

อิทธิพลของวิถีชีวิตและกลยุทธ์การสื่อสารการตลาดอีคอมเมิร์ซ
ที่มีต่อความภักดีของผู้บริโภคสูงวัย: กรณีศึกษาแพลตฟอร์ม Pinduoduo
The Influence of lifestyle and E-commerce Marketing Communication
Strategies on Aging Consumers' Loyalty: A Case Study of Pinduoduo

วันที่รับบทความ: 2 กุมภาพันธ์ 2569/ วันที่แก้ไขบทความ: 28 มีนาคม 2569/ วันที่ตอบรับบทความ: 30 มีนาคม 2569

Cai Jingyu¹ and Sermsiri Nindum²

Abstract

In the context of an aging society, this group of consumers has become a key driving force in the e-commerce market. This study aims to examine the characteristics of aging consumers, particularly their lifestyles and perceptions of e-commerce marketing communication strategies on the Pinduoduo platform, and to analyze the influence of these factors on consumer loyalty. A quantitative research design was employed, with data collected from 437 consumers aged 50 and above in Chengdu, China, using a structured questionnaire. Descriptive statistics and multiple regression analysis (MRA) were applied.

The findings reveal that aging consumers demonstrated diverse lifestyle patterns and generally positive perceptions toward marketing communication strategies. The regression results indicate that precision marketing and gamification marketing had significant positive effects on consumer loyalty, with precision marketing showing the strongest influence ($\beta = 0.400$), followed by gamification marketing ($\beta = 0.199$). In contrast, lifestyle and viral marketing did not have significant effects on consumer loyalty. These findings highlight the importance of targeted and interactive marketing strategies, particularly precision marketing and gamification, in enhancing loyalty among aging consumers in social e-commerce contexts.

Keywords: Consumer Lifestyle, Marketing Communication Strategies, Precision Marketing, Gamification, Aging Consumer Loyalty

บทคัดย่อ

ในบริบทของสังคมสูงวัย กลุ่มผู้บริโภคกลุ่มนี้ได้กลายเป็นกำลังสำคัญในตลาดพาณิชย์อิเล็กทรอนิกส์ การวิจัยนี้จึงมีวัตถุประสงค์เพื่อศึกษาลักษณะของผู้บริโภคสูงวัย โดยเฉพาะรูปแบบการดำเนินชีวิตและการรับรู้ต่อกลยุทธ์การสื่อสารการตลาดอีคอมเมิร์ซบนแพลตฟอร์ม Pinduoduo ตลอดจน

¹ Doctoral Student in the Communication Arts Program, Faculty of Management Science, Chiang Rai Rajabhat University, Thailand

² Associate Professor of Communication Arts, Faculty of Management Science, Chiang Rai Rajabhat University, Thailand

*Corresponding author; Email address: cai_crru@outlook.co.th

วิเคราะห์อิทธิพลของปัจจัยดังกล่าวที่มีต่อความภักดีของผู้บริโภค การวิจัยนี้ใช้ระเบียบวิธีวิจัยเชิงปริมาณ โดยเก็บรวบรวมข้อมูลจากผู้บริโภคที่มีอายุ 50 ปีขึ้นไป จำนวน 437 คน ในเมืองเฉิงตู สาธารณรัฐประชาชนจีน ด้วยแบบสอบถามที่มีโครงสร้าง และวิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณนาและการวิเคราะห์การถดถอยพหุคูณ

ผลการวิจัยพบว่า ผู้บริโภคสูงวัยมีรูปแบบการดำเนินชีวิตที่หลากหลาย และมีการรับรู้เชิงบวกต่อกลยุทธ์การสื่อสารการตลาด โดยผลการวิเคราะห์การถดถอยแสดงให้เห็นว่า การตลาดแบบแม่นยำและการตลาดเชิงเกมมีอิทธิพลเชิงบวกอย่างมีนัยสำคัญต่อความภักดีของผู้บริโภค โดยการตลาดแบบแม่นยำมีอิทธิพลสูงสุด ($\beta = 0.400$) รองลงมาคือการตลาดเชิงเกม ($\beta = 0.199$) ในขณะที่รูปแบบการดำเนินชีวิตและการตลาดแบบไวรัลไม่พบว่ามีอิทธิพลอย่างมีนัยสำคัญต่อความภักดีของผู้บริโภค ผลการศึกษานี้สะท้อนให้เห็นถึงความสำคัญของกลยุทธ์การสื่อสารการตลาดที่มุ่งเน้นความตรงกลุ่มและการมีปฏิสัมพันธ์ โดยเฉพาะการตลาดแบบแม่นยำและการตลาดเชิงเกม ในการเสริมสร้างความภักดีของผู้บริโภคสูงวัยในบริบทของพาณิชย์อิเล็กทรอนิกส์

คำสำคัญ: วิถีชีวิตผู้บริโภค กลยุทธ์การสื่อสารการตลาด การตลาดแบบแม่นยำ การตลาดเชิงเกม ความภักดีของผู้บริโภคสูงวัย

Introduction

The rapid growth of e-commerce in China has significantly transformed consumer behavior across different age groups. While the early adoption of digital commerce was primarily driven by younger consumers, individuals aged 50 years and above have increasingly emerged as an important segment of the e-commerce market (China Internet Network Information Center [CNNIC], 2022). This transformation is closely associated with China's transition into an aging society, improvements in digital infrastructure, and the normalization of online consumption in everyday life (Chaffey & Ellis-Chadwick, 2019).

Aging consumers demonstrate distinctive consumption characteristics, including rational decision-making, price sensitivity, heightened risk awareness, and a strong reliance on trust in online environments. In digital commerce contexts, recent studies emphasize that factors such as trust, satisfaction, perceived value, and customer experience play a critical role in shaping consumer loyalty and long-term relationships (Hollebeek et al., 2020; Rather et al., 2019; Rather & Hollebeek, 2021). These findings suggest that aging consumers may respond differently to e-commerce marketing communication strategies compared to younger users, particularly in environments characterized by personalized communication and interactive features.

Despite the growing importance of aging consumers, existing research on e-commerce consumer loyalty has largely focused on general or younger consumer groups, with limited empirical attention paid to aging consumers in social e-commerce environments (Anderson et al., 2003). In particular, the role of lifestyle characteristics and

marketing communication strategies in shaping aging consumer loyalty remains insufficiently explored.

Pinduoduo, as one of China's leading social e-commerce platforms, offers a unique context for examining aging consumers. The platform integrates group buying, personalized marketing, gamified interactions, and social communication mechanisms to enhance user engagement and repeated usage. These features are consistent with recent studies emphasizing the role of interactive and relationship-oriented digital marketing strategies in shaping consumer engagement and loyalty (Chaffey & Ellis-Chadwick, 2019; Hollebeek et al., 2020; Rather et al., 2019). Although Pinduoduo has attracted a substantial number of middle-aged and elderly users, empirical evidence explaining how these marketing communication strategies influence aging consumer loyalty remains limited.

To advance understanding in this area, this study examines the influence of aging consumers' lifestyle and e-commerce marketing communication strategies on consumer loyalty, using Pinduoduo as a case study. Specifically, the study focuses on three key marketing communication strategies—precision marketing, gamification marketing, and viral marketing—and evaluates their relative effects on consumer loyalty among aging consumers. By integrating lifestyle characteristics and marketing communication strategies within a unified analytical framework, this research contributes to a deeper theoretical understanding of aging consumer loyalty in social e-commerce contexts. In particular, it provides empirical evidence that highlights the relative importance of strategy-driven factors over lifestyle characteristics in predicting consumer loyalty, thereby offering both theoretical insights and practical implications for sustainable e-commerce platform development in an aging digital society.

Research Objectives

1. To examine the characteristics of aging consumers, including their lifestyle and perceptions of e-commerce marketing communication strategies on the Pinduoduo platform.
2. To analyze the influence of aging consumers' lifestyle and e-commerce marketing communication strategies (gamification marketing, precision marketing, and viral marketing) on consumer loyalty toward the Pinduoduo platform.

Definition of Terms

Aging consumers refer to individuals aged 50 years and above residing in Chengdu City, Sichuan Province, China, who have experience using the Pinduoduo platform for e-commerce activities.

Aging consumers' lifestyle refers to patterns of activities, interests, and consumption behaviors among aging consumers, categorized into three groups—Best, Bright, and Basic—based on the classification proposed by Jakkrit Siririn (2018).

Gamification marketing refers to the application of game design elements to marketing communication activities in order to create engaging experiences and influence consumers' cognition, emotions, and behavioral intentions toward a brand.

Precision marketing refers to the use of data-driven and technological tools to deliver personalized products, services, and marketing messages to target consumers at the right time and through appropriate channels, with the aim of improving marketing effectiveness and return on investment.

Viral marketing refers to a marketing strategy that leverages social networks and interpersonal communication to rapidly disseminate marketing messages through user-to-user sharing.

Consumer loyalty refers to a consumer's commitment to repeatedly purchase from the same brand or platform over time, reflecting both attitudinal and behavioral loyalty. In this study, consumer loyalty comprises consumer trust, satisfaction, perceived value, and consumer experience.

Literature Review

This study integrates theories of consumer behavior and e-commerce marketing communication to examine factors influencing aging consumer loyalty on the Pinduoduo platform.

Aging Consumers and E-commerce Engagement

Aging consumers have emerged as a significant and rapidly growing segment in the digital economy, particularly in the context of e-commerce. Recent studies define aging consumers as individuals aged 50 years and above who actively participate in digital consumption and online shopping activities (United Nations, 2020; OECD, 2020). This definition is increasingly relevant in the Chinese context, where middle-aged and older consumers are rapidly adopting digital technologies and contributing to the expansion of the e-commerce market.

In terms of consumption behavior, aging consumers exhibit distinct characteristics shaped by life experience, cognitive changes, and social context. Research indicates that older consumers tend to demonstrate more deliberate and rational decision-making, relying on accumulated knowledge and carefully evaluating product information before making purchase decisions (East, Hammond, & Lomax, 2008). Compared to younger consumers, they show lower impulsivity and a stronger preference for functional value, including convenience, safety, and reliability.

In addition, price sensitivity remains a key feature of aging consumers, as they are more likely to compare prices and respond positively to promotions and discounts. At the same time, they tend to place greater emphasis on trust and risk reduction in online environments, reflecting their cautious approach to digital transactions (Lian & Yen, 2014). These characteristics suggest that aging consumers engage with e-commerce platforms in ways that differ from younger users, requiring tailored marketing communication strategies.

Another important characteristic of aging consumers is their strong need for security and trust in digital environments. They are more likely to prefer reputable platforms, well-known brands, and secure payment systems to reduce perceived risk. Trust has been widely identified as a critical factor influencing online consumer behavior and loyalty in e-commerce contexts (Anderson & Srinivasan, 2003). Furthermore, aging consumers tend to exhibit group-oriented consumption behavior. They often rely on peer recommendations, product reviews, and social interactions to validate purchase decisions and gain psychological reassurance (Yao & Zhang, 2003). This tendency aligns closely with the mechanisms of social e-commerce platforms, which emphasize community interaction and shared consumption experiences.

With the rapid development of digital infrastructure, aging consumers have increasingly adopted e-commerce as a convenient alternative to offline shopping. Online platforms enable them to overcome physical limitations by allowing access to products and services from home, thereby enhancing convenience and accessibility. At the same time, their engagement with e-commerce platforms is strongly influenced by perceived usefulness and ease of use, which are key determinants in technology adoption (Gefen et al., 2003). These factors play an important role in shaping continued usage and loyalty in digital environments.

Lifestyle also plays a role in shaping aging consumers' engagement with e-commerce, although its influence may vary. In recent literature, lifestyle is conceptualized as patterns of daily activities, interests, and behaviors that influence how individuals interact with digital technologies and consumption environments (Solomon, 2020; Kotler, Keller, & Chernev, 2022). For aging consumers, lifestyle reflects differences in health orientation, social participation, and digital engagement, which may affect their online shopping behavior and media usage patterns.

Previous studies suggest that aging consumers can be segmented based on their levels of technology adoption, social interaction, and consumption preferences. For example, some older consumers actively engage with digital platforms and online communities, while others demonstrate more cautious and limited usage patterns (Lian & Yen, 2014; Hwang & Lee, 2019). These differences indicate that aging consumers are not a homogeneous group and may interact with e-commerce platforms in diverse ways. Lifestyle-based segmentation therefore remains a useful approach for understanding

behavioral differences and supporting the development of targeted marketing strategies in digital contexts.

Overall, aging consumers' engagement in e-commerce is shaped by a combination of rational decision-making, price sensitivity, trust orientation, and social influence. While they increasingly participate in digital consumption, their behavior differs from that of younger consumers, requiring platforms to design age-appropriate, user-friendly, and trust-enhancing marketing strategies. Understanding these characteristics is essential for developing effective e-commerce communication strategies and fostering long-term consumer loyalty among aging populations.

E-commerce Marketing Communication Strategies

E-commerce marketing communication strategies refer to the systematic use of digital communication channels and tools to promote products and services, engage consumers, and build long-term customer relationships in an online environment. These strategies involve delivering targeted and persuasive messages through various digital platforms to enhance brand visibility, attract potential customers, and foster consumer loyalty (Tuten & Solomon, 2017; Chaffey & Ellis-Chadwick, 2019). In the context of e-commerce, marketing communication extends beyond simple information dissemination to include interactive and relationship-oriented communication processes enabled by digital technologies.

From a strategic perspective, e-commerce marketing communication integrates multiple channels such as social media, search engines, email marketing, content marketing, and online advertising to create a consistent and effective communication experience across different touchpoints (Chaffey & Ellis-Chadwick, 2019). These strategies enable firms to deliver personalized and timely messages, which are essential in highly competitive digital markets. As suggested by Strauss & Frost (2005), e-marketing emphasizes the application of information technology in creating, communicating, and delivering value to customers, while maintaining mutually beneficial relationships between organizations and stakeholders.

The rapid development of e-commerce in China has significantly transformed marketing communication practices. The evolution from traditional e-commerce to mobile commerce and social e-commerce has reshaped how businesses interact with consumers. Social e-commerce platforms integrate online shopping with social networking functions, allowing users to share product information, participate in group purchasing, and engage in interactive communication processes. This development enhances consumer trust, participation, and engagement, making marketing communication more socially embedded. In particular, platforms such as Pinduoduo have adopted a social commerce model that emphasizes group buying and user interaction, attracting a large number of price-sensitive consumers (Li et al., 2020).

E-commerce marketing communication strategies can be categorized into several major types. First, search-based strategies, including search engine optimization (SEO) and search engine marketing (SEM), aim to improve online visibility and attract potential consumers. Second, social media marketing leverages digital platforms to facilitate communication and interaction between brands and consumers (Kaplan & Haenlein, 2010). Third, content marketing focuses on delivering valuable and relevant information to build trust and long-term relationships with consumers. Fourth, direct communication strategies, such as personalized recommendations and targeted promotions, aim to enhance marketing effectiveness by addressing individual consumer needs.

In social e-commerce environments, marketing communication strategies have increasingly evolved toward interactive and engagement-oriented approaches. Among these, precision marketing, gamification marketing, and viral marketing are particularly relevant. Precision marketing refers to the use of consumer data and analytics to deliver targeted and personalized marketing messages, thereby increasing marketing efficiency and customer value (Zabin & Brebach, 2004). Gamification marketing involves the application of game design elements, such as points, rewards, and challenges, to stimulate user participation and enhance engagement (Deterding et al., 2011; Hsu & Chen, 2018). Viral marketing, on the other hand, relies on social sharing and word-of-mouth communication to rapidly disseminate marketing messages across networks, increasing reach and influence (Kaplan & Haenlein, 2010).

These strategies are particularly evident in platforms such as Pinduoduo, where group buying, social sharing, and interactive features are central to the user experience. For example, users are encouraged to invite others to participate in group purchases to obtain discounts, which simultaneously enhances social interaction and expands marketing reach. In addition, gamified promotional activities and reward-based mechanisms increase user engagement and platform stickiness. These features demonstrate how e-commerce marketing communication strategies integrate functional, social, and experiential elements to influence consumer behavior and loyalty.

Overall, e-commerce marketing communication strategies in the digital era are characterized by integration, personalization, and interactivity. The shift toward social and mobile commerce further highlights the importance of consumer engagement and relationship building. Understanding these strategies is essential for analyzing how marketing communication influences consumer perceptions and loyalty, particularly among aging consumers who may respond differently to digital marketing stimuli.

In summary, e-commerce marketing communication strategies encompass a wide range of digital tools and approaches that enable firms to effectively communicate with consumers and build long-term relationships in online environments (Tuten & Solomon, 2017; Chaffey & Ellis-Chadwick, 2019). With the rapid development of social e-commerce

platforms, these strategies have evolved toward more personalized, interactive, and engagement-driven forms of communication.

Among the various types of e-commerce marketing communication strategies, precision marketing, viral marketing, and gamification marketing have emerged as particularly important approaches in digital platforms. These strategies not only enhance the effectiveness of marketing communication but also play a crucial role in influencing consumer engagement, participation, and loyalty. Therefore, this study focuses on these three strategies as key dimensions of e-commerce marketing communication in the context of social e-commerce platforms such as Pinduoduo

Precision Marketing

Precision marketing is a customer-centered and data-driven approach that aims to deliver the right message to the right consumer through appropriate channels and timing. It emphasizes accurate market segmentation, the use of consumer data, and personalized communication to improve marketing effectiveness and return on investment (Zabin & Brebach, 2004; Chaffey & Ellis-Chadwick, 2019). In addition, precision marketing relies on digital technologies and data analytics to understand consumer behavior and develop targeted strategies, thereby enhancing marketing efficiency and customer engagement (Kumar & Reinartz, 2018; Wedel & Kannan, 2016).

Viral Marketing

Viral marketing refers to a communication strategy that leverages social networks and consumer participation to rapidly disseminate marketing messages through user-to-user sharing. This strategy relies on consumers' willingness to share content within their social networks, enabling information to spread widely in a short period of time (Kaplan & Haenlein, 2011; Chaffey & Ellis-Chadwick, 2019). The effectiveness of viral marketing is often reflected in consumers' sharing behavior, engagement, and electronic word-of-mouth (eWOM), which play a crucial role in influencing consumer attitudes and decision-making in digital environments (Hollebeek et al., 2020; Rather et al., 2019).

Gamification Marketing

Gamification marketing involves the application of game design elements, such as points, rewards, and interactive tasks, into non-game contexts to enhance user engagement and participation. This strategy aims to create enjoyable and interactive experiences that motivate consumers and influence their attitudes and behaviors toward brands (Deterding et al., 2011; Hsu & Chen, 2018). By integrating game mechanisms into marketing activities, firms can strengthen emotional connections, increase engagement, and encourage repeated interactions with the platform.

Consumer Loyalty and Satisfaction

Consumer loyalty is widely conceptualized as a multidimensional construct that encompasses both behavioral and attitudinal components. Recent studies define

consumer loyalty not only in terms of repeated purchase behavior but also as a psychological commitment and preference toward a brand or platform (Rather et al., 2019; Kumar & Reinartz, 2018). In digital and e-commerce contexts, loyalty is increasingly understood as the outcome of ongoing customer engagement, satisfaction, and relationship quality between consumers and firms (Tyrväinen et al., 2020). Therefore, contemporary perspectives suggest that consumer loyalty reflects both repeated behavioral intentions and positive attitudes, indicating a long-term relationship between consumers and firms.

In the context of e-commerce, consumer loyalty is closely associated with trust and satisfaction. Consumer trust refers to the belief that a firm or platform is reliable, honest, and capable of fulfilling its promises, particularly in uncertain online environments (Gefen et al., 2003). Trust is especially important in e-commerce due to the lack of face-to-face interaction, which increases perceived risk in transactions (Pavlou, 2003). Prior studies have also highlighted that trust in online environments includes perceptions of website reliability, service quality, and merchant credibility (Bart et al., 2005).

Consumer satisfaction refers to consumers' overall evaluation of their purchase experience, reflecting both cognitive and emotional responses to products, services, and the overall consumption process. In digital commerce contexts, satisfaction is influenced by multiple factors, including product quality, pricing, service performance, platform usability, and post-purchase support (Hollebeek et al., 2020; Chaffey & Ellis-Chadwick, 2019).

Recent research highlights that satisfaction plays a critical role in shaping consumer loyalty, as higher levels of satisfaction lead to stronger repurchase intentions and long-term relationships with digital platforms (Rather et al., 2019; Rather & Hollebeek, 2021). In addition, perceived value and consumer experience have been identified as key antecedents of both satisfaction and loyalty in online environments, influencing how consumers evaluate and respond to their shopping experiences (Tyrväinen et al., 2020; Kumar & Reinartz, 2018). These factors interact to shape consumers' perceptions and behaviors throughout the e-commerce process.

In summary, consumer loyalty in e-commerce is a multidimensional construct shaped by behavioral and attitudinal factors, with trust and satisfaction serving as key determinants. Understanding these relationships is essential for explaining how marketing communication strategies influence consumer loyalty, particularly in digital and social commerce contexts.

Pinduoduo Platform and Communication Strategies

Pinduoduo is a rapidly growing social e-commerce platform founded in 2015, which operates based on a customer-to-business (C2B) group-buying model. The platform differentiates itself from traditional e-commerce by integrating social networking with online shopping, allowing users to share product information and invite others to participate in

group purchases in exchange for lower prices. This model leverages price sensitivity and social interaction, enabling Pinduoduo to expand quickly and become one of the largest e-commerce platforms in China.

In terms of communication strategies, Pinduoduo adopts a distinctive approach that combines precision marketing, viral marketing, and gamification marketing. The platform utilizes precise user targeting and data-driven strategies to deliver personalized content, while its group-buying and sharing mechanisms encourage users to disseminate information within their social networks, resulting in viral communication effects. In addition, gamified features, such as reward-based interactions and participatory activities, are embedded into the shopping process to enhance user engagement and create an enjoyable shopping experience. (Li et al., 2020; Wu, 2023).

These characteristics make Pinduoduo a representative case of social e-commerce platforms, where marketing communication strategies are closely integrated with user behavior and platform design. The combination of personalization, social interaction, and gamified engagement provides an appropriate context for examining how e-commerce marketing communication strategies influence consumer loyalty, particularly among aging consumers in digital environments.

Based on the above literature, aging consumers' lifestyle and e-commerce marketing communication strategies are expected to influence consumer loyalty. In particular, personalized and interactive strategies, such as precision marketing and gamification marketing, can enhance consumer engagement and foster long-term relationships between consumers and platforms. Therefore, this study aims to examine the influence of lifestyle and e-commerce marketing communication strategies on consumer loyalty in the context of the Pinduoduo platform.

Overall, the literature suggests that while lifestyle factors contribute to understanding consumer diversity, marketing communication strategies—particularly those emphasizing personalization and interaction—may play a more decisive role in shaping consumer loyalty in social e-commerce environments.

Research Hypotheses

H1: Aging consumers' lifestyle has a significant influence on consumer loyalty toward the Pinduoduo platform.

H2: Gamification marketing has a significant positive influence on consumer loyalty toward the Pinduoduo platform.

H3: Precision marketing has a significant positive influence on consumer loyalty toward the Pinduoduo platform.

H4: Viral marketing has a significant influence on consumer loyalty toward the Pinduoduo platform.

Research Methodology

This study employed a quantitative research design to systematically investigate the factors influencing consumer loyalty. The target population comprised aging consumers aged 50 years and above residing in Chengdu, China, who possessed direct experience in utilizing the Pinduoduo platform for e-commerce transactions. To ensure data quality and minimize sampling bias, specific inclusion criteria were applied: participants must (1) be at least 50 years of age, (2) have a permanent or long-term residence in Chengdu, and (3) have engaged in at least one purchase or active interaction on Pinduoduo within the past six months. Using a combination of purposive and snowball sampling methods, a total of 437 valid responses were obtained. This sample size is considered highly robust and sufficient for performing Multiple Regression Analysis (MRA), as it exceeds the recommended minimum ratio of 15 to 20 observations per independent variable (Hair et al., 2010). Data were collected through an online questionnaire survey administered between September and October 2023.

The research instrument was a structured questionnaire using a Likert scale, developed based on a comprehensive review of relevant theories and literature, together with insights obtained from in-depth interviews with aging consumers. The qualitative input was used to refine the measurement items, ensuring clarity, content validity, and contextual relevance for aging consumers in the e-commerce environment. Content validity was assessed using the Index of Item-Objective Congruence (IOC), with values ranging from 0.66 to 1.00. The reliability of the questionnaire was confirmed through a pilot test, yielding a Cronbach's alpha coefficient of 0.898. Quantitative data were analyzed using descriptive statistics, correlation analysis, and Multiple Regression Analysis (MRA) to examine the effects of aging consumer lifestyle and e-commerce marketing communication strategies on consumer loyalty toward the Pinduoduo platform.

Research Results

1. Profile and Online Shopping Behavior of Aging Consumers on the Pinduoduo Platform

The demographic profile of the respondents indicates a balanced gender distribution, with males accounting for 50.8% and females 49.2%. The majority of respondents were aged between 55 and 59 years. Most reported a monthly income ranging from 3,001 to 5,000 yuan, and a large proportion were housewives, unemployed, or retired. In terms of education, the highest educational attainment for most respondents was junior high school.

Regarding e-commerce consumer behavior, the majority of aging consumers reported having one to three years of experience using the Pinduoduo platform. Most respondents shopped one to five times per month, with clothing and food being the most frequently purchased product categories. The primary motivations for using Pinduoduo were lower prices and group-buying mechanisms. In terms of usage patterns, respondents typically spent between 5 and 30 minutes per shopping session, with average expenditure per transaction ranging from 101 to 300 RMB.

Lifestyle Characteristics of Aging Consumers

The lifestyle distribution of aging consumers was relatively balanced across the three categories, with 35.2% classified as Best, 29.1% as Bright, and 35.7% as Basic. This distribution indicates considerable lifestyle diversity among aging consumers on the Pinduoduo platform rather than a homogeneous consumer group.

Perceptions of E-commerce Marketing Communication Strategies

The results indicate that aging consumers held generally positive perceptions toward e-commerce marketing communication strategies employed by the Pinduoduo platform. All three marketing communication strategies—gamification marketing, precision marketing, and viral marketing—were evaluated at a high level.

Among these strategies, gamification marketing received the highest mean score ($\bar{X} = 3.77$, S.D. = 1.23), followed by precision marketing ($\bar{X} = 3.61$, S.D. = 1.29) and viral marketing ($\bar{X} = 3.56$, S.D. = 1.33). The overall mean score for marketing communication strategies was 3.65, indicating a high level of recognition among aging consumers.

Level of Consumer Loyalty Toward the Pinduoduo Platform

Consumer loyalty toward the Pinduoduo platform was also rated at a high level across all dimensions. Consumer satisfaction demonstrated the highest mean score ($\bar{X} = 3.84$, S.D. = 1.15), followed closely by consumer trust, perceived value, and consumer experience, each with a mean score of 3.82.

The overall mean score for consumer loyalty was 3.83, reflecting a high level of loyalty among aging consumers. These findings indicate that aging consumers on the Pinduoduo platform are characterized by diverse lifestyle patterns, moderate online shopping frequency, and strong price sensitivity. They also demonstrate generally positive perceptions toward marketing communication strategies, particularly gamification and precision marketing, and exhibit a high level of loyalty toward the platform.

2. Influence of E-commerce Consumer Characteristics and Marketing Communication Strategies on Consumer Loyalty

To examine the influence of aging consumers' lifestyle and e-commerce marketing communication strategies on consumer loyalty toward the Pinduoduo platform, correlation analysis and multiple regression analysis were conducted.

The results of the correlation analysis indicate that e-commerce marketing communication strategies were significantly and positively related to consumer loyalty. Gamification marketing, precision marketing, and viral marketing all showed statistically significant positive correlations with consumer loyalty. Among these variables, precision marketing exhibited the strongest correlation with consumer loyalty, followed by viral marketing and gamification marketing. In contrast, aging consumer lifestyle was not

significantly correlated with consumer loyalty, suggesting that lifestyle differences alone do not directly relate to loyalty formation on the platform.

Before conducting the multiple regression analysis, multicollinearity among the independent variables was examined using the Variance Inflation Factor (VIF). As shown in Table 1, the VIF values ranged from 1.005 to 3.415, indicating no multicollinearity.

Table 1 Variance Inflation Factor (VIF) in Multiple Regression Analysis

Variables (X)	VIF
Aging Consumer Lifestyle (X1)	1.005
Gamification Marketing (X2)	1.188
Precision Marketing (X3)	3.415
Viral Marketing (X4)	3.129

Multiple regression analysis further clarified the predictive effects of the studied variables on consumer loyalty. The overall regression model was statistically significant and explained 37.4% of the variance in consumer loyalty ($R^2 = 0.374$).

Table 2 The Results of Enter Multiple Regression Analysis of Aging Consumer Lifestyle, Gamification Marketing, Precision Marketing and Viral Marketing on Customer Loyalty

	b	SEb	β	t	Sig.
Constant	1.515	.185		8.198	.000
Aging Consumer Lifestyle	.002	.036	.002	.052	.959
Gamification Marketing	.219	.046	.199	4.792	.000
Precision Marketing	.325	.057	.400	5.683	.000
Viral Marketing	.086	.046	.126	1.875	.061

$R=0.611a$, $R^2=0.374$, $R^2_{adj}=0.368$

The Multiple Regression Analysis results reveal that precision marketing had the strongest and most significant positive influence on consumer loyalty ($\beta = 0.400$, $p < .001$). Gamification marketing also demonstrated a significant positive effect on consumer loyalty ($\beta = 0.199$, $p < .001$). However, viral marketing did not show a statistically significant effect on consumer loyalty in the regression model. Similarly, aging consumer lifestyle did not have a significant influence on consumer loyalty.

The hypothesis testing results indicate that H2 and H3 were supported, while H1 and H4 were not supported. Specifically, precision marketing and gamification marketing significantly influenced consumer loyalty, whereas lifestyle and viral marketing did not show significant effects.

Overall, these findings indicate that consumer loyalty among aging users of the Pinduoduo platform is primarily influenced by marketing communication strategies, particularly precision marketing and gamification marketing. Lifestyle characteristics of aging consumers, while diverse, do not independently predict loyalty toward the platform.

Research Discussion

The findings demonstrate that age is a significant demographic factor influencing aging consumers' perceptions of e-commerce marketing communication strategies and their loyalty toward the Pinduoduo platform. Specifically, consumers aged 50–59 exhibit higher levels of engagement and stronger loyalty compared to those aged 60 and above. This result reinforces the argument that aging consumers are not a homogeneous group, but consist of sub-segments with varying levels of consumption capability and digital engagement.

From a theoretical perspective, this finding can be explained by differences in risk perception and trust formation in digital environments. Prior research suggests that trust plays a central role in shaping online consumer behavior and loyalty, particularly under conditions of uncertainty (Gefen et al., 2003; Anderson & Srinivasan, 2003). Younger aging consumers (50–59) are more likely to develop trust through repeated interactions and accumulated experience, whereas older consumers tend to be more cautious, leading to lower engagement and weaker loyalty. This highlights the importance of trust-based mechanisms in explaining variations within aging consumer groups.

Interestingly, the results show that lifestyle does not significantly influence consumer loyalty. This finding suggests that, among aging consumers, functional considerations such as convenience, reliability, and risk reduction are more important than lifestyle-based differences. Recent studies also indicate that older consumers tend to prioritize utilitarian value over symbolic consumption in digital environments (Liu & Wang, 2018; Pereira et al., 2025). Therefore, lifestyle segmentation may have limited explanatory power in predicting loyalty in e-commerce contexts.

More importantly, the study reveals that marketing communication strategies play a decisive role in shaping consumer loyalty. This finding is consistent with digital marketing theory, which emphasizes the role of integrated and interactive communication in building long-term customer relationships (Tuten & Solomon, 2017; Chaffey & Ellis-Chadwick, 2019). Among the strategies examined, precision marketing exerts the strongest influence, followed by gamification marketing, while viral marketing does not show a significant effect.

The strong effect of precision marketing can be explained through its ability to enhance perceived value and reduce uncertainty in decision-making. By delivering relevant and personalized information, precision marketing improves consumers' evaluation of products and services, which directly contributes to satisfaction and loyalty. Recent studies confirm that personalization plays a central role in strengthening customer engagement, trust, and loyalty in digital environments (Casaca, 2024; Tamilmani et al., 2025). In particular, personalized marketing has been shown to enhance perceived relevance and emotional connection, which significantly improves customer retention and long-term loyalty (Shin et al., 2020; Hardcastle, 2025). For aging consumers, who tend to be more risk-averse, such mechanisms are particularly important in reducing cognitive effort and increasing confidence in online transactions.

Gamification marketing also demonstrates a significant positive influence, indicating that interactive and experiential elements can enhance consumer engagement. This finding is consistent with experiential consumption theory, which emphasizes the role of emotional and interactive experiences in shaping consumer responses and loyalty (Holbrook & Hirschman, 1982). Recent empirical studies further confirm that engagement-based strategies, including gamified interactions, enhance perceived value and customer experience, which in turn contribute to loyalty formation (Tyrväinen et al., 2020). However, its relatively weaker effect compared to precision marketing suggests that engagement alone may not be sufficient without relevance and clarity, particularly for aging consumers who prefer simple and meaningful interactions.

In contrast, viral marketing does not significantly influence consumer loyalty, despite its positive correlation. While previous studies emphasize the effectiveness of social sharing and digital word-of-mouth in influencing consumer behavior, particularly among younger users, recent research suggests that personalization and relationship-based strategies play a more critical role in sustaining long-term loyalty in digital environments (Rahayu, 2024; Pereira et al., 2025). This indicates that aging consumers may rely more on personal evaluation and perceived value rather than peer-driven communication, highlighting a limitation in the applicability of viral marketing strategies across different age groups.

From a broader academic perspective, this study contributes to the literature by addressing a gap in understanding aging consumers in social e-commerce contexts. Recent research highlights that personalization, trust, and digital marketing strategies are key drivers of customer loyalty, yet empirical studies integrating these factors specifically for aging consumers remain limited (Pereira et al., 2025). By integrating lifestyle and marketing communication strategies within a single framework, this study provides new empirical evidence that consumer loyalty among aging populations is primarily driven by personalized and value-oriented communication mechanisms rather than lifestyle

differences. This finding extends existing theories of customer loyalty by demonstrating that the effectiveness of marketing strategies varies across age segments, particularly in digital environments.

Overall, this study advances theoretical understanding by demonstrating that aging consumer loyalty in digital commerce is shaped by the interplay between perceived value, trust, and communication effectiveness. These findings contribute to refining existing theories and emphasize the need for age-sensitive approaches in e-commerce marketing research.

Research Limitations

This study has several limitations. First, the sample is limited to aging consumers in Chengdu, which may affect the generalizability of the findings. Second, the study focuses on selected variables, and other factors such as service quality and logistics performance were not included. Third, the cross-sectional design limits the ability to infer causal relationships. Future research should consider broader samples, additional variables, and longitudinal approaches to provide a more comprehensive understanding of aging consumer loyalty.

Research Recommendation

1. Recommendation for Application

Based on the findings, e-commerce platforms should adopt age-sensitive and strategy-specific approaches, with particular emphasis on precision marketing and gamification marketing.

- 1) E-commerce platforms should prioritize precision marketing by delivering relevant product information, personalized promotions, and targeted recommendations. This approach can strengthen trust, perceived value, and satisfaction, which are key drivers of loyalty among aging consumers.
- 2) Gamification strategies should focus on low-complexity and user-friendly activities, such as reward-based participation and simple interactive campaigns, to enhance engagement without creating cognitive burden for aging users.
- 3) Platforms should differentiate between sub-groups of aging consumers by offering interactive features for younger users (50–59) while emphasizing simplicity, clarity, and reliability for older users (60+). Functional aspects such as ease of use and risk reduction should be prioritized over lifestyle-based segmentation.

2. Recommendation for Further Research

Future research should include aging consumers from diverse regions, socioeconomic backgrounds, and cultural settings to improve generalizability.

Factors such as service quality, logistics performance, and after-sales service should be examined to provide a more comprehensive understanding of consumer loyalty.

Future studies should explore mediating factors (e.g., trust, perceived value) and compare different e-commerce platforms to better understand variations in loyalty formation.

References

- Anderson, E. W., & Srinivasan, S. S. (2003). E-satisfaction and e-loyalty: A contingency framework. *Psychology & Marketing*, 20(2), 123–138.
<https://doi.org/10.1002/mar.10063>
- Bart, Y., Shankar, V., Sultan, F., & Urban, G. L. (2005). Are the drivers and role of online trust the same for all websites and consumers? A large-scale exploratory empirical study. *Journal of Marketing*, 69(4), 133–152.
<https://doi.org/10.1509/jmkg.2005.69.4.133>
- Bennett, R., & Rundle-Thiele, S. (2002). A comparison of attitudinal loyalty measurement approaches. *Journal of Brand Management*, 9(3), 193–209.
<https://doi.org/10.1057/palgrave.bm.2540069>
- Casaca, J. A. (2024). *The influence of personalization on consumer satisfaction: Trends and challenges*. IGI Global.
- China Internet Network Information Center. (2022). *Statistical survey on internet development in China* (December 2022). <https://www.cnnic.net.cn>
- Chaffey, D., & Ellis-Chadwick, F. (2019). *Digital marketing: Strategy, implementation, and practice* (7th ed.). Pearson Education.
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining gamification. In *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments* (pp. 9–15). Association for Computing Machinery. <https://doi.org/10.1145/2181037.2181040>
- East, R., Hammond, K., & Lomax, W. (2008). Measuring the impact of positive and negative word of mouth on brand purchase probability. *International Journal of Research in Marketing*, 25(3), 215–224. <https://doi.org/10.1016/j.ijresmar.2008.04.001>
- Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51–90. <https://doi.org/10.2307/30036519>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Pearson Education.
- Hardcastle, K., Vorster, L., & Brown, D. M. (2025). Understanding Customer Responses to AI-Driven Personalized Journeys: Impacts on the Customer Experience. *Journal of Advertising*, 54(2), 176–195. <https://doi.org/10.1080/00913367.2025.2460985>
- Hollebeek, L. D., Srivastava, R. K., & Chen, T. (2020). S-D logic-informed customer engagement: Integrative framework, revised fundamental propositions, and application to CRM. *Journal of the Academy of Marketing Science*, 48(1), 161–185.
<https://doi.org/10.1007/s11747-019-00659-4>
- Hsu, C.-L., & Chen, M.-C. (2018). How gamification marketing activities motivate desirable consumer behaviors: Focusing on the role of brand love. *Computers in Human Behavior*, 80, 165–179. <https://doi.org/10.1016/j.chb.2017.11.010>

- Hwang, Y., & Lee, J. (2019). The role of technology readiness in consumers' adoption of mobile internet services between South Korea and China. *International Journal of Mobile Communications*, 17(4), 427–448.
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59–68.
<https://doi.org/10.1016/j.bushor.2009.09.003>
- Kotler, P., Keller, K. L., & Chernev, A. (2022). *Marketing management* (16th ed.). Pearson.
- Kumar, V., & Reinartz, W. (2018). *Customer relationship management: Concept, strategy, and tools* (3rd ed.). Springer.
- Li, S., Hu, S., & Pan, S. (2020). Research on the brand communication strategy of China's social e-commerce from the perspective of new media: Take Pinduoduo brand as an example. *Economic Perspective*, (2), 58–64. [In Chinese]
- Lian, J. W., & Yen, D. C. (2014). Online shopping drivers and barriers for older adults: Age and gender differences. *Computers in Human Behavior*, 37, 133–143.
<https://doi.org/10.1016/j.chb.2014.04.028>
- OECD. (2020). *Consumers in the digital age*. OECD Publishing.
<https://doi.org/10.1787/5d7f37c3-en>
- Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3), 101–134. <https://doi.org/10.1080/10864415.2003.11044275>
- Pereira, M. S., et al. (2025). Factors of customer loyalty and retention in the digital environment. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2).
- Rahayu, S. (2024). Digital marketing strategies to build customer loyalty. *Atestasi: Jurnal Ilmiah Akuntansi*, 7(1), 792–806.
- Rather, R. A., & Hollebeek, L. D. (2021). Customers' service-related engagement, experience, and behavioral intentions: The moderating role of age. *Journal of Retailing and Consumer Services*, 60, 102453.
<https://doi.org/10.1016/j.jretconser.2020.102453>
- Rather, R. A., Tehseen, S., & Parrey, S. H. (2019). Promoting customer brand engagement and brand loyalty through customer brand identification and value congruity. *Journal of Retailing and Consumer Services*, 47, 321–332.
<https://doi.org/10.1016/j.jretconser.2018.12.002>
- Solomon, M. R. (2020). *Consumer behavior: Buying, having, and being* (13th ed.). Pearson.
- Strauss, J., & Frost, R. (2005). *E-marketing* (4th ed.). Pearson Prentice Hall.
- Tamilmani, K., Archana, S., Mohan, T., et al. (2025). Brand loyalty in the digital age: The role of personalization and AI. *Journal of Information Systems Engineering and Management*, 10(32s), 716–721. <https://doi.org/10.52783/jisem.v10i32s.5404>

- Tuten, T. L., & Solomon, M. R. (2017). *Social Media Marketing*. Sage Publications.
- Tyrväinen, O., Karjaluo, H., & Saarijärvi, H. (2020). Personalization and hedonic motivation in creating customer experiences and loyalty. *Journal of Retailing and Consumer Services*, 57.
- United Nations. (2020). *World population ageing 2020 highlights: Living arrangements of older persons*. United Nations.
- Wedel, M., & Kannan, P. K. (2016). Marketing analytics for data-rich environments. *Journal of Marketing*, 80(6), 97–121. <https://doi.org/10.1509/jm.15.0413>
- Wu, W. (2023). Strategic research on sustainable development. *Accounting of Chinese Township Enterprises*, (02), 163–165. [In Chinese]
- Yao, Y., & Zhang, D. (2003). Characteristics and marketing strategies of the elderly consumer market. *Economic Forum*, (13), 43–44.
- Zabin, J., & Brebach, G. (2004). *Precision marketing: The new rules for attracting, retaining, and leveraging profitable customers*. John Wiley & Sons.