prophet Muhammad's (PBUH) saying!

> "The one who deceives is not one of us" (Sahih Muslim, Book 1, No 190)

> "Don't deceive someone who trusts you so you can't cheat him" (Wasa' il ul-Shia Vol. 12 pages 364).

He (PBUH) also said: "An honest and truthful Muslim trader shall be held with the martyrs on the Day of Resurrection." (Ibn Majah, Book 12, Hadith 2222).

> "If both parties were to speak the truth and explain the faults and attributes (of the goods), then they would be blessed in their transaction, and if they said lies and concealed anything, then their transaction's blessings would be lost" (Bukhari and Muslim Resolution No. (101).

The Prophet has been recorded to state that it is not permitted to sell goods without making clear about everything, nor is it allowed for anybody who knows about the goods' defects, not to mention them. An act of dishonesty is the same as cheating. One of the worst forms of fraud is dishonesty. A dishonest person is always likely to defraud others as often as possible, such as by misuse, false claim, intimate good, and so on.

Basic Duties

The primary duties of Muslims contain all religious beliefs and attitudes. Muslims believe that there is only one God (Allah), "Indeed, your God is one" (37:4), and Muhammad is the Prophet, "o Muhammad! They say 'we testify that you are the last Messenger of Allah" (63:1). Religious teachings are based on three things, the "Quran" and the "Hadith" (Muhammad's documented saying and acts), and the shari'a (religious law) offers answers to all ethical questions (Rice, 2006). Muslims believe that religion is not only faith but a systemic entity, a complete code of life. It offers guidance for its followers' daily life, social, emotional, physical, and to some degree (Rice, 1999). Religion presumes two fundamental beliefs: faith in Allah and belief in the presence of another life. In other words, Muslims believe that their attitudes and acts in this life will affect their treatment in the hereafter (Tsalikis and Lassar, 2009). According to the Quran

> "Rather, to Allah belong the hereafter and the first life" (Quran 53:25).

Central Duties

The second dimension is the fulfillment of the core religious duties. These consist of following more or less the "five pillars of Islam" duties which consist of religious beliefs and practices (Aji, 2018): (1) "Shahadah—the profession of faith; that there is no other God than Allah and Muhammad is the messenger." (2) Five prayers in a day "And your Lord says! Call upon me; I will respond to you. Indeed, those who disregard My worship will enter hell contemptible" (40:60). (3) A month of Ramadan fasting, "O you who have believed! Fasting is prescribed to you as it was prescribed to those before you, so you can learn to control yourself" (2:183). (4) Zakat is Islamic finance in which every individual has to contribute a particular portion of wealth each year to the community. "Who is that would loan Allah a goodly loan so He may multiply it for him many times over? And it is Allah who withholds and grants abundance, and to him, you will be returned" (2:245). (5) A journey of Makkah to perform Hajj or umrah. "Indeed, the first House of worship established for mankind was at Makkah-blesses and the guidance for the whole worlds" (3:96).

Experience Dimension

The experience dimension includes people's perceptions and practices of their faith (Rehman and Shahbaz Shabbir, 2010). Experience dimension is also known as mystical religiosity and it is defined as belief and practices in which Muslims seek the truth of God's love and knowledge through God's direct personal experience (Van Summeren, 2007), such as healing through prayer, "And when I am ill, it is God who cures me" (Quran26:80). And declare (O Muhammad) that (the Quran) is a guidance and healing for the believers (Quran41:44), protecting the Quran's power, "Allah says in the Quran: never will we be struck except by what Allah has decreed for us; He is our protector. And upon Allah let the believers rely on" (Quran9:51), "And if an evil suggestion comes to you from Satan, then seek refuge in Allah. Indeed, he is hearing and knowing" (Quran7:200), brotherhood, "the believers are but brothers, so make reconciliation between and fear Allah that you may receive mercy" (Quran49:10), and reward behavior, "Is the reward of goodness anything but goodness" (Quran55:60). Indeed, Allah does not do injustice, even as much as an atoms weight; while there is a good deed, He multiplies it and gives from Himself a great reward (Quran4:40) and punish behavior, "As to those who reject faith, I will punish them in severe a punishment in this world and in the hereafter, nor will they have anyone to help" (Quran3:56) (Van Summeren, 2007; Aji, 2018).

Knowledge Dimension

The knowledge aspect involves knowledge of the person about religion. The contents of the Quran and Sunnah are usually the primary source of Islamic knowledge. Believers are expected to know a minimum of these contents. Muslims call for the in-depth understanding of equality for all human beings, a strong sense of brotherhood, good or bad deeds, including morality, modesty, humility, trustworthiness, duty, justice, patience, fairness, tolerance, ethics in dealing, care, empathy, and compassion (Rice, 1999; Ali and Weir, 2005).

> "He also says, we have revealed to you the book which clarifies every matter" (Quran 16:89).

> "Indeed this Quran guides to the path which is clearer and straighter than any other" (Quran, 17:9).

Orthopraxis Dimension

The Orthopraxis dimension of religiosity plays an important and distinct role in Muslim religiosity (Aji, 2018). Orthopraxis is defined as Muslims maintaining and practicing religious beliefs, practices, norms, and values in their daily life (Van Summeren, 2007), such as halal/haram, "O you who believe! Eat of the good things wherewith we have provided you, and render thanks to Allah if it is (indeed) He whom you worship" (Quran 2:127), the ban on interest "But Allah has permitted trade and has forbidden interest" (Quran 2:275), gender relationship, "And come not near unto adultery. Lo! It is an immorality and evil way" (Quran17:32), music (El-Menouar and Stiftung, 2014), "For the harshest of sounds, without doubt, is the braying of the ass" (Quran31:19), and differs from believer to believer, and the Muslim community fully accepts these examples as religious norms (Khadduri, 1989). The author found that people who are more orthodox strictly follow religious norms and values (Aji, 2018).

> H1(a): Basic Duties dimension of religiosity negatively affect consumers' attitude toward purchasing luxury counterfeit products.
> H1(b): Central Duties dimension of religiosity negatively affects consumers' attitude toward purchasing luxury counterfeit products.
> H1(c): The experience dimension of religiosity negatively affects consumers' attitudes toward purchasing luxury counterfeit products.
> H1(d): The knowledge dimension of religiosity negatively affects consumers' attitudes toward purchasing luxury counterfeit products.
> H1(e): Orthopraxis dimension of religiosity negatively affect consumers' attitude toward purchasing luxury counterfeit products.

Materials and Methods

Survey Design

A survey method was employed to validate the conceptual model because the quantitative research method predicts individual responses and examines the relationship between constructs (Newsted et al., 1998). Many researchers in the past have employed survey methods to study behavior in the field of social commerce (Lin et al., 2018; Liu et al., 2019; Sheikh et al., 2019). An online survey was used to collect data for this study. To manage the various responses from the respondents, the mail chimp software is used to administer all the online responses. The prospective respondents were Pakistani social media users who had at least one account on any social media platform (Facebook, Twitter, Instagram, or others). An online survey is deemed advantageous since it is less costly and gives timely replies with a broad geographic reach (Denscombe, 2006). In addition, by using an online survey, consistency between the study and data gathering contexts may be maintained (Liu et al., 2016). As a result, we believe that a survey method is the most appropriate approach for this study.

Measurement Scale

A 7-point Likert scale was used to measure all these constructs that ranged from strongly disagree = 1 to strongly agree = 7. A quantitative approach using the survey questionnaire method was used to examine the influence of religiosity on Pakistani Muslim youth's attitude toward counterfeit products. The questionnaire comprises two parts. Section A will be the attitude (5 items) (Ting et al., 2016), basic duties (3 items), central duties (6 items), knowledge (3 items), experience (4 items), and orthodox (6 items) (Aji, 2018) and section B includes demographics of age, gender, education, and income level.

Data Collection

In the current study, the non-probability sampling technique of purposive sampling was employed. It is suitable and more appropriate when the sampling frame is not available and the population is unknown (Ali et al., 2019b). Moreover, non-probability sampling techniques are suitable for theoretical generalization. Therefore, a purposive sampling technique was adopted. The data were collected from four universities in two major cities of Pakistan, namely Lahore and Multan, during the Spring 2021 semester. In coordination with the university's student affairs office, a survey questionnaire was sent to students through their email accounts. The final questionnaire and a covering letter were sent out by email to the students who requested to participate in this research. We sent 600 questionnaires through email and received 427 responses, 394 of which were usable. As a result, the response rate was 65.67%. All of the students who were asked to fill out the questionnaire had an account with at least one of Pakistan's social media websites. **Tables 1**, **2** show the respondents' demographics.

RESULTS

Structural Equation Modeling (SEM) has an advantage for statistical analysis in terms of efficiency, accuracy, and convenience over traditional multivariate statistical techniques (Usakli and Kucukergin, 2018). Moreover, SEM helps to examine both explanatory and confirmatory analysis. Structural equation modeling (SEM) has two well-known methods: covariance-based SEM (CB-SEM) and variance-based SEM (VB-SEM) (Hoyle, 1999). Partial least square (PLS-SEM) is used in this study to analyze the theoretical framework because the partial least-square SEM approach presents findings in two parts: the measurement model and the structural model. The measurement model (validity and reliability) and the structural model (testing the hypothesized relation between variables) were tested.

Measurement Model

The measurement model is used to observe the relationship between observed data and latent variables, and it also explains the calculation of variables. The advantage of this model was to assess the valuation of validity and reliability test. Construct reliability is measured using outer loading, and internal consistency of reliability was measured through composite reliability. Moreover, convergent reliability is measured through the average variance extracted (AVE) (Hair et al., 2014). To ascertain the items' reliability, the out loadings should be above the suggested value of 0.50 (Hair et al., 2014), and the composite reliability should exceed the recommended value of 0.7. The AVE value is above the threshold value of 0.50 (Anderson and Gerbing, 1988). As shown in **Table 2** (**Figure 1**), all outer loadings were found to be above the threshold values, the composite reliability (CR) value was higher than 0.70, and AVE scores were greater than 0.50.

Next discriminating validity, Heterotrait-Monotrait correlation ratio (HTMT) TEST, was used to measure discriminating validity because it is more potent than other methods. According to Kline (2015), the HTMT value should be less than 0.85, but Gold argues that the HTMT value should be

TABLE 1 | Characteristics of respondents.

	Characteristics	Frequency	Percentage
Gender	Male	227	57.61
	Female	167	42.39
Age	18–21	104	26.40
	22–25	148	37.56
	26–29	89	22.59
	30–over	53	13.45
Education	Undergraduate	176	44.67
	Graduates	153	38.83
	Postgraduate	65	16.50

TABLE 2 | Measurement model.

Constructs	Items	Loadings	AVE	CR
Basic religiosity				
	BASR1	0.693	0.510	0.862
	BASR2	0.759		
	BASR3	0.712		
	BASR4	0.716		
	BASR5	0.667		
	BASR6	0.736		
Central duties				
	CEND1	0.855	0.712	0.881
	CEND2	0.863		
	CEND3	0.813		
Experience				
	EXPE1	0.934	0.640	0.839
	EXPE2	0.789		
	EXPE3	0.652		
Knowledge				
	KNOW1	0.861	0.656	0.851
	KNOW2	0.747		
	KNOW3	0.818		
Orthopraxis				
	ORTH1	0.828	0.614	0.823
	ORTH2	0.887		
	ORTH3	0.607		
Attitude				
	ATTI1	0.707	0.565	0.838
	ATTI2	0.713		
	ATTI3	0.788		
	ATTI4	0.794		

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	ATTI4	0.794		

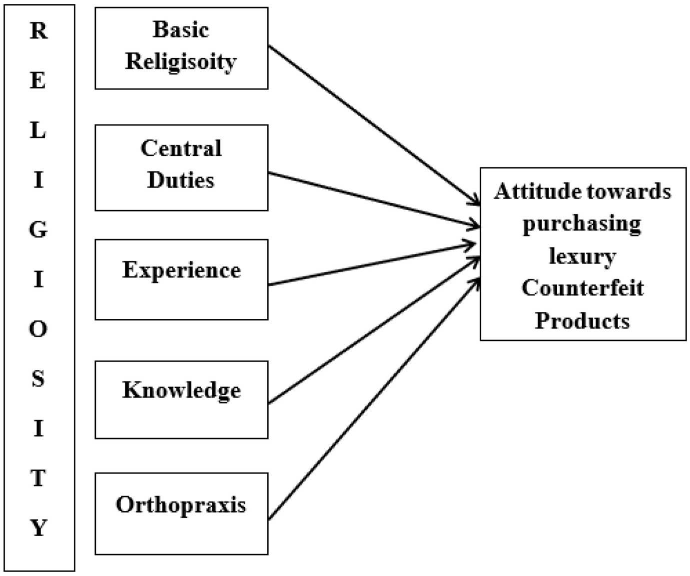

FIGURE 1 | Theoretical framework.

TABLE 3 | Discriminant validity [Heterotrait-Monotrait (HTMT) criterion].

	Attitude	Basic religiosity	Central duties	Experience	Knowledge	Orthopraxis
Attitude						
Basic religiosity	0.571					
Central duties	0.640	0.591				
Experience	0.223	0.121	0.178			
Knowledge	0.889	0.585	0.694	0.095		
Orthopraxis	0.673	0.407	0.626	0.161	0.593	

TABLE 4 | Hypotheses testing.

Hypothesis	Relationship	Path-coefficient	Std.error	*t*-value	*p*-value	Supported	f2	R2	Q2	SRMR
H1	BASRATTI	–0.071	0.034	1.982	0.018	Yes	0.008	0.524	0.204	0.076
H2	CENDATTI	–0.081	0.041	2.1051	0.024	Yes	0.010			
H3	EXPEATTI	–0.132	0.035	3.810	0.000	Yes	0.026			
H4	KNOWATTI	–0.477	0.040	11.885	0.000	Yes	0.302			
H5	ORTHATTI	–0.194	0.039	4.981	0.000	Yes	0.057			

less than 0.90 to affirm discriminant validity (Gold et al., 2001). All HTMT values are below the threshold value (see **Table 3**).

Structure Model

Once the measuring model has been confirmed as reliable and valid, the second step is to examine the structural model. The structural model involves the significance of path coefficient, *t*-values, coefficient of determination (R2), effect size (f2), and predictive relevance (Q2). Using the bootstrapping method (5,000 resample), path coefficient significance was measured. The results indicate that all hypotheses are accepted and significant toward individuals' attitudes to purchasing counterfeit products. However, findings suggested that the knowledge dimension has the most significant negative impact on attitude to use luxury counter fitting products (47%), followed by the orthopraxis dimension (19%), experience dimension (13%), central duties (8%), and basic religiosity (7%) (see **Table 4**). The R2 of attitude is 0.524, which indicates that 52% variation in attitude to use luxury counterfeiting products is due to these five religiosity dimensions, which is a moderate effect as per indication by Hair et al. (2011) who suggested that R2 values of 0.25, 0.50, and 0.75 are considered as a week, moderate, and substantial. As per Cohen (1998), effect size ranges from small to large because 0.02 is deemed to be small, 0.15 as a medium, and 0.35 as a strong effect. Moreover, this study does not rely only on R2 but also checks the predictive relevance in the recommended range, that is, $0.204 > 0$ (**Figure 2**).

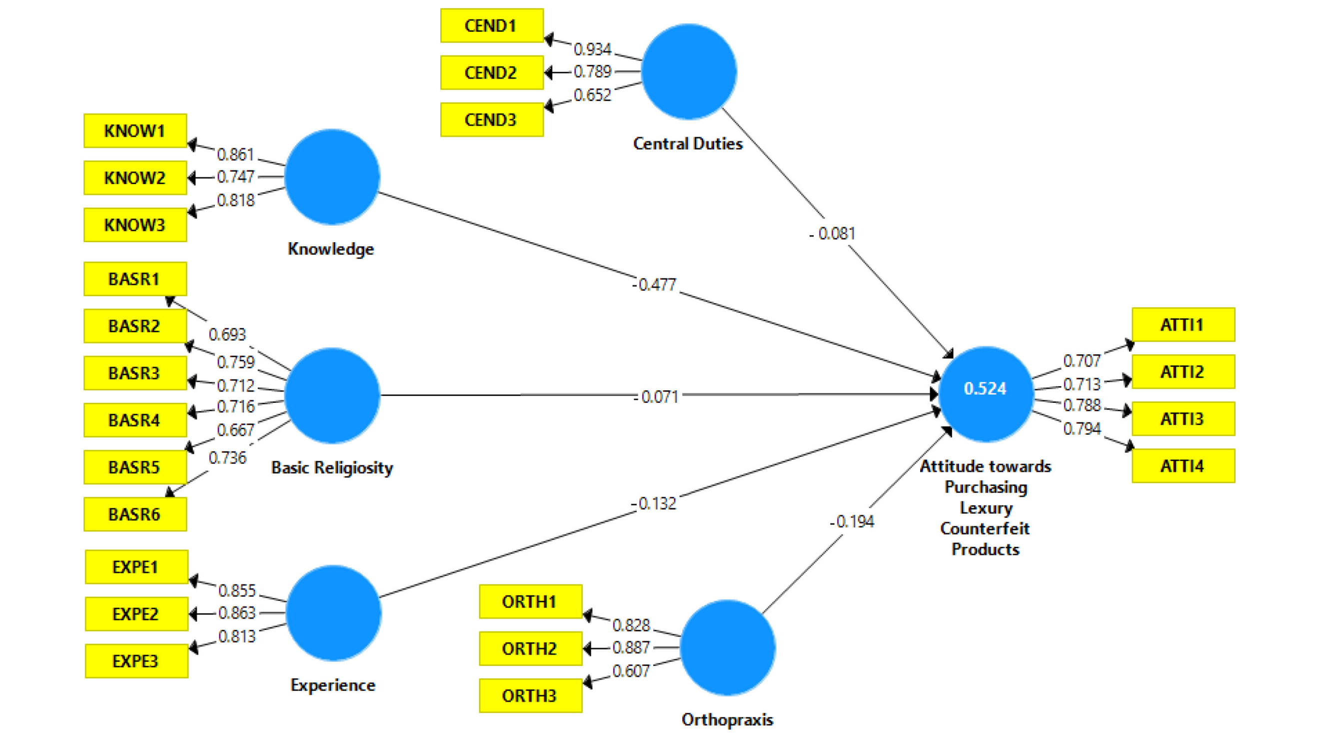

FIGURE 2 | Structural model (bootstrapping results).

DISCUSSION

Counterfeiting is a centuries-old crime, the proliferation of counterfeit products has become a global phenomenon, and indeed is a serious business issue all over the nation (Wilcox et al., 2009; Chaudhry and Stumpf, 2011). It is fascinating how religion, culture, and counterfeit products interact. However, there is a lack of academic research investigating the influence of religiosity and attitude toward counterfeit products, especially among Muslim consumers (Arli et al., 2017; Souiden et al., 2018). Because of the lack of academic research and gap in the literature, this study's primary purpose is to examine how Muslim religious commitment influences the attitude toward counterfeit products. Data analysis confirmed that five religiosity dimensions such as basic duties, central duties, experience, knowledge, and orthopraxis directly influence the individuals' attitudes toward counterfeit products.

The knowledge dimension means the person's knowledge of the content of Islam (Waardenburg, 2002). The results show that the Knowledge dimension has the highest negative impact on consumers' attitudes to buy luxury counterfeiting products in Pakistan (Beta = -0.477, $p > 0.05$). The highest impact of the knowledge dimension is in line with the expectations that more knowledge and study of basic tenets and scriptures of Islam influence Muslims to act accordingly. This finding also collaborates with the previous studies (Farrag and Hassan, 2015; Briliana and Mursito, 2017) who suggested that the contents of the Quran and Hadith completely guide the followers in every aspect of life and it also instructs them on what is right and wrong (Rohrbaugh and Jessor, 1975), and when the individual has more knowledge about the content of Quran and Hadith than the individual behaves in a relatively more.

Orthopraxis was the second-highest effective dimension of attitude toward counterfeiting product usage in Pakistan. Orthopraxis means that Muslims uphold the religious belief and follow norms and values in their daily lives (Van Summeren, 2007). The results indicated that orthopraxis significantly negatively impacts consumers' attitudes toward counterfeiting products in Pakistan (Beta = -0.194, $p > 0.05$). The results are also in agreement with previous research (Farrag and Hassan, 2015; Souiden et al., 2018), and the possible reason for these results could be the orthodox person who strictly follows the religion and did not compromise on religious norms (gender segregation, avoid shaking of hands, and avoiding listening to music) (Aji, 2018). The orthodox Muslim has a more developed fear of divine punishment. They are more afraid of being in haram than less likely to be involved in unethical and illegal activities. It has a significant negative effect on attitudes toward counterfeit products.

The experience dimension is also called mystical religion, and this may include feelings, emotions, and knowledge generated from some experience with the ultimate divine truth (Van Summeren, 2007). Empirical findings suggested that the experience dimension has a moderate negative impact on available dimensions on the consumer's attitude toward counterfeiting luxury products in Pakistan (Beta = -0.132,

$p > 0.05$). One plausible explanation for the significant results is that when the individual is more afraid of the creator, they abide by what is considered good (halal) and avoid what is deemed bad (haram), which can be seen in their practices. Muslims follow the instructions of ALLAH because they know that their excellent behavior rewards them and their bad behavior punished them in the hereafter (Souiden and Rani, 2015). These experiences of instructions motivate consumers to avoid those products that are not legal, for instance, counterfeiting luxury products.

Central duties include religious practices like prayers, dedication, and all the things a person is doing to fulfill their religious commitment. The person follows all the spiritual approaches at the collective level (Edwards and Carpenter, 2013). H2 claims that central duties directly influence the attitude toward purchasing counterfeit products. Results of central duties (Beta = -0.081, $p > 0.05$) show a negative association of religious duties with attitude toward counterfeit products with a weak effect. The results are consistent with the earlier study. Previous studies also suggest that a person with strong religious commitment is less likely to engage in unethical behavior such as illegal use of the drug (Wagener et al., 2003; Mellor and Freeborn, 2011; Sanchez et al., 2011), viewing the internet obscene materials (Wagener et al., 2003; Stack et al., 2004), students cheating (Barnett et al., 1996; Allmon et al., 2000), business ethics (Conroy and Emerson, 2004), insider trading (Terpstra et al., 1993), and alcohol consumption (Brown et al., 2001; Brechting et al., 2010). The more religious people respect, follow, and practice their religion (Souiden and Rani, 2015), and their submission must be evident in the individuals' actions.

Basic duties simply mean the core belief of every individual, individuals are committed to these beliefs on the individual level (Aji, 2018), and basic duties directly influence the attitude toward the purchase of counterfeit products. The results of this study confirm that basic duties (Beta = -0.071, $p > 0.05$) have a weak negative relationship with attitude toward the purchase of counterfeit products. Some previous researches also validate the finding of the study. Basic duties are interconnected with the core or fundamental values of Islam, which differentiate Muslims from non-Muslims. The main reasons for the results are the previous author characterized these beliefs into three types. The first type of belief explains the exitance of the divine, the second type of belief explains the purpose of the divine, and the third describes the ethical structure of the whole region (Hassan, 2007). However, basic religiosity does not guarantee the following of rituals and experiences, and it is the individual's level of religiosity that varies. That's why it is the weakest dimension affecting consumer attitude in Pakistan.

PRACTICAL AD THEORETICAL IMPLICATIONS OF THE STUDY

The study has investigated the effect of religiosity on luxury counterfeited products in Pakistan. The study has contributed theoretically in many ways. Researchers have confirmed the relationship between attitude and religiosity of individuals toward different moral and ethical issues, such as the drug's illegal use. Nevertheless, there is little literature on the relationship between religiosity and counterfeit/pirated products. So, studying the effect of religiosity will enhance the understanding of the phenomena. Second, the study has adopted a five-dimensional Muslim religiosity model to understand Pakistan consumers' behavior. However, previous researchers have adapted the translated Glock (1972) model to the Muslim context, with many limitations in explaining Muslim consumers' religiosity. So, the adoption of the Islamic religiosity model in the counterfeiting context has added new insights to the literature. Third, the study has targeted generation M for the research. Generation M is, in particular, Muslim consumers who have unique desires, consumption, and living patterns. Studying generation M in Pakistan has contributed as Pakistan has one of the largest young populations. Moreover, these consumers care about ethical and moral decision-making. However, the literature regarding generation M consumption behavior of counterfeiting products was not found. So, this research has fulfilled this gap in the literature that was absent. Finally, our research contributes to a better understanding of the online consumers' purchasing behavior in S-commerce by focusing on a crucial purchasing experience: counterfeit purchase intention. There was a lot of research on why consumers buy counterfeit products in the offline context in the past. However, previous research has not looked at the determinants influencing consumers to purchase counterfeiting products in e-commerce.

Managerial Implications

This study's results help the managers, particularly those who deal in the market of Islamic countries. First, this study mentioned that religiosity is the main factor that predicts attitude toward counterfeit products. The main problem is that people do not see themselves as unethical in buying counterfeit products. In this regard, the Muslim country used religious appeal. However, various unethical practices, including corruption and digital piracy, exist in Pakistan, so spiritual appeal plays a vital role in changing young consumers' perception because 87% of Pakistani people like to see themselves first as Muslim. So, marketers must use the Quran and Hadith in their religious appeal, which will allow them to buy the original products instead of counterfeiting. While making advertisements and marketing campaigns, the marketers must use these sentences, such as Allah said! Do not deceive others; Allah wants justice, which helps them to provoke and motivate them to buy legal or original products. Second, the managers and marketers can change these attitudes by educating and providing awareness about the side effects of using counterfeit products and original brands by providing information through blogs, emails, websites, social media, and so on, about the logo and trademarks, and their packaging. Original manufacturers also make time to time changes in the product's designs and packaging to attract and retain consumers. Hence, customers are more conscious while purchasing products.

Organizational and Institutional Implications

The governments, politicians, and news organizations should cooperate and reinforce "anti-counterfeiting organizations," such as "Pakistan's anti-counterfeiting agency, Pakistan's Standard" and "Quality Control Authority," in Pakistan to prevent counterfeiting by sharing the experience of damage and harmful effects of counterfeit products and counterfeit business. Also, enact strict rules and regulations and levy sanctions or prosecute producers, distributors, and customers, impose penalties and punishments on buyers and sellers if they have been found doing counterfeit-related activities, and finally to prevent counterfeit purchases in the online context; legislators and IT experts should rigorously monitor online retailers' activities and establish an atmosphere that prohibits the sale of counterfeit goods. IT experts can identify online sellers, disable the S-commerce platform instantly, and report them to the appropriate authorities. Online platforms are easier to track down unethical trading than offline. Finally, the COVID-19 epidemic has also influenced consumer spending. During the epidemic, both social media use and social commerce business grew. As a result, officials projected greater online buying for counterfeit products. To confront this new condition, the official must formulate policies.

LIMITATIONS AND FUTURE DIRECTIONS

Although this study has some interesting findings and implications, our research has some limitations. First, this study focuses only on attitudes toward the use of counterfeit products rather than intentions and actual behavior. So, future research can be conducted to check the intention and the actual behavior of the consumers. Second, future research could use these dimensions of religiosity (basic duties, central duties, knowledge, experience, and orthodox) on specific counterfeiting products like cosmetics, digital piracy, and online books. Third, many other factors or variables like culture, income, and education should be added to conduct further research. Fourth, this study only focuses on young Muslim consumers. Further studies can consider other religions like Christians, Hindus, Jews, and Buddhism.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval were not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/participants or patients'/participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

SA and HZ: conceptualization and writing of the original manuscript. MA and NK: review and improve. PP: data collection and analysis. All authors contributed to the article and approved the submitted version.

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