Study on Consumers' Choice Game Between Live Streaming E-commerce and Shelf E-commerce

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Abstract: With the rapid advancement of digital technology, e-commerce has become a dominant force in the global retail industry. Among various models, live streaming e-commerce and shelf e-commerce have emerged as predominant paradigms, each offering unique advantages and challenges. This study explores consumer preferences between these two models, analyzing factors influencing decision-making and business strategies. A comparative case study between Taobao Live and Amazon highlights the operational differences. These structural distinctions generate divergent consumer behavior patterns: live streaming e-commerce fosters real-time interaction, trust, and impulse buying, whereas shelf e-commerce emphasizes structured browsing, product comparison, and convenience. The analysis identifies key issues such as misinformation and deceptive marketing in live streaming, decision fatigue, and inauthentic product evaluations in shelf e-commerce. Furthermore, logistical inefficiencies and data privacy concerns are common challenges in both models. To address these issues, this study suggests strengthening regulations and transparency in live streaming, optimizing AI-driven recommendations in shelf e-commerce, improving supply chain management, and enhancing data privacy protections. These measures aim to create a more trustworthy and consumer-friendly e-commerce environment. This research provides valuable insights for businesses to refine marketing strategies, enhance consumer engagement, and optimize profitability. Additionally, it contributes to consumer protection and policy development, ensuring a fair and sustainable digital marketplace.

1 INTRODUCTION

1.1 Research Background

As digital technology advances and the internet becomes more prevalent in people's lives, e-commerce has emerged as a major trend in global retail marketplaces. Global e-commerce sales in 2021 were $5.2 trillion, and by 2025, they are expected to surpass $7.4 trillion, according to research by eMarketer (eMarketer, 2021). Shelf e-commerce and live e-commerce are currently the most popular forms of e-commerce. They both impact business operations as well as consumer behavior. Live streaming e-commerce allows businesses to communicate with customers directly via video platforms such as Douyin and YouTube, combining online interaction with product sales. Shelf e-commerce is the traditional retailing model of the typical app browsing page. Consumers browse product catalogs on online platforms such as Alibaba and Amazon without directly engaging immediately.

The significance of consumer choice between the two models is that they have their own set of advantages and disadvantages. Live streaming e-commerce is urgent and trustworthy through real-time communication and influencer endorsement, with higher conversion rates (Zhao, Yang & Zhao,2024). Shelf e-commerce, however, is convenient and product specification-abundant, allowing consumers to make rational purchase decisions through reviews and specs. An understanding of consumer choice determinants among the two models has extensive business and social connotations. Businesses can optimize advertising, enhance user engagement, and optimize profitability. In addition, insights from this research can enlighten policymakers and industry regulators to create guidelines for ethical and transparent online purchasing practices.

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1.2 Literature Review

Certain studies have explored the coordination between live streaming and shelf e-commerce, featuring consumer behavior, marketing strategies, and technological advancement. Xu et al. found that live streaming e-commerce elevates consumer confidence and purchasing behavior due to instant interaction between the host and consumer (Xu, Wu & Li, 2020). The study focuses on the significance of trust in sales triggering as live streamers can verify the product, answer queries from consumers in real time, and create a sense of urgency among their viewers by offering limited-time promotions. Huang & Suo were concerned with the psychological impact of live streaming e-commerce and mentioned how consumers make spontaneous purchases due to social influence by live streamers and peer-to-peer connections through comments (Huang & Suo, 2021). The study further revealed that emotional attachment plays a significant role in shaping consumer decisions, as live streaming interactive elements improve the purchasing experience. Tan examined the effectiveness of shelf e-commerce in providing detailed product information, allowing consumers to compare alternatives before purchasing (Tan, 2022). The study shows that shelf e-commerce is used for analytical buyers who have a preference for product attributes, price comparisons, and reviews compared to impulse buying. Necula & Păvăloaia studied the use of artificial intelligence (AI) in improving consumer experience through live streaming and shelf e-commerce (Necula& Păvăloaia, 2023). The study revealed that AI-based recommendation systems improve the efficiency of consumer choice-making through similar product recommendations based on browsing history and purchase behavior. Chen & Yang analyzed the influence of influencer marketing on live streaming e-commerce, demonstrating that celebrity influencers significantly impact product sales and brand awareness (Chen & Yang, 2023). The study emphasized the use of influencer credibility and audience engagement in determining the success of live streaming campaigns. These studies are helpful in analyzing consumer behavior and marketing strategies in both e-commerce platforms. However, previous studies only focused on the individual elements of live streaming or shelf e-commerce without an investigation into how consumers compare the two models.

1.3 Research Gap

Most academics have been intent on studying either live streaming e-commerce or shelf e-commerce individually, with fewer comparative studies into consumer preference for the two models. While some past studies have dealt with trust and impulse buying on live streaming e-commerce, to the best of our knowledge, they have not compared how this affects consumer choice versus shelf e-commerce. Some other studies on shelf e-commerce predominantly dealt with rational choice and do not have a comparative discussion on how it fares relative to live streaming e-commerce on consumer attraction. Apart from the role of e-commerce technological innovations, such as AI-based recommendations and interactions, on consumer preferences, no research has addressed these questions. They are required by businesses to develop comprehensive e-commerce strategies that will cater to different types of consumers. Therefore, this study attempts to bridge such gaps by analyzing the motivations of consumer choice between shelf e-commerce and live streaming.

1.4 Research Framework

To complement the identified gap in research, the current research takes a systematic approach:

Firstly, this study explores consumer preference for live streaming e-commerce on the grounds of trust, impulse purchase behavior, and social interaction.

Second, this study examines the advantages of shelf e-commerce in rational choice-making, availability of information, and price comparison.

Third, a comparative analysis is conducted to determine how consumers weigh the benefits and drawbacks of each model by product category, shopping motivation, and technology effect.

Finally, the study provides strategic suggestions to firms to optimize their e-commerce models in line with customer choice.

According to this study design, the study aims to develop a comprehensive understanding of shelf e-commerce and live streaming competition dynamics, offering value for entrepreneurs, policymakers, and researchers.

2 CASE DESCRIPTION

2.1 Overview of Live Streaming and Shelf E-commerce

Live streaming e-commerce and shelf e-commerce have been widely favored worldwide in the digital economy, both of which offer customers exclusive experiences. Live streaming e-commerce is video broadcasting and internet shopping through which

customers can converse with hosts in real time. This model has enjoyed phenomenal success in China, where Taobao Live and Douyin (the Chinese version of TikTok) have revolutionized consumer engagement. According to a study by iResearch, China's live streaming e-commerce industry was approximately ¥3.5 trillion ($540 billion) in 2023 and accounted for close to 20% of the country's total e-commerce sales (iResearch, 2023).

Conversely, shelf e-commerce is a traditional online shopping experience whereby consumers browse static lists of products on websites such as Amazon, JD.com, and Alibaba. Shelf e-commerce relies primarily on search algorithms, product recommendations, and consumer reviews to succeed. As convenient and wide product selection as this mode provides, it is less interactive and engaging than live streaming e-commerce. Despite such dissimilarity, both sites are developed as reactions to changing shopper behaviors and have spawned cross-platform hybrids blending live streaming and classical web shopping websites.

2.2 Case Study: Taobao Live vs. Amazon

2.2.1 Taobao Live: Pioneering Live Streaming E-commerce

Taobao Live, which Alibaba launched in 2016, has been the trendsetter in live streaming e-commerce. Brands and celebrities on the site can live-stream product events, present instant questions from buyers, and unveil exclusive deals. One of the biggest milestones was Alibaba's "Double 11" shopping festival in 2022, when live stream sales accounted for over ¥100 billion ($15.7 billion) in one day (Alibaba Group, 2022). The platform's success is that it can generate a sense of urgency and trust through influencer marketing, live testing, and social interaction.

2.2.2 Amazon: The Global Shelf E-commerce Leader

The world's biggest e-commerce platform, Amazon, has monopolized the shelf e-commerce trend with its gigantic product library, advanced recommendation engines, and robust logistics network. While Taobao Live is based mostly on consumer feedback and artificial intelligence-based personalized suggestions to induce purchases, Amazon is largely dependent on consumer feedback and artificial intelligence-based personalized suggestions to drive sales. The total e-commerce sales of Amazon in 2022 were $514 billion, and the Prime membership program spearheaded customer loyalty (Amazon Inc., 2022). Although Amazon has tried live streaming capabilities in the form of "Amazon Live," its business model is still shelf-based e-commerce.

2.3 Comparison and Implications

The contrast in success between Taobao Live and Amazon also mirrors the comparative advantages and disadvantages of each model. Live streaming commerce relies on real-time interaction, impulse buying, and influencer-derived trust and, therefore, is most appropriate for fashion, cosmetics, and lifestyle products. Shelf e-commerce is most appropriate for convenience-oriented consumers who desire rich product information and a linear shopping process. It is essential for companies looking to optimize their e-commerce models and optimize customer interaction to understand how these two models engage.

3 ANALYSIS ON THE PROBLEM

3.1 Factors Identified in Shelf E-commerce and Live Streaming (Positive Contribution)

Shelf e-commerce and live streaming e-commerce have revolutionized the online retailing market greatly, and both these models introduce new opportunities for consumers and companies. These two models drive consumer behavior, marketplace expansion, and shopping experience differently.

3.1.1 Improved Consumer Engagement and Purchase Conversion

Live streaming e-commerce inspires instant interaction among consumers and merchants, creating an immersive shopping experience that induces trust and purchasing intention. Unlike shelf e-commerce, where customers make purchases based on fixed product information and feedback, live streaming allows sellers to display products in real time, answer questions in real time, and make time-limited promotions. According to Shih et al., this real-time interactive type significantly enhances customer trust and purchasing intention, as customers are more confident about the quality and applicability of products they see live (Shih, Silalahi & Eunike, 2024).

Secondly, the live streaming business also takes advantage of influencer marketing, whereby

influential opinion leaders (KOLs) impact consumer decision-making through endorsements. Studies indicate that buyers are likely to purchase products endorsed by known influencers, which means live streaming is a very effective sales channel. Shelf e-commerce, on the other hand, boosts engagement via AI-driven personalization. Suggestion algorithms look at browsing history and previous buys to suggest related products, easing shopping. Habil et al. concluded in a study that user engagement and search time are minimized through personalized recommendations in shelf e-commerce, leading to higher customer retention (Habil, El-Deeb & El-Bassiouny, 2023).

3.1.2 Expanding Market Reach and Business Scalability

Shelf e-commerce and live streaming have significantly enhanced market accessibility, particularly for small and medium-sized enterprises (SMEs). Live streaming enables sellers to reach a global audience in real time, breaking geographical barriers and fostering cross-border trade. For example, TikTok Shop reported a gross merchandise value (GMV) growth of over 300% in Southeast Asia in 2022, highlighting its role in cross-border e-commerce (Coresight Research, 2023). Platforms such as Taobao Live also demonstrate success, with annual transaction volumes exceeding 500 billion RMB, providing SMEs with a cost-effective marketing channel (Coresight Research, 2023).

Similarly, shelf e-commerce enables businesses to scale operations efficiently through robust logistics and warehousing systems. Companies like Amazon and JD.com optimize inventory management and fulfillment, ensuring rapid delivery. Amazon's fulfillment network delivers over 3.5 billion packages annually, reducing shipping times and operational burdens for SMEs (JD.com., 2023). JD Logistics achieves 90% same-day or next-day delivery coverage in China, exemplifying the efficiency of shelf e-commerce (JD.com., 2023).

3.1.3 Facilitating Consumer Decision Making through Information Accessibility

Shelf e-commerce offers detailed product information, such as specifications, price comparisons, and reviews, enabling informed decisions. Compared to live streaming, where consumption is largely driven by urgency and sociality, shelf e-commerce allows consumers to logically compare multiple alternatives before making the decision to purchase. As Liu & Guo have contended, product comparison at length lessens post-purchase regret and general satisfaction (Liu & Guo, 2021).

Live streaming e-commerce also supports intelligent purchasing with live product demonstrations. Customers receive an idea of products for real-life use, ask for product features, and receive immediate answers from sellers. Direct contact does away with doubt and enhances customer confidence with purchases.

3.2 Issues That Have Been Identified in Live Streaming and Shelf E-commerce (Negative Impact)

Despite their virtues, Shelf e-commerce, and live e-commerce are contaminated by problems that erode customer trust, the sustainability of companies, and market fashion.

3.2.1 Misinformation and Deceptive Marketing in Live Streaming E-commerce

Misrepresentation is the most critical issue in live streaming business. Sellers and influencers often exaggerate product attributes or use misleading advertising to boost sales. Customers are frequently driven to make impulse purchases due to limited-time discounts and influencer endorsements. For instance, in 2023, a well-known skincare brand in China was fined by regulatory authorities after falsely claiming that its product could "remove dark spots in seven days," leading to a surge in consumer complaints (Wadhawan & Wadhawan, 2024). Wadhawan & Wadhawan's study also found that approximately 30% of customers were dissatisfied with live-streaming purchases due to discrepancies between product demonstrations and actual quality (Wadhawan & Wadhawan, 2024).

Moreover, influencers acting as product promoters raise concerns about biased reviews. Some prioritize financial incentives over consumer interests, leading to unethical promotional tactics. Since live streaming e-commerce is still underregulated, ensuring transparency and accountability remains a challenge.

3.2.2 Consumer Overload and Decision Fatigue in Shelf E-commerce

Though shelf e-commerce offers the customer an enormous variety of products, too much choice can cause decision fatigue. Research has established that

when customers are offered too many comparable product options, they feel cognitive overload, and it becomes challenging for them to make the purchase. In contrast to live streaming, where hosts provide product suggestions and make explicit recommendations, shelf e-commerce is based on search filtering and algorithms that might not always reflect personal taste.

In addition, manipulated ratings and inauthentic product evaluations are common problems in shelf e-commerce. Sellers manipulate reviews to artificially increase the credibility of products, which has made it difficult for consumers to separate real and misleading feedback. A study by Shanthi & Desti revealed that 42% of online consumers have been exposed to inauthentic product evaluations, which has adversely affected their confidence in e-commerce websites (Shanthi & Desti, 2015).

3.2.3 Logistical Challenges and Supply Chain Constraints

Live streaming e-commerce and shelf e-commerce are vulnerable to logistical problems that impact delivery times and customer satisfaction. Last-minute rush orders during major sales events in live streaming e-commerce often lead to stockouts and late shipments. During the 2023 "Double 11" shopping festival, logistics delays on platforms, including Taobao and JD.com, surged by nearly 20%, resulting in a high volume of consumer complaints (Nabbosa & Iftikhar, 2019). Research by Nabbosa & Iftikhar found that nearly 25% of live streaming orders face significant supply chain disruptions and inventory planning delays (Nabbosa & Iftikhar, 2019).

Shelf e-commerce, despite its efficient logistics, also struggles with issues such as counterfeiting and inconsistent quality control. Third-party vendors selling counterfeit products on platforms like Amazon and eBay pose credibility risks. Ensuring product authenticity and maintaining consistent quality remain ongoing challenges in the shelf e-commerce business.

3.2.4 AI-Driven E-commerce Risks to Privacy and Data Security

The intersection of AI and data analytics in shelf e-commerce and live streaming generates strong privacy concerns. Live streaming platforms collect large volumes of user information, including what they watch, buy, and interact with, and can be utilized to serve targeted ads. Shelf e-commerce platforms track user behavior to enhance recommendation algorithms as well.

Mubarak Alharbi et al. noted in a study that nearly 40% of consumers are worried about the use of their personal information during e-shopping environments (Mubarak Alharbi, Zyngier & Hodkinson, 2013). Inappropriate data sharing, security breaches, and transparency shortages in the data collection process destroy consumer trust. It is important to resolve such issues by enforcing strong encryption practices and harmonizing data privacy legislation.

4 SUGGESTIONS

4.1 Strengthening Regulations and Transparency to Reduce Misinformation in Live Streaming E-commerce

To address the issue of misinformation and misleading marketing in live streaming e-commerce, both platform operators and government regulators should enhance merchant verification and establish stricter product promotion standards. Firstly, platforms should require merchants and influencers to provide detailed product certification information, such as quality inspection reports and authentic customer feedback, to enhance consumer trust. Additionally, a "live-stream playback review" mechanism can be introduced, where random audits of live-streamed content are conducted to ensure the accuracy of promotional claims.

Secondly, government regulators should introduce stricter advertising laws with hefty fines and market bans for false advertising. For example, China's State Administration for Market Regulation strengthened its oversight of live streaming e-commerce in 2023, imposing heavy fines on brands found guilty of deceptive advertising, which significantly reduced fraudulent marketing practices (Fox, Lynn & Rosati, 2022). Furthermore, consumer organizations and third-party monitoring agencies can establish a "live-stream e-commerce credibility rating system," publicly rating merchants and influencers based on their trustworthiness to enhance market transparency.

4.2 Optimizing Personalized Recommendation Systems to Reduce Information Overload and Decision Fatigue

To mitigate decision fatigue caused by the overwhelming number of product choices in shelf e-

commerce, platforms should optimize AI-driven recommendation algorithms to make suggestions more personalized. Implementing a "customized preference setting" feature would allow users to manually adjust recommendation parameters, such as price range and brand preferences, thereby reducing irrelevant product exposure. Additionally, platforms could introduce an "intelligent filtering mode" that automatically selects the most suitable products based on users' shopping history and browsing behavior.

To enhance user experience, platforms could integrate "short-form product video reviews" within product pages, offering concise visual summaries instead of lengthy text descriptions. Research indicates that products accompanied by short video demonstrations experience a 25% higher purchase conversion rate compared to those with text-only descriptions (Sarma, Nagavalli & Sresth, 2020).

4.3 Enhancing Supply Chain Management to Improve Logistics Efficiency

To address logistics delays and supply chain issues in both live streaming and shelf e-commerce, businesses should strengthen digital supply chain management to improve inventory control and order fulfillment efficiency. Firstly, live streaming platforms can implement an "AI-driven inventory forecasting" system that predicts demand based on historical sales data and real-time traffic, preventing stock shortages or overstocking. For example, JD Logistics has successfully optimized its inventory distribution using big data analytics, enabling 90% of orders in China to be delivered within the same day or the next (Sarma, Nagavalli & Sresth, 2020).

Additionally, businesses can deepen collaborations with third-party logistics providers to accelerate order fulfillment. Alibaba's Cainiao Network has improved delivery efficiency by 30% during major sales events like "Double 11" through smart warehouse allocation. Live streaming merchants can also adopt a "pre-sale + batch shipping" model, securing stock in advance to mitigate shipping delays caused by sudden order surges.

4.4 Strengthening Data Privacy Protection to Enhance Consumer Trust

To address data privacy risks associated with AI-driven e-commerce platforms, companies should implement stricter data protection measures to strengthen consumer confidence. Firstly, e-commerce platforms should adopt "end-to-end encryption" to ensure that users' personal data is not compromised during transmission or storage. Additionally, businesses should comply with international data privacy regulations such as the General Data Protection Regulation (GDPR), providing users with clear information on data usage and allowing them to opt out of data sharing.

Moreover, platforms should establish a "User Privacy Control Center," enabling users to manage their data permissions, such as disabling personalized ads or deleting browsing history. Research shows that when users have control over data permissions, their trust in the platform increases by 35% (Fox, Lynn & Rosati, 2022). Governments should also encourage industry self-regulation by requiring e-commerce platforms to publish annual data security compliance reports, ensuring transparency in data handling and reinforcing consumer trust.

Based on the analysis above, Table 1 summary Applicability of measures:

Table 1: Applicability of measures

Stage	Platform measures	Corporate measures	Policy supporting
Short Term (0-6 months)	Content audit system upgrade	Data encryption transformation	Pilot of the implementation of the blacklist system
Interim (6-8 months)	Referral algorithm reconstruction	Intelligent storage construction	Regulatory sandbox start
Long-term (18 + months)	Full chain traceability system	Privacy computing platform	The Digital Markets Act was enacted

5 CONCLUSION

Shelf e-commerce provides a structured browsing experience supported by AI-driven recommendations and efficient logistics, ensuring a rational and convenient shopping process. These features contribute to stable conversion rates and predictable purchasing patterns. In contrast, live streaming e-commerce enhances consumer engagement through real-time interaction and influencer-driven marketing, fostering a more immersive shopping experience. This dynamic and interactive approach often leads to higher participation rates and increased impulse purchases.

Despite their advantages, both models face systemic challenges. From a technological perspective, shelf e-commerce may lead to decision

fatigue due to excessive product choices, while live streaming commerce is vulnerable to misinformation and deceptive marketing tactics. Moreover, logistical inefficiencies remain a concern, affecting delivery speed and reliability. On the governance side, regulatory gaps in live streaming e-commerce raise issues related to transparency, misleading promotions, and ethical data usage. At the same time, privacy risks and algorithmic biases in shelf e-commerce necessitate stronger consumer protection measures. Addressing these challenges through targeted improvements in technology, regulation, and supply chain management will be crucial for fostering a more trustworthy and sustainable e-commerce ecosystem.

This study offers both theoretical and practical contributions to the field of e-commerce. Theoretically, it extends the application of the Technology Acceptance Model (TAM) to live streaming e-commerce, providing a deeper understanding of how real-time interaction and social influence shape consumer decision-making in this emerging format. By integrating behavioral insights with established e-commerce frameworks, this research enriches the academic discourse on digital consumption patterns and engagement dynamics.

Practically, the findings provide actionable insights for both industry stakeholders and policymakers. For e-commerce platforms, optimizing recommendation algorithms can enhance user experience by balancing personalization with information diversity, mitigating issues such as decision fatigue and algorithmic bias. For regulators, the study offers guidance on developing a more structured governance framework that addresses challenges such as misinformation, deceptive marketing, and data privacy concerns. Establishing clear regulatory standards and improving transparency mechanisms can foster a more ethical and consumer-friendly e-commerce environment, ultimately benefiting both businesses and consumers.

Despite its contributions, this study has limitations. It primarily relies on secondary data, such as industry reports and academic studies, which may not fully capture real-time consumer behavior. The lack of primary data, such as surveys and interviews, limits the depth of behavioral analysis.

Future research should incorporate primary data collection methods, such as large-scale surveys and interviews across diverse demographics, to provide a more comprehensive understanding of e-commerce trends. Additionally, exploring emerging technologies like AI-driven virtual shopping assistants and augmented reality (AR) could offer deeper insights into the evolving digital commerce landscape. Addressing these gaps will help businesses and policymakers develop more effective e-commerce strategies.

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