

Article

# The influence of virtual community platform attributes on Chinese luxury consumers' purchase intention: The role of policy innovation in digital infrastructure

Pei Hu<sup>1,\*</sup>, Kanakarn Phanniphong<sup>2,\*</sup><sup>1</sup> Chakrabongse Bhuvanarth International College for Interdisciplinary Studies, Rajamangala University of Technology Tawan-ok, Bangkok 10400, Thailand<sup>2</sup> Faculty of Business Administration and Information Technology, Rajamangala University of Technology Tawan-ok, Bangkok 10400, Thailand\* **Corresponding authors:** Pei Hu, [pei.hu@rmutto.ac.th](mailto:pei.hu@rmutto.ac.th); Kanakarn Phanniphong, [kanakarn\\_ph@rmutto.ac.th](mailto:kanakarn_ph@rmutto.ac.th)

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**Abstract:** This research examines the influence of virtual community platform attributes on luxury consumers' purchase intentions, with a specific focus on the role of policy innovation in digital infrastructure. The study aims to 1) identify key factors affecting purchase intentions toward luxury products in virtual environments; 2) develop and validate a structural equation model to analyze these intentions; and 3) provide actionable insights for luxury goods marketers to refine their strategies within these platforms. Utilizing a structural equation model, the study investigates the interactions among various determinants of consumer behavior in virtual communities, highlighting the impact of policy innovation. Data was collected through purposive sampling from 1142 respondents in China's top 10 high-spending cities on luxury goods, ensuring data relevance. The findings emphasize the significance of knowledge sharing, interactive communication, and leaders' opinions in virtual communities in building consumer trust and shaping perceptions of online reviews. These elements influence purchase intentions directly and indirectly, with consumer trust serving as a crucial mediator. The study reveals the substantial impact of virtual community attributes on fostering consumer trust and shaping buying decisions for luxury items, underlining the contribution of social development processes. Moreover, the role of policy innovation is found to be significant in enhancing these virtual community dynamics, suggesting that regulatory changes can positively influence consumer engagement and trust. The conclusions offer valuable implications for marketers, proposing strategies to boost consumer engagement and drive sales in virtual settings. This research contributes to the theoretical understanding of digital consumer behavior and provides practical strategies for innovation and growth within the luxury goods sector, emphasizing the critical role of policy innovation in shaping these dynamics.

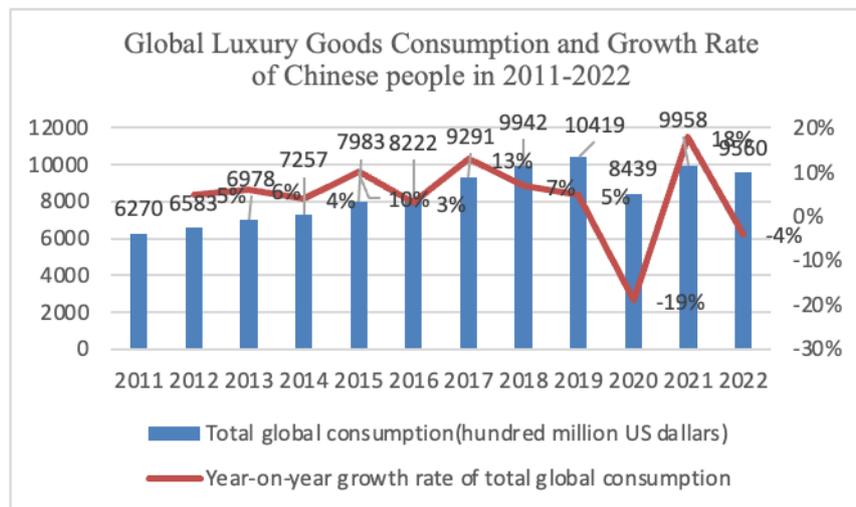
**Keywords:** policy innovation; luxury goods consumer behavior; virtual community platforms; consumer trust in digital marketing; purchase intentions analysis

## 1. Introduction

### 1.1. Research background

The primary issue addressed in this study is the influence of virtual community platform attributes on luxury consumers' purchase intentions, particularly the role of policy innovation in digital infrastructure. The luxury market is distinct due to its high price points, exclusivity, and strong brand identification, which differentiate consumer behavior in virtual environments from other markets. Focusing on the luxury sector allows for an in-depth understanding of how these high-end consumers interact within

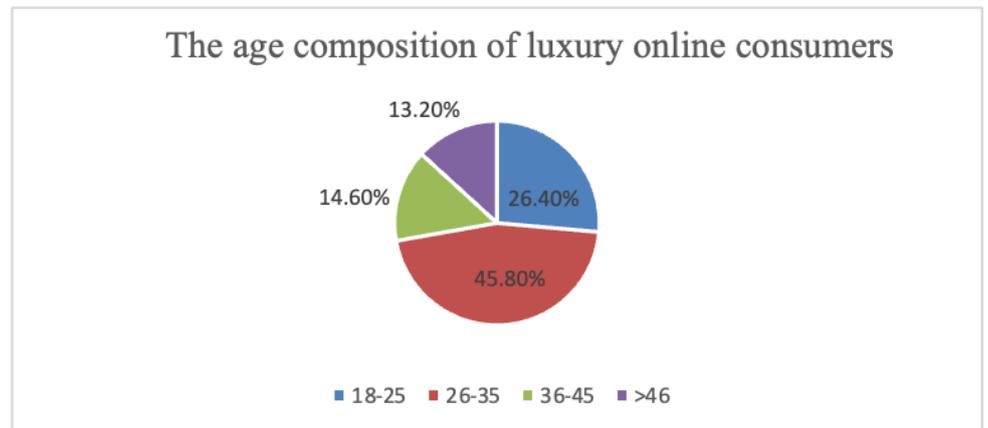
virtual communities and how these interactions shape their purchase intentions, thereby offering targeted market strategies and theoretical contributions. The luxury industry, encompassing high-end products such as fashion, jewelry, and automobiles, continues to evolve with shifts towards digital marketing, particularly on social media platforms such as Instagram and WeChat. These platforms are instrumental in targeting younger consumers like millennials and Gen Z (Rao and Ko, 2021). Through these channels, luxury brands can display their offerings, share narratives, and engage with audiences via influencer partnerships and tailored content (de Kervenoael et al., 2020). Additionally, sustainability and social responsibility are increasingly crucial, driven by consumer demand for transparency and sustainable practices (Chu et al., 2020; Jung et al., 2020). The digital revolution, propelled by advancements in technologies such as big data, AI, and blockchain, has reshaped consumer lifestyles and purchasing behaviors, making accessibility and personalized demands more pronounced. This shift poses challenges to traditional marketing models and intensifies competition, compelling brands to maintain competitiveness through unique promotions and direct consumer interactions on digital platforms like e-commerce sites and virtual communities (Chao et al., 2023; Guyader and Piscicelli, 2019). In China, the rapid development of virtual communities due to technological advancements has significant socio-economic impacts, facilitating extensive exchanges of ideas and information, and enhancing business-consumer engagement, albeit raising concerns about privacy and misinformation. As depicted in **Figure 1**, China plays a pivotal role in global luxury consumption, demonstrating consistent growth over the years, albeit experiencing a temporary downturn in 2020 due to the COVID-19 pandemic, followed by a recovery in subsequent years.



**Figure 1.** Global luxury goods consumption and growth rate of Chinese People in 2011–2022.

The innovation of policy is an essential factor in this landscape. Regulatory changes aimed at enhancing digital security, privacy, and consumer protection are crucial in building trust and promoting active participation in virtual communities. For instance, policies encouraging transparency in online transactions and safeguarding consumer data can mitigate concerns about privacy and misinformation, thereby

fostering a more trustworthy digital environment. This interplay between policy innovation and technological progress underscores the dynamic and interconnected nature of the luxury market's evolution. The Chinese luxury goods market is projected to reach 956 billion yuan, accounting for 38% of the global market (Yang, 2021). Chinese consumers continue to wield considerable influence in luxury spending. Luxury brands stimulate demand through targeted positioning and unique user-generated content, while consumer reviews significantly influence purchasing decisions (Liao and Huang, 2021). Additionally, **Figure 2** shows younger consumers are emerging as key luxury buyers, with platforms like Xiaohongshu and TikTok becoming essential for brands targeting this demographic.



**Figure 2.** The age composition of luxury online consumer.

From the perspective of consumers, existing research on luxury consumption behavior in virtual community platforms has yielded scattered findings, particularly concerning luxury brand knowledge, brand loyalty, and purchase intention. There is also limited research on luxury brands' community experiences of virtual brands and customers' purchase intention in virtual communities. It has become a trend for luxury brands to establish their own virtual communities on social media platforms. Virtual communities can promote the purchase decision of goods. However, there is little discussion from the consumer standpoint on how virtual communities affect luxury purchase intention, and further exploration is still needed.

Existing research on luxury consumer behavior within virtual communities has left certain gaps, particularly concerning the mechanisms by which knowledge sharing, interaction, and opinion leadership influence consumer trust and purchase intentions. Moreover, there is a lack of exploration into the role of policy innovation within digital infrastructure. This study aims to fill these gaps by investigating how virtual community platform attributes affect luxury consumers' purchase intentions and uncovering how policy innovation can enhance consumer trust and interaction quality.

## 1.2. Research questions

- 1) What attributes of the virtual community affect the customers' willingness to purchase luxury products?
- 2) What roles do trust and customers' online comments play in shaping purchase

intentions within virtual communities?

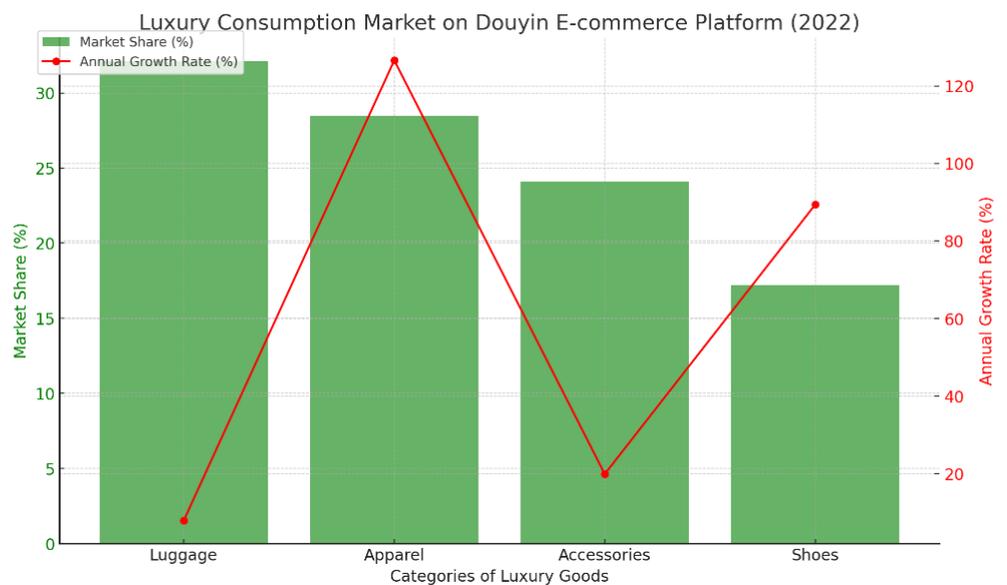
- 3) What implications can this study propose to marketing strategies applied in luxury products?

### 1.3. Research objectives

- 1) To explore factors that can explain the purchase intention toward luxury products in a virtual community platform.
- 2) To create a model for purchase intention toward luxury products in the virtual community platform.
- 3) To provide actionable insights for luxury goods marketers and promote the development of luxury goods marketing in the virtual community platform.

### 1.4. Research scope

By 2025, projections indicate that nearly a third of all global luxury goods sales will occur online, marking a 5% increase from previous estimates. This surge highlights the critical importance of digital engagement for luxury brands, as affluent consumers increasingly turn to online shopping. The ten most popular luxury brands of 2022, including Gucci, Chanel, Hermès, Dior, Louis Vuitton, Rolex, Tiffany & Co, Prada, Versace, and Armani. The leading categories in the luxury market as fashion and leather goods, automobiles, jewelry, and watches, among others. Notably, high-end clothing and jewelry were the most popular purchase categories in 2022. The luggage category dominates with a 32.1% market share and a 7.9% growth in broadcast volume. Apparel follows with a 28.5% share and a significant 126.6% increase in broadcast volume, while accessories and luxury shoes also show substantial market shares and growth rates. This data highlights the evolving landscape of luxury sales towards digital platforms and the varying consumer preferences across different luxury segments.



**Figure 3.** The luxury consumption market on the Douyin e-commerce platform (2022).

In **Figure 3**, the green bars represent the market share for each category of luxury goods, with the percentages labeled on the y-axis on the left. The red line with markers shows the annual growth rate of the broadcast volume for each category, with the percentages labeled on the y-axis on the right. This dual-axis chart serves as a comprehensive visual summary, capturing both the current market share and the rate of growth for each category of luxury goods on the Douyin e-commerce platform. This study aims to bridge the gap in understanding how virtual community attributes, under the influence of policy innovation, affect luxury consumers' purchase intentions. By focusing on the Chinese market, this research will provide insights into the dynamic interplay between digital infrastructure, consumer behavior, and regulatory policies. The findings will be valuable for luxury brands seeking to enhance their digital strategies and engage more effectively with their target audience.

## **2. Literature review**

### **2.1. Chinese and international studies**

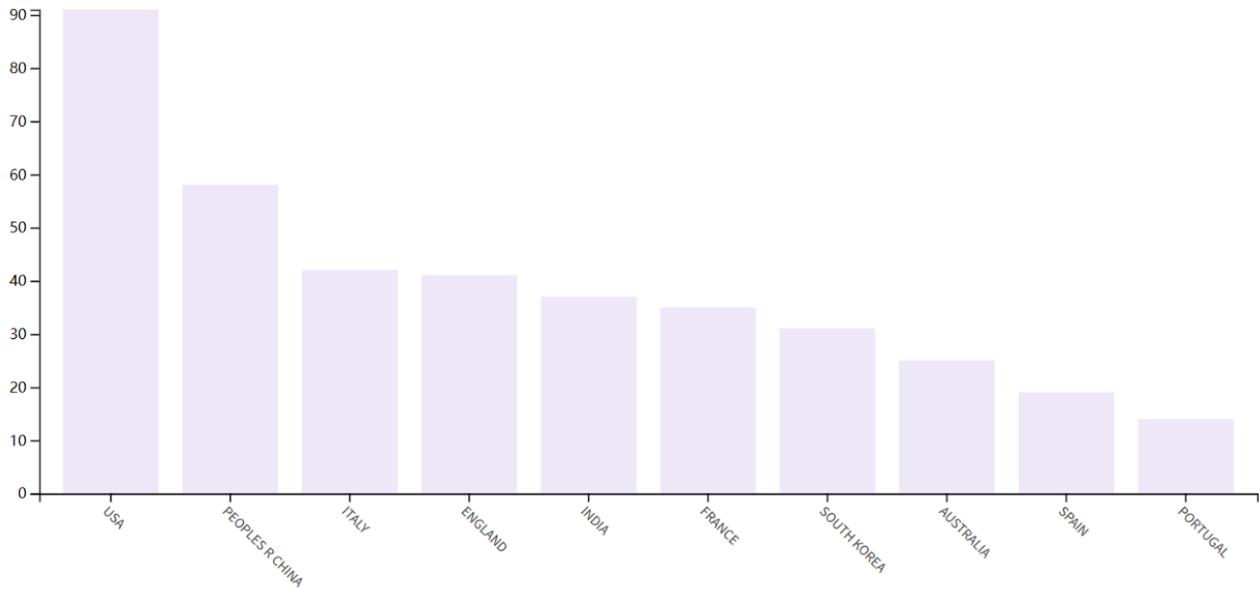
#### **2.1.1. Virtual community platform**

Virtual communities are digital spaces where individuals form networks through discussions, knowledge sharing, and interactive communication, fostering strong emotional bonds and a sense of belonging (Ma et al., 2021). These communities, characterized by the virtualization of social spaces, evolve through user self-organization across different platforms, resulting in stable social networks that enhance user engagement and loyalty (Tausczik and Huang, 2020). Information sharing within these communities not only encourages organizational citizenship behaviors but also increases transactions for associated e-commerce platforms, demonstrating a positive correlation between information sharing and community loyalty. This dynamic is essential for attracting and retaining users by boosting their trust and perceived usefulness towards brands (Le and Li, 2022). Moreover, virtual communities play a crucial role in shaping consumer brand esteem and identity, influenced by the quality of interactions across human-computer interfaces, content, and social dimensions (Zhang et al., 2019). Effective management of these interactions is necessary to maintain engagement and support community growth (Mendizabal et al., 2021). Virtual community platforms, such as Xiaohongshu in China, have become pivotal in influencing consumer behaviors, especially in the luxury sector, where they facilitate detailed product discussions, reviews, and social endorsements.

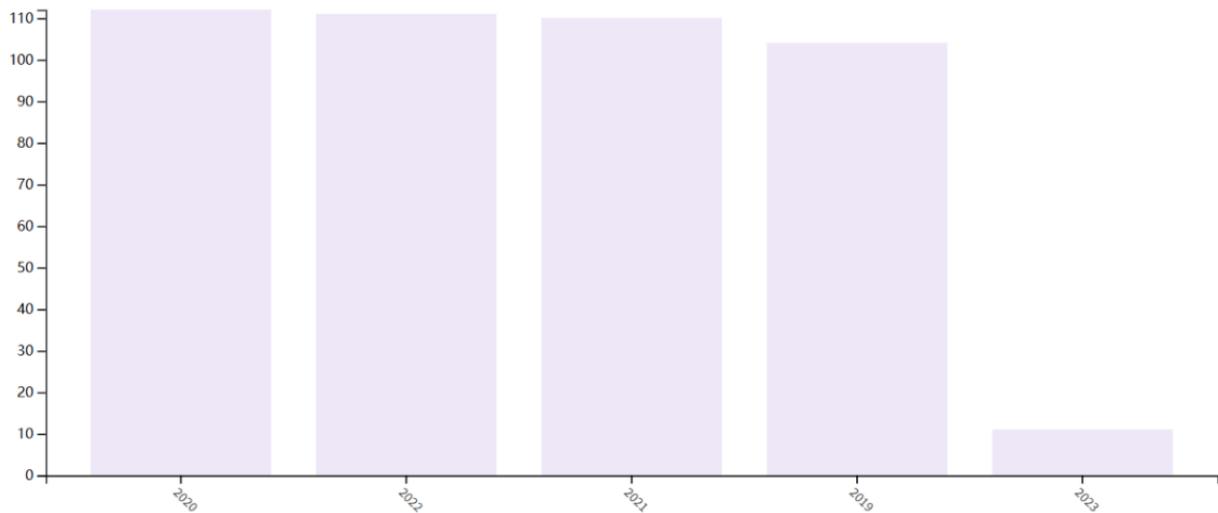
As shown in **Figure 4**, countries like the United States and China lead in luxury industry research contributions. This research focus underscores the economic significance and consumer interest in luxury goods within these regions, driving continuous innovation and market expansion.

In conclusion, **Figure 5** showed that the study highlights that research on the luxury goods industry has made certain breakthroughs in the past five years, with particular prominence observed in many developed countries (Jain et al., 2021). This industry is mainly in the business and service sectors, including hotel leisure tourism. Therefore, there is a strong alignment with current market demands to continue exploring the consumption behavior within the luxury goods industry (Pang et al.,

2022).



**Figure 4.** The contribution of top 10 countries for the luxury industry.



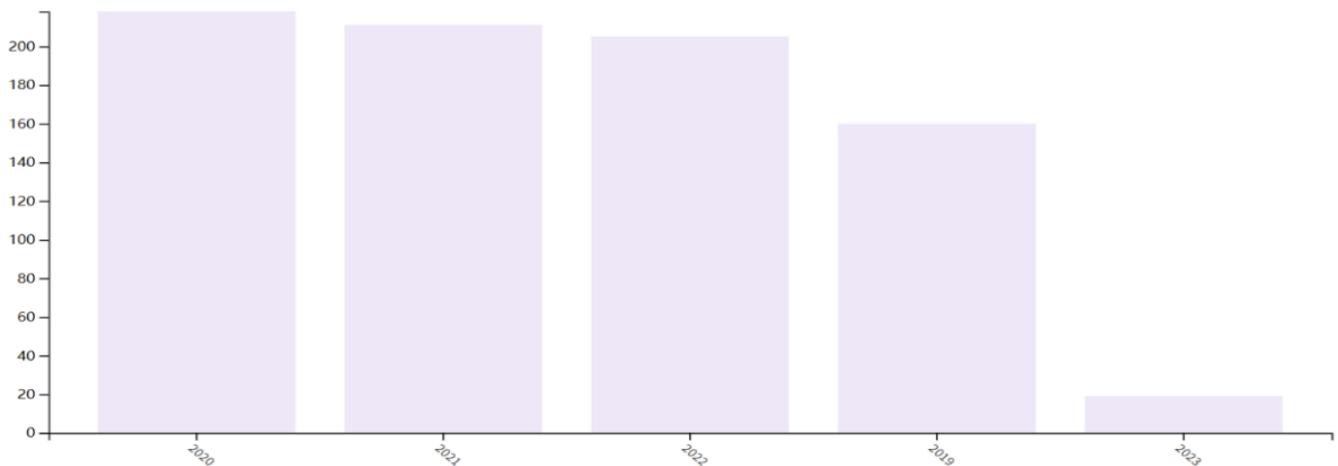
**Figure 5.** Research on the luxury industry in the 2019–2023.

### 2.1.2. Luxury commodities/luxury goods

Luxury goods, synonymous with high quality, exclusivity, and prestige, often command prices far above those of similar mass-market items (Nobre et al., 2022). This category includes designer apparel, luxury watches, premium automobiles, fine wines, gourmet foods, and exclusive travel experiences like private jets and luxury cruises. The industry, characterized by intense competition, heavily invests in marketing to bolster the exclusivity and desirability of its products. While the luxury market has experienced substantial growth fueled by higher incomes and demand from emerging markets like China and India, it remains sensitive to economic fluctuations and changing consumer trends (Cavusgil, 2021). This paper reviews the current state of luxury goods research by analyzing English-language articles from the past five

years on the Web of Science, as shown in **Figure 6**. It provides insights based on publication year, discipline, and country of origin, with notable research peaks in 2020 and consistent interest maintained through 2021 and 2022.

Studies have shown that consumer behavior towards luxury goods is significantly influenced by cultural factors, social status, and psychological motivations (Ngai et al., 2020). Additionally, the rise of digital marketing and e-commerce platforms has transformed the landscape of luxury shopping, making it more accessible to a broader audience while maintaining the essence of exclusivity through personalized marketing strategies and virtual shopping experiences (Guo et al., 2020).



**Figure 6.** Research on the luxury commodities in the 2010–2023.

## 2.2. Theoretical basis

### 2.2.1. Social exchange theory

Social exchange theory posits that human behaviors are transactions aimed at maximizing benefits while minimizing costs. It suggests that individuals assess social interactions by comparing returns against costs, with positive outcomes fostering favorable attitudes and negative outcomes prompting adverse reactions (Bagheri et al., 2021). This theory categorizes interactions into three types: negotiation behavior, where agreements dictate exchanges; altruistic behavior, involving unilateral contributions; and cooperative behavior, where parties mutually contribute. Essentially, individuals engage in social interactions based on a cost-benefit analysis, seeking to maximize gains and ensure fairness in exchanges (Cortez and Johnston, 2020; Nai, 2021). In **Figure 7**, the social exchange theory, often employed to examine luxury consumption, serves as a framework to understand the motivations behind and implications of consumer behaviors in social settings (Kim et al., 2022). This approach underscores the strategic nature of social interactions and their influence on consumer decisions within the luxury market.

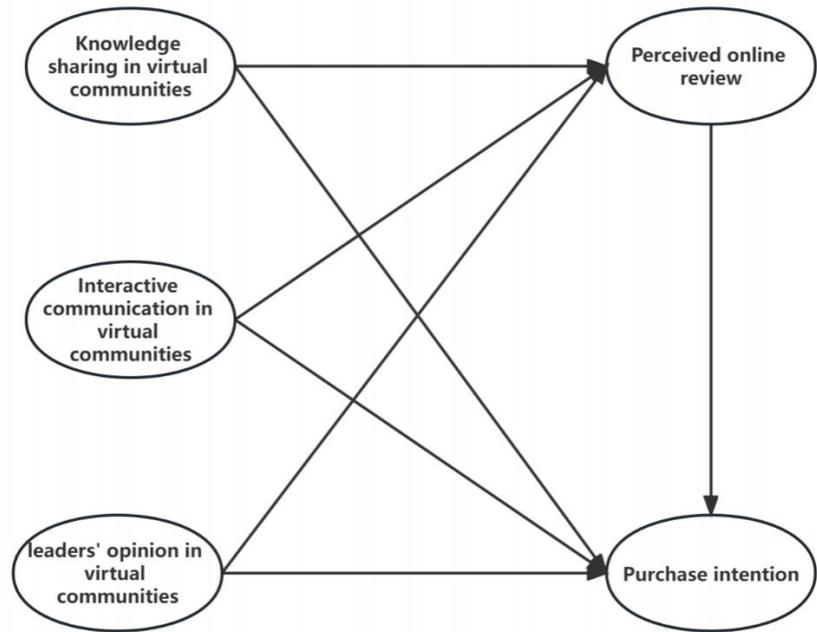


Figure 7. Social exchange theory used in social media marketing.

### 2.2.2. Consumer trust theory

Consumer trust theory explains how trust serves as the cornerstone of relationships between consumers and brands, especially in virtual communities. Trust formation is influenced by several factors, including a brand’s positive reputation, perceived value, transparent communication, personal experiences, and social endorsements. In **Figure 8**, in the virtual communities, trust assumes heightened importance as these spaces facilitate information exchange and opinion formation, shaped by the perceived expertise and credibility of both brands and fellow community members. Factors like consistent high-quality contributions, transparency, positive reputation, and social proof from the community significantly enhance trust. The design and functionality of the platform, such as prioritizing privacy and security, also play crucial roles in fostering trust. Building and maintaining trust is imperative for brands to establish robust, enduring relationships with consumers (Marmat, 2022).

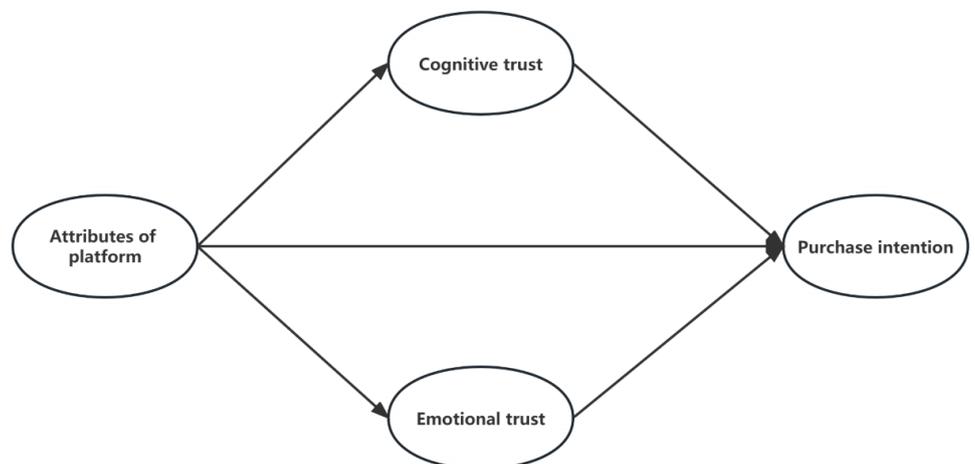


Figure 8. Consumer trust theory used in virtual community marketing context.

To better explain luxury consumer behavior in virtual communities, this study modifies social exchange theory and consumer trust theory. Traditional social exchange theory primarily focuses on offline interactions, so this study adapts it to digital platforms to analyze how information exchange and interaction in virtual community's influence consumer behavior. Similarly, consumer trust theory requires adjustments to address the mechanisms of trust formation in digital environments, especially when high-priced luxury goods are involved.

### **2.3. Research hypothesis**

Research highlights the significant impact of virtual community attributes, particularly in e-commerce, on consumer purchase intentions (Wang et al., 2022). Virtual communities in sectors like fashion and beauty are pivotal platforms where consumers exchange information and gain social validation, greatly influencing their purchasing decisions. For instance, fashion platforms such as ASOS and Zara host vibrant communities offering style advice and product feedback (Freudenreich and Schaltegger, 2020), while beauty platforms like Sephora and Ulta Beauty facilitate exchanges between users and experts for personalized beauty guidance (Liao et al., 2021). These interactions encompass knowledge sharing, interactive communication, and leaders' opinions, crucial dimensions that shape consumer behavior yet are less discussed in the context of luxury goods (Beall et al., 2021). This study focuses on the role of these dimensions in luxury purchase intentions, proposing that knowledge sharing within these communities positively influences luxury purchase decisions. It aids consumers in making informed choices through robust information exchange, enhancing product trust and credibility (Algharabat and Rana, 2021; Rajabion et al., 2019). Interactive communication in virtual communities significantly enhances purchase intentions by fostering a two-way dialogue between consumers and brands. This engagement allows consumers to ask questions and receive personalized responses, thereby increasing their confidence and likelihood of purchasing (Song et al., 2021). Furthermore, interaction with other users sharing similar experiences boosts trust and credibility (Parrish et al., 2020). Brands participating in these communications can establish deeper relationships with consumers, enhancing their credibility and trustworthiness (Priharsari et al., 2020).

Leaders in virtual communities, recognized as experts or authoritative figures, significantly influence member opinions and decisions due to their perceived trustworthiness and knowledge (Pop et al., 2022). Their insights are viewed as credible and often shape community discussions, thereby enhancing engagement (Reinikainen et al., 2020). This increased interaction fosters trust and credibility around discussed products, boosting purchase intentions (Hahnel et al., 2020). Consequently, leaders' opinions play a pivotal role in driving consumer behavior towards luxury products, as their engagement and credibility lead to heightened purchase intentions among community members (Priharsari and Abedin, 2021). Consumer trust in virtual communities significantly enhances purchase intentions, as trust leads to greater engagement and loyalty within these platforms (Liu et al., 2019). Trust is fostered by transparent communication, reliable information, and the presence of credible leaders, influencing the acceptance of recommendations and opinions shared within the

community (Liu et al., 2020; Urena et al., 2019). When consumers feel part of a supportive community, their willingness to make purchases based on community input increases. Social exchange theory elucidates the significance of online reviews in consumer decision-making processes. Positive reviews act as social proof, enhancing trust in products or services (Naeem, 2021). Consumers tend to trust these peer assessments more than brand claims, using reviews as vital sources of product information. The quantity and sentiment of reviews often indicate product quality, with numerous positive reviews suggesting higher quality (Sorrell et al., 2020). Furthermore, a strong presence of positive reviews builds a brand's reputation as trustworthy and reputable (Agmeka et al., 2019). Consequently, perceived online reviews are crucial in influencing purchase intentions by providing social proof, vital product information, quality indicators, and enhancing brand reputation (Foroudi et al., 2019).

Therefore, the study proposes the following hypotheses:

H1: Knowledge sharing in virtual communities (KSVC) positively affects Purchase intention toward luxury products (PITLP).

H2: Interactive communication in virtual communities (ICVC) positively affects Purchase intention toward luxury products (PITLP).

H3: Leaders' opinions in virtual communities (LOVC) positively affect Purchase intention toward luxury products (PITLP).

H4: Consumer trust positively affects purchase intention toward luxury products (PITLP).

H5: Perceived online review (POR) positively affects purchase intention toward luxury products (PITLP).

Social exchange theory highlights the crucial role of knowledge sharing in fostering trust within virtual communities, which subsequently enhances consumer purchase intentions. Knowledge sharing allows members to establish themselves as experts, thereby creating trust in their recommendations (Urena et al., 2019). This open exchange of experiences promotes transparency and trust in the community, and by validating other members' experiences, it enhances reliability and trust among community members. Interactive communication, a key component of knowledge sharing, significantly influences consumer trust by facilitating open sharing of experiences and opinions, thereby promoting transparency and trust. Interactive communication also provides timely feedback and support, which enhances trust, and fosters deeper personal connections and community engagement, further solidifying trust within the virtual community (Bhaumik et al., 2020). The influence of leaders' opinions in virtual communities is another significant aspect that affects consumer trust and decision-making. Leaders provide valuable insights and establish credibility, which can significantly influence consumer behaviors, especially in group consumption settings (Dwidienawati et al., 2020; Guo et al., 2021). Their role in fostering a sense of community also contributes to a supportive environment where consumers feel comfortable sharing their own opinions, thereby strengthening trust (Dodds and Hess, 2020). Furthermore, the perception of online reviews is intricately linked to knowledge sharing. When community members share detailed reviews and insights, it not only provides valuable information but also helps form a positive perception of online reviews. This is because increased information from trusted

community members leads to more informed consumer decisions and enhances the credibility of the reviews shared within the community (Chatterjee and Correia, 2020; Trudel, 2019). Interactive communication not only fosters connection and community but also enhances the perception of online reviews. When community members engage in open and honest dialogues, they establish themselves as credible sources of information, thereby positively influencing the perception of reviews (Johnson et al., 2020; Kang and Namkung, 2019). This open exchange helps to build a trusted network where reviews are more likely to be perceived positively.

H6: Knowledge sharing in virtual communities (KSVC) positively affects consumer trust.

H7: Interactive communication in virtual communities (ICVC) positively affects consumer trust.

H8: Leaders' opinions in virtual communities (LOVC) positively affect consumer trust.

H9: Knowledge sharing in virtual communities (KSVC) positively affects perceived online review (POR).

H10: Interactive communication in virtual communities (ICVC) positively affects perceived online review (POR).

Leaders are often viewed as experts in their fields, and their endorsements of products or services significantly enhance their perceived value and credibility (Konuk, 2019). When these leaders express positive opinions, they serve as potent social proof, influencing community members' perceptions and behaviors. This authoritative input can sway other members' views, fostering a more favorable outlook on the products or services discussed, thereby affecting community dynamics and consumer decisions (Djafarova and Bowes, 2021). Consumer trust is a crucial mediator in various sectors, though evidence in the luxury industry remains scant (Athwal et al., 2019). Social exchange theory suggests that when consumers share high-quality information about products and services, it enhances trust among community members. Trust is further bolstered when information is perceived as accurate and reliable (Duffy et al., 2020), and when consumer actions based on shared knowledge led to positive outcomes, serving as social proof (Naeem, 2021). This trust reduces uncertainty, and boosts purchase intentions. Thus, in virtual communities, when consumers trust shared information, they are more inclined to make purchases based on that information (Guo et al., 2020). Consumer trust plays a pivotal mediating role between interactive communication and purchase intention toward luxury products (PITLP), a relationship still emerging in research (Mishra et al., 2021). Trusted brands are more likely to see consumers engage via social media, chatbots, or forums, where they can directly ask questions and share experiences, thus influencing their buying decisions (Waluya et al., 2019; Wang, 2021). Trust enhances the credibility of information received from these interactive channels, increasing the likelihood of purchases based on positive interpretations of product details, customer reviews, and peer recommendations (Warsah, 2020; Zhao et al., 2020). Engaging in knowledge sharing within virtual communities significantly impacts purchasing intentions (Ghahtarani et al., 2020). This effect is mediated by the perceived online reviews encountered in these communities, which shape product perceptions and influence consumer behavior. By participating in these virtual exchanges, individuals

gain insights that crucially inform their purchasing decisions, thus playing a pivotal role in shaping market dynamics (Nilashi et al., 2021). Knowledge sharing in virtual communities significantly influences purchase intentions by shaping how individuals perceive products through online reviews (Ghahtarani et al., 2020). These interactions provide consumers with valuable insights, which in turn guide their purchasing decisions. As members share and discuss reviews, they form perceptions that impact their behavior, demonstrating the critical role virtual communities play in the consumer market (Nilashi et al., 2021).

Interactive communication within virtual communities facilitates the exchange of opinions and experiences, impacting purchase intentions (Testa et al., 2020). Perceived online reviews significantly shape these intentions; positive reviews enhance product perceptions and encourage purchases, while negative reviews can deter them (Ceyhan, 2019). These reviews mediate the relationship between interactive communication and purchasing decisions, influencing consumer attitudes and behaviors toward products. Virtual communities thus serve as critical platforms for information exchange that can profoundly affect consumer behavior (Wang et al., 2022). Leaders in virtual communities significantly influence member perceptions and behaviors through their opinions about products or brands (Rasoolimanesh et al., 2019). These leaders' endorsements can shape community perceptions, which are often further mediated by online reviews. For instance, when a leader positively reviews a product, it increases the likelihood that other members will also view the product favorably, influenced by their trust in the leader (Cheng et al., 2019). These perceptions are then either reinforced or contradicted by other community reviews, affecting the final purchase intentions. Thus, perceived online reviews serve as a critical mediator between leaders' opinions and consumer purchase decisions in virtual communities, underscoring the importance of leader influence and community feedback in shaping consumer behavior (Dong et al., 2020).

H11: Leaders' opinions in virtual communities (LOVC) positively affect perceived online review (POR).

H12: Consumer trust mediates the relationship between knowledge sharing in virtual communities and purchase intention toward luxury products (PITLP).

H13: Consumer trust mediates the relationship between interactive communication in virtual communities and Purchase intention toward luxury products (PITLP).

H14: Consumer trust mediates the relationship between leaders' opinions in virtual communities and purchase intention toward luxury products (PITLP).

H15: Perceived online review mediates the relationship between knowledge sharing in virtual communities and purchase intention toward luxury products (PITLP).

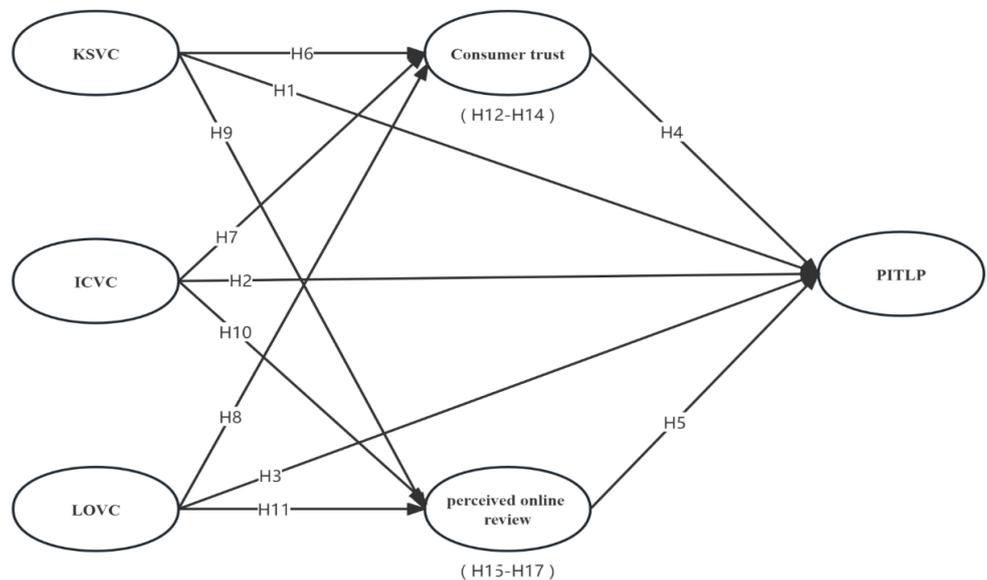
H16: Perceived online review mediates the relationship between interactive communication in virtual communities and purchase intention toward luxury products (PITLP).

H17: Perceived online review mediates the relationship between leaders' opinions in virtual communities and purchase Intention toward luxury products (PITLP).

## 2.4. Conceptual framework

The underlying mechanism through which virtual community platform attributes exert influence on luxury goods consumers' purchase intention can be delineated as follows: Within the virtual community ecosystem, elements such as knowledge sharing, interactive communication, and leader opinions play pivotal roles. These elements shape and modulate the purchase intention towards luxury goods. However, this influence is not direct; it is mediated through two critical constructs—consumer trust and perceptions of online reviews. Essentially, the virtual community dynamics, characterized by knowledge exchanges, dialogic interactions, and leader endorsements, indirectly sway luxury purchase decisions by first impacting the levels of trust consumers place in the platform and their perceptions of online reviews therein.

The selection of variables is based on key factors in luxury consumer behavior, including knowledge sharing, interaction, and opinion leadership, all of which directly affect consumer trust and purchase intentions in virtual communities. Additionally, policy innovation is chosen as a critical external variable, as it can indirectly influence these behaviors by improving the digital infrastructure of virtual community platforms. These variables are selected to construct a comprehensive model that analyzes how virtual communities impact luxury purchase intentions, as shown in **Figure 9**.



**Figure 9.** Conceptual framework of this research.

## 3. Methodology

### 3.1. Research design

This study adopts a quantitative research design to gather data on consumer behavior in virtual community platforms, focusing on luxury goods. Quantitative methods are used to identify patterns, trends, and relationships between variables, providing a comprehensive understanding of the factors influencing consumer

intentions. Surveys and structural equation modeling (SEM) are employed to collect and analyze numerical data, which is valuable for businesses and policymakers seeking to understand and influence consumer behavior (Mappesona et al., 2020; Thomas et al., 2020). Quantitative methods allow researchers to explore the frequency and types of luxury products purchased, the price points at which consumers are willing to buy, and the factors that influence their purchase intentions. By adopting these methods, the study aims to uncover the underlying motivations and drivers behind consumers' actions, offering actionable insights for luxury goods marketers and policymakers to refine their strategies and interventions.

This study employs quantitative methods to ensure data breadth and representativeness, using structural equation modeling (SEM) to analyze the complex relationships between virtual community platform attributes and consumer purchase intentions. Quantitative methods provide precise statistical analysis, identify relationships between variables, and validate the model's effectiveness. Additionally, conducting a large-scale survey across China's top ten luxury consumption cities offers a broad and representative sample, enhancing the study's reliability.

## **3.2. Research method**

### **3.2.1. Data collection**

This study uses an online questionnaire to collect data, utilizing the Wenjuanxing platform, which fits the needs, budget, and technical expertise of the research team. The questionnaire includes questions designed to capture information on virtual community attributes, consumer trust, perceived online reviews, and purchase intentions. Before distribution, the questionnaire underwent a pilot test with a small group of respondents to assess its clarity and ease of completion. Feedback from this test was used to refine the questions and improve the overall design of the survey. The questionnaire is distributed via social media channels to reach a wider audience. Online questionnaires offer numerous advantages, including cost-effectiveness, flexibility, and rapid distribution. They minimize data entry errors and improve response accuracy by automatically recording and storing responses. However, potential biases and limitations, such as response rate and selection bias, are acknowledged. Ensuring the confidentiality and privacy of respondents and complying with ethical guidelines for research involving human subjects are also prioritized (Resnik, 2019).

### **3.2.2. Population**

The survey targets consumers residing in the top ten cities in China with the highest spending power on luxury goods. China remains one of the largest markets for luxury goods globally, with projections indicating continued growth in luxury consumer numbers. The top ten luxury consumption cities in China are Beijing, Shanghai, Guangzhou, Shenzhen, Chengdu, Hangzhou, Chongqing, Wuhan, Xi'an, and Tianjin, as shown in **Table 1**. These cities are home to a significant number of affluent consumers with high purchasing power who are willing to spend on luxury goods and services.

**Table 1.** Definition of the populations.

Criteria	Definition
Top ten consumer cities	Beijing, Shanghai, Guangzhou, Shenzhen, Chengdu, Hangzhou, Chongqing, Wuhan, Xi'an, Tianjin
Age range	Consumers over the age of 18
Luxury goods with consumption experience	Bags

Source: Elaborated by this research.

### 3.2.3. Sampling

#### *Sample size*

The study first identified the top ten cities with the highest population of luxury consumption, and **Table 2** shows the relevant data. Subsequently, the study calculated the possible sample size based on the total population.

**Table 2.** The population size of the top 10 Chinese cities for luxury consumption.

City	Population	Percentage (%)
Beijing	22 million	11.6%
Shanghai	15 million	7.9%
Chongqing	32 million	16.9%
Tianjin	16 million	8.4%
Chengdu	20 million	10.6%
Shenzhen	17 million	8.9%
Hangzhou	12 million	6.3%
Suzhou	11 million	5.8%
Guangzhou	31 million	16.4%
Xi'an	13 million	6.9%
	189 million	

Determining the appropriate sample size for a questionnaire involves several considerations such as desired precision, confidence level, and response variability (Wauchope et al., 2019). Utilizing a common formula:

$$n = \frac{Z^2 \times p \times q}{E^2}$$

where  $n$  is the sample size,  $Z$  is the standard normal deviate (1.96 for 95% confidence),  $p$  is the estimated proportion of the population with the characteristic (0.5 for maximum variability),  $q = 1 - p$ , and  $E$  is the precision level (0.03 for 3% precision). Applying these values:

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.03^2} \approx 1068.44$$

Rounding to the nearest whole number gives a sample size of 1069 for a population of 189 million. The distribution of this sample across various cities are based on their proportionate populations as indicated in **Table 3** of the study.

**Table 3.** Stratified sample size for different cities.

Cities	Population percentage	Sample size
Beijing	11.6%	124
Shanghai	7.9%	84
Chongqing	16.9%	181
Tianjin	8.4%	90
Chengdu	10.6%	113
Shenzhen	8.9%	95
Hangzhou	6.3%	68
Suzhou	5.8%	63
Guangzhou	16.4%	176
Xi'an	6.9%	75
		1069

*Sampling method*

The research adopts purposive sampling to select participants that meet specific criteria: (1) they have purchased luxury goods online, and (2) they reside in the top ten cities with luxury spending power. Purposive sampling is a non-probability sampling technique in which participants are selected based on specific characteristics relevant to the research question (Baltes and Ralph, 2022). To recruit participants, snowball sampling and homogeneous sampling are also employed. Snowball sampling involves selecting participants based on referrals from other participants, while homogeneous sampling focuses on selecting participants who share certain characteristics or traits. These methods enhance the efficiency and relevance of the sample, ensuring that the research captures the perspectives of consumers with luxury consumption experience (Farrugia, 2019; Parker et al., 2019). Purposive sampling offers several advantages, including efficiency, relevance, flexibility, and the ability to access hard-to-reach populations. However, it is important to recognize its limitations, such as potential biases introduced by the non-random selection process.

**3.3. Data analysis**

The collected data will be analyzed using statistical software such as SPSS and AMOS. The analysis will include descriptive statistics to summarize the data and inferential statistics to test the research hypotheses. Structural equation modeling (SEM) will be employed to examine the relationships between virtual community attributes, consumer trust, perceived online reviews, and purchase intentions. The SEM approach allows for the simultaneous examination of multiple relationships, providing a comprehensive understanding of how virtual community attributes influence luxury consumers' purchase intentions through the mediating roles of consumer trust and perceived online reviews. By employing these robust analytical techniques, the study aims to generate actionable insights that can inform luxury goods marketers and policymakers, helping them to develop effective strategies for engaging consumers in virtual community platforms.

### 3.4. Ethical considerations

The study adheres to ethical guidelines for research involving human subjects. Informed consent is obtained from all participants, ensuring they are aware of the study’s purpose, procedures, and their rights. Confidentiality and anonymity of respondents are maintained throughout the research process. The study also complies with data protection regulations to safeguard the privacy and security of collected data. By addressing these ethical considerations, the research ensures the integrity and credibility of its findings, contributing to the broader understanding of consumer behavior in virtual communities and the luxury goods market. This detailed methodology chapter aligns with the journal’s focus on infrastructure, economic development, and public policy, emphasizing the role of digital infrastructure and policy innovation in shaping consumer behavior. The comprehensive research design, sampling methods, data collection, and analysis approaches provide a solid foundation for examining the influence of virtual community platform attributes on luxury consumers’ purchase intentions.

## 4. Data analysis

### 4.1. Descriptive analysis

#### 4.1.1. Basic information of the samples

The sample characteristics outlined in **Table 4** provide a robust and well-rounded overview, furnishing the study with extensive and nuanced insights. A detailed analysis of these characteristics helps better understand the multidimensional nature of the luxury goods market, thereby offering guidance for market strategies and product development.

**Table 4.** Sample basic characteristics.

		Frequency	Percentage
Gender	Male	503	44.0
	Female	608	53.2
	Prefer not to say	31	2.7
Age	18–25	370	32.4
	26–35	518	45.4
	36–45	124	10.9
	45 and above	130	11.4
Educational background	High school and below	363	31.8
	Bachelor’s degree	418	36.6
	Master’s degree	331	29.0
	Doctoral degree	30	2.6
Region	Beijing	112	9.8
	Shanghai	213	18.7
	Guangzhou	144	12.6
	Shenzhen	131	11.5
	Chengdu	72	6.3

**Table 4.** (Continued).

		Frequency	Percentage
Region	Hangzhou	94	8.2
	Chongqing	57	5.0
	Wuhan	127	11.1
	Xi'an	79	6.9
	Tianjin	113	9.9
Purchase method	Online purchase	503	44.0
	Offline purchase	639	56.0

#### 4.1.2. Descriptive statistics

Descriptive statistics from the study on virtual community platforms and luxury goods in **Table 5** illustrate diverse consumer perceptions across key variables. Knowledge sharing in virtual community (KSVC) registers an average score of 3.670, with a standard deviation of 0.954, reflecting generally positive but varied attitudes. Interactive communication in virtual community (ICVC) scores, similarly, averaging 3.644 with a deviation of 0.934, emphasizing the significance of interaction. Leaders' opinion in virtual community (LOVC) achieves a higher average of 3.716 and a deviation of 0.897, highlighting its strong influence on consumer decisions. Consumer trust scores the highest at 3.767 with the least variability at 0.788, suggesting widespread confidence in brands. Perceived online reviews average 3.660 with a deviation of 0.804, indicating a moderate impact on perceptions. Purchase Intention Toward Luxury Products (PITLP) tops the scales at 3.781, with a deviation of 0.968, showing a strong inclination towards purchasing luxury goods. These results suggest generally positive perceptions, though with notable individual differences. The skewness and kurtosis values further indicate a normal distribution of data, pointing to high data quality.

**Table 5.** Descriptive statistics results.

Variables	Mean	Std. Deviation	Skewness	Kurtosis
KSVC	3.670	0.954	-1.840	2.473
ICVC	3.644	0.934	-0.927	0.820
LOVC	3.716	0.897	-1.936	3.030
Consumer trust	3.767	0.788	-2.066	3.972
Perceived online review	3.660	0.804	-1.050	1.158
PITLP	3.781	0.968	-1.767	2.424

## 4.2. Structural equation model

### 4.2.1. Reliability analysis

The reliability analysis in **Table 6** confirms that the scales used in the formal survey have high reliability, effectively measuring and reflecting consumers' perceptions and attitudes in areas such as KSVC, ICVC, LOVC, Consumer trust, perceived Online review, and PITLP. This provides reliable data support for the research.

**Table 6.** Results of reliability analysis.

Variables	Items	Cronbach's $\alpha$
KSVC	6	0.925
ICVC	8	0.919
LOVC	6	0.904
Consumer trust	7	0.902
Perceived online review	8	0.907
PITLP	5	0.891

**4.2.2. Validity analysis (CFA) + correlation analysis**

TA confirmatory factor analysis (CFA) was conducted to examine the structural validity of the scales, as shown in **Table 7**. The measurement model showed a good fit ( $\chi^2/df = 4.385$ , GFI = 0.880, NFI = 0.900, IFI = 0.921, TLI = 0.915, CFI = 0.924, RMR = 0.050, RMSEA = 0.054), indicating strong alignment between the proposed model and empirical data, as show in **Figure 10**. The convergent and discriminant validity of each variable were also tested, as shown in **Table 8**.

**Table 7.** The results of convergent validity test.

Variables	Items	Loading coefficients	CR	AVE
KSVC	A1	0.816	0.925	0.674
	A2	0.795		
	A3	0.833		
	A4	0.832		
	A5	0.791		
	A6	0.858		
ICVC	B1	0.753	0.920	0.594
	B2	0.645		
	B3	0.736		
	B4	0.800		
	B5	0.869		
	B6	0.886		
	B7	0.848		
	B8	0.574		
LOVC	C1	0.826	0.904	0.612
	C2	0.744		
	C3	0.804		
	C4	0.792		
	C5	0.758		
	C6	0.770		
Consumer trust	D7	0.808	0.904	0.576
	D6	0.825		
	D5	0.733		
	D4	0.576		

**Table 7.** (Continued).

Variables	Items	Loading coefficients	CR	AVE
Consumer trust	D3	0.796	0.909	0.557
	D2	0.824		
	D1	0.716		
Perceived online review	E1	0.694	0.892	0.625
	E2	0.690		
	E3	0.858		
	E4	0.721		
	E5	0.760		
	E6	0.804		
	E7	0.810		
	E8	0.606		
PITLP	F1	0.847	0.892	0.625
	F2	0.820		
	F3	0.693		
	F4	0.751		
	F5	0.833		

**Table 8.** The results of the discriminant validity test.

Variables	KSVC	ICVC	LOVC	Consumer trust	Perceived online review	PITLP
KSVC	<b>0.821</b>					
ICVC	0.447***	<b>0.771</b>				
LOVC	0.669***	0.452***	<b>0.783</b>			
Consumer trust	0.413***	0.414***	0.432***	<b>0.759</b>		
Perceived online review	0.341***	0.347***	0.356***	0.570***	<b>0.747</b>	
PITLP	0.390***	0.345***	0.391***	0.515***	0.386***	<b>0.791</b>

Note: The values on the diagonal are the square root of the AVE (average variance extracted) for each variable, and they are indicated in bold.

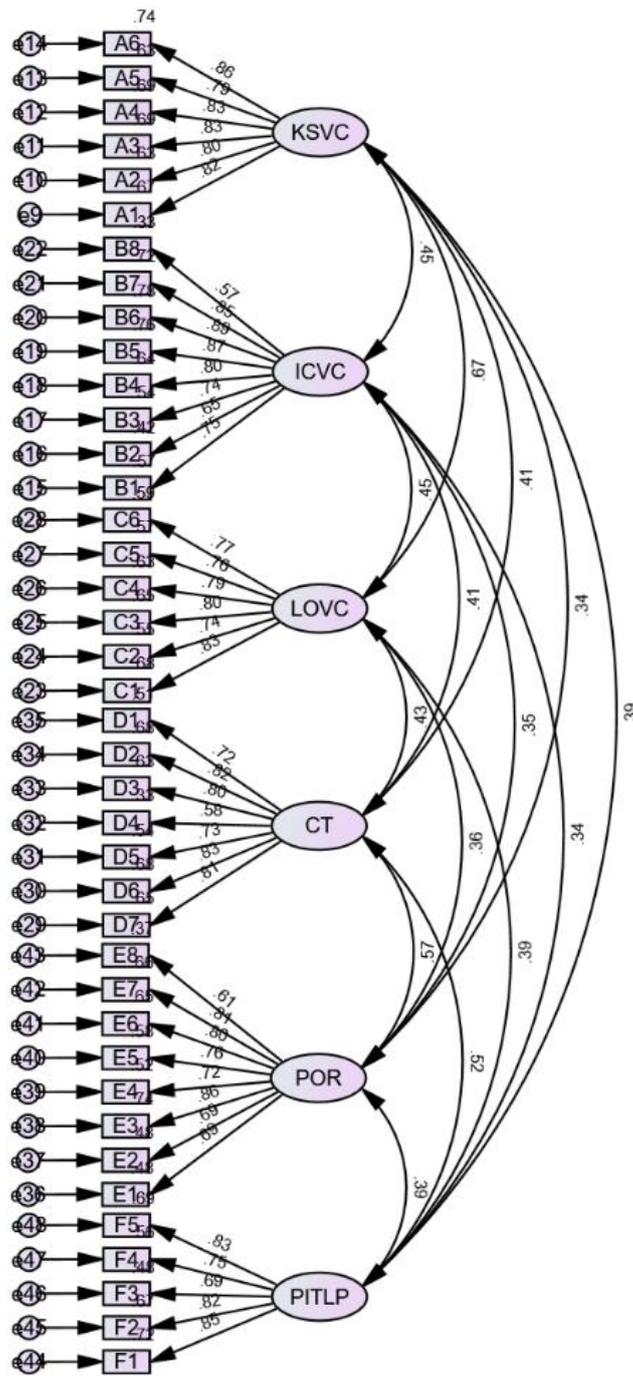


Figure 10. Measurement model.

#### 4.2.3. Common method bias

This study acknowledges a certain degree of common method bias in the sample data; however, the severity is insignificant and unlikely to exert a substantial impact on the research outcomes. Additionally, the measurement results indicate the presence of six effective factors in the sample data, providing a foundation of accuracy and reliability for subsequent research analyses, as shown in **Table 9**.

**Table 9.** Common method bias test results.

Component	Initial eigenvalue			The sum of extracted eigenvalues			The sum of rotated eigenvalues		
	Total	Variance percentage	Cumulative percentage	Total	Variance percentage	Cumulative percentage	Total	Variance percentage	Cumulative percentage
1	13.380	33.450	33.450	13.380	33.450	33.450	5.268	13.170	13.170
2	4.020	10.051	43.500	4.020	10.051	43.500	4.958	12.395	25.565
3	3.054	7.635	51.136	3.054	7.635	51.136	4.511	11.278	36.843
4	2.540	6.349	57.485	2.540	6.349	57.485	4.297	10.744	47.586
5	1.998	4.995	62.480	1.998	4.995	62.480	4.036	10.089	57.676
6	1.658	4.146	66.626	1.658	4.146	66.626	3.580	8.950	66.626

**4.2.4. Path analysis for direct effects**

The fit of the structural model in this study is satisfactory, with various indices demonstrating a well-performing model in terms of fit. This indicates that the research model can accurately explain and predict the relationships among the study variables, with high credibility and accuracy, as shown in **Table 10**.

**Table 10.** Structural model fit.

Fit indices	$\chi^2/df$	RMSEA	GFI	NFI	IFI	CFI	TLI	SRMR
Fit Results	4.656	0.057	0.876	0.893	0.914	0.914	0.908	0.076

**Table 11.** Path analysis results.

Hypothesis	Path	Estimate	$\beta$	SE	T	P	Results
H1	KSVC → PITLP	0.127	0.12	0.044	2.887	0.004	Supported
H2	ICVC → PITLP	0.081	0.073	0.038	2.127	0.033	Supported
H3	LOVC → PITLP	0.1	0.097	0.044	2.255	0.024	Supported
H4	Consumer trust → PITLP	0.418	0.34	0.043	9.775	***	Supported
H5	Perceived online review → PITLP	0.147	0.107	0.044	3.378	***	Supported
H6	KSVC → Consumer trust	0.135	0.157	0.036	3.772	***	Supported
H7	ICVC → Consumer trust	0.225	0.248	0.031	7.352	***	Supported
H8	LOVC → Consumer trust	0.188	0.223	0.036	5.25	***	Supported
H9	KSVC → Perceived online review	0.098	0.128	0.033	2.948	0.003	Supported
H10	ICVC → Perceived online review	0.172	0.214	0.028	6.075	***	Supported
H11	LOVC → Perceived online review	0.138	0.183	0.033	4.151	***	Supported

Path analysis from **Table 11** elucidates dynamics affecting consumer behavior in virtual communities, particularly concerning luxury products. Key findings include the impacts of community attributes on consumer trust and perceived online review, critical drivers of purchase intentions toward luxury products (PITLP), as shown **Figure 11**. Knowledge sharing in virtual community (KSVC) moderately enhances Consumer Trust (coefficient = 0.157), promoting transparency and credibility. Interactive communication in virtual community (ICVC) exerts a stronger influence on trust (coefficient = 0.248), facilitating deeper personal connections. Leaders’ opinion in virtual community (LOVC) also significantly boosts trust (coefficient =

0.223), with leaders perceived as trustworthy. Additionally, KSVC, ICVC, and LOVC shape perceived online review, affecting purchase intentions to varying degrees. Overall, these elements crucially dictate luxury purchasing decisions, validating hypotheses H1–H11 and offering profound insights into the role of virtual community attributes in luxury consumer behavior.

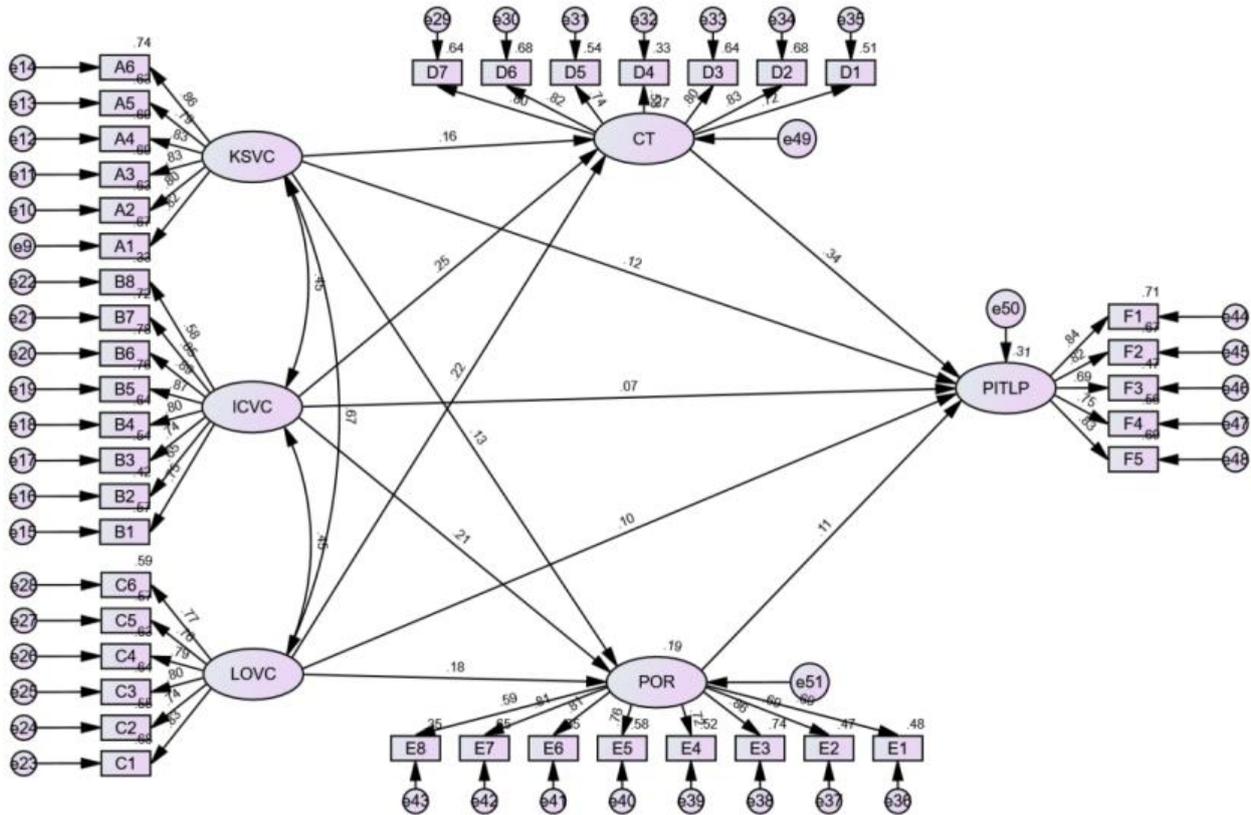


Figure 11. Adjusted model.

#### 4.2.5. Path analysis for indirect effects

The mediation analysis in Table 12 reveals the significant roles of consumer trust and perceived online review in shaping purchase intentions for luxury products within virtual communities. Knowledge sharing (KSVC) increases consumer trust, indirectly influencing purchase intentions with an effect of 0.053 ( $P = 0.002$ ), underscoring the value of shared knowledge. Interactive communication (ICVC) significantly raises consumer trust, with an effect of 0.085 on purchase intentions ( $P = 0.000$ ), highlighting the importance of engagement. Leaders’ opinions (LOVC) also boost trust, increasing purchase intentions with an effect of 0.076 ( $P = 0.000$ ). Additionally, the impact of these factors through perceived online review—KSVC at 0.014 ( $P = 0.009$ ), ICVC at 0.023 ( $P = 0.006$ ), and LOVC at 0.020 ( $P = 0.006$ )—illustrates how community attributes affect perceptions of online reviews and, subsequently, purchase intentions. These insights are crucial for developing effective marketing strategies and managing brands in the luxury sector.

**Table 12.** Mediation effect test results.

Hypothesis	Path	$\beta$	Lower	Upper	P	Results
H12	KSVC → Consumer trust → PITLP	0.053	0.019	0.094	0.002	Supported
H13	ICVC → Consumer trust → PITLP	0.085	0.052	0.126	0.000	Supported
H14	LOVC → Consumer trust → PITLP	0.076	0.041	0.119	0.000	Supported
H15	KSVC → Perceived online review → PITLP	0.014	0.003	0.034	0.009	Supported
H16	ICVC → Perceived online review → PITLP	0.023	0.006	0.049	0.006	Supported
H17	LOVC → Perceived online review → PITLP	0.020	0.005	0.046	0.006	Supported

These findings highlight the importance of virtual community attributes in influencing consumer trust and perceived online reviews, which in turn drive purchase intentions towards luxury products. The results provide valuable insights for luxury brand marketers and policymakers to enhance engagement and trust within virtual communities, ultimately fostering stronger consumer relationships and boosting sales. By employing a comprehensive analysis of both direct and indirect effects, this study offers a detailed understanding of the mechanisms through which virtual community attributes impact luxury consumer behavior. This aligns with the journal’s focus on infrastructure, economic development, and public policy, emphasizing the role of digital infrastructure and policy innovation in shaping consumer behavior in the luxury goods market.

## 5. Discussion and conclusion

### 5.1. Discussion

This research explores consumer behavior within virtual community platforms, specifically focusing on luxury goods. The primary objective is to identify the factors that influence purchase intentions and develop a tailored structural equation model for this context. Key factors identified include knowledge sharing (KSVC), interactive communication (ICVC), and leaders’ opinions (LOVC), all of which significantly affect consumer trust and perceptions, thereby influencing purchasing decisions. The study employs structural equation modeling (SEM) to detail the intricate relationships between these factors, showing both direct and indirect impacts on purchase intentions. Knowledge sharing within virtual communities significantly enhances consumer trust and perceived online reviews. This, in turn, positively impacts purchase intentions towards luxury goods. The implication for marketers is the necessity of fostering an environment where consumers feel encouraged and valued for sharing their knowledge and experiences. By promoting content that educates and informs, luxury brands can build a loyal customer base that trusts their offerings and is more likely to make purchases. Interactive communication is another critical factor that enhances consumer trust. The study shows that two-way communication channels where consumers can engage with brands and other community members boost confidence and trust. This finding suggests that luxury brands should invest in creating interactive platforms that facilitate real-time engagement and personalized responses to consumer inquiries. This not only improves consumer experience but also increases the likelihood of purchase intentions. Leaders within virtual communities, often seen

as influencers or experts, play a significant role in shaping consumer perceptions and trust. Their opinions are highly valued and can sway consumer behavior. Luxury brands should strategically collaborate with influential community leaders to endorse their products and build credibility within the community. This approach leverages the trust and authority of community leaders to enhance brand reputation and drive sales.

The mediation analysis demonstrates how virtual community attributes indirectly influence purchase intentions through consumer trust and perceived online reviews. This underscores the importance of trust-building in marketing strategies. Brands need to ensure transparency, reliability, and authenticity in their interactions with consumers to build and maintain trust. By extending social exchange theory and consumer trust theory to the digital luxury goods market, this study highlights the significance of virtual interactions and leadership in shaping consumer trust and purchase intentions. These theoretical extensions provide a deeper understanding of the mechanisms through which social interactions in virtual platforms impact purchasing decisions.

## **5.2. Conclusions**

The research effectively demonstrates the significant role that virtual community attributes play in influencing consumer behavior towards luxury goods. The structural equation model developed through this study successfully outlines the direct and indirect pathways by which knowledge sharing, interactive communication, and leaders' opinions impact consumer trust and subsequent purchasing decisions. These findings underscore the pivotal role of consumer trust as a mediator in the luxury purchasing process, offering invaluable guidance for marketers seeking to optimize engagement strategies within virtual platforms. Furthermore, the results highlight the profound effect that the dynamics of virtual communities have on purchase intentions, emphasizing that well-managed interactions and credible leadership can significantly boost consumer trust and encourage purchase behaviors. Despite its focused geographic scope, the study offers a robust framework for understanding how luxury brands can leverage virtual communities to enhance consumer engagement and drive sales. This research marks a pivotal contribution to both academic research and practical marketing strategies in the luxury goods sector.

The study does not provide a detailed comparison with other related studies because its primary focus is on exploring the unique impact of virtual community platform attributes on luxury purchase intentions, particularly in the Chinese market context. However, future research could consider comparing these findings with similar studies in other regions or sectors to validate the universality and uniqueness of the results.

## **5.3. Research implications**

### **5.3.1. Theoretical implications**

This study provides significant theoretical implications by extending social exchange theory and consumer trust theory to the context of digital consumer behavior in luxury goods. By highlighting how virtual community attributes such as knowledge sharing, interactive communication, and leaders' opinions contribute to building consumer trust, this research deepens our understanding of the mechanisms through

which social interactions in virtual platforms impact purchasing decisions. These theoretical extensions offer new perspectives on consumer behavior in the digital age, particularly in the luxury sector.

The theoretical contributions of this study are primarily in extending the application of social exchange theory and consumer trust theory to the domain of digital consumer behavior. By examining how knowledge sharing, interaction, and opinion leadership in virtual community's influence consumer trust and purchase intentions, the study offers new perspectives on luxury consumption in the digital age. Additionally, it highlights the importance of policy innovation in promoting digital infrastructure development, providing theoretical support for future policy formulation.

### **5.3.2. Practical implications**

The practical implications of this research are particularly valuable for marketers of luxury goods within virtual community platforms. The findings suggest actionable strategies to enhance engagement and drive sales, such as fostering personalized connections through interactive communication and enhancing information credibility via knowledge sharing. specific recommendations include: 1) Developing educational content: Creating and sharing high-quality, informative content that educates consumers about luxury products can enhance knowledge sharing and build trust. 2) Facilitating real-time engagement: Implementing features such as live chats, Q&A sessions, and responsive customer service can improve interactive communication and consumer satisfaction. 3) Leveraging influencers: Collaborating with influential figures within the community can bolster credibility and trust, encouraging more consumers to engage with and purchase luxury products. These strategic recommendations are based on a detailed analysis of how community attributes influence consumer behavior, offering marketers insights on leveraging these dynamics to boost market growth.

This study explores the influence of virtual community platform attributes on luxury consumers' purchase intentions, particularly how knowledge sharing, interactive communication, and leaders' opinions impact purchase decisions through consumer trust and perceived online reviews. By employing structural equation modeling, the research reveals both direct and indirect effects of these factors, offering strategic insights for luxury goods marketing. This aligns closely with the policy and development's focus, emphasizing the role of digital infrastructure and policy innovation in economic development and consumer behavior. The findings underscore the significance of virtual interactions in shaping consumer trust and driving luxury market growth.

### **5.4. Research limitation**

The limitations of this study include the data collection being restricted to China's top ten luxury consumption cities, which may not fully represent consumer behavior in other regions or cultural contexts. Furthermore, the study relies solely on quantitative methods, lacking in-depth qualitative analysis, which might limit a comprehensive understanding of the complexity of consumer behavior. Future research could explore cross-cultural comparisons and a mixed methods approach to

further validate and expand the study's findings.

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