The Use of New Technologies in E-Commerce: A Study of Consumer Experience and Impact Based on Consumer Care Mechanisms

Xinyi Du 1,*, Weihao Ding 2 and Yaqi Li 3

1 High School of Shanghai New Hongqiao
2 High School of Beijing Science & Technology University, Beijing, China
3 Secondary School of Yunnan University
* Corresponding Author Email: 196061319@mail.sit.edu.cn

Abstract. In the past, the single marketing model of traditional e-commerce can no longer meet the experience of consumers in the shopping process, so that consumers' satisfaction and trust in the shopping process have declined, in order to solve this problem. The authors of this paper decided to take the current research and application examples as a starting point to review the existing research and summarize the new e-commerce model based on emerging technologies that have a significant impact and change on e-commerce platforms. This paper focuses on the application of virtual reality technology, virtual fitting mirror technology and artificial intelligence technology in different fields to analyze the impact of corresponding marketing strategies on consumers. This paper uses the SOR model to make a flowchart of the impact of marketing strategies applied by new technologies on consumer psychology and behavior based on existing research. In the end, it was found that new marketing models greatly improved the interaction between consumers and products, so as to regain consumer trust. This paper hopes that this research will have a certain impact on the future marketing model transformation of enterprises and play a certain reference role in future related research.

Keywords: Virtual reality; e-commerce; artificial intelligence.

1. Introduction

With the advancement of science and technology and the digitalization of society, e-commerce has gradually transformed from a marginal field to the core of global commerce. Especially with the emergence and application of new technologies such as artificial intelligence, blockchain, and virtual reality, the e-commerce field has not only experienced the transformation of business and operation models, but also at a deeper level, they are challenging and reshaping consumers' shopping experience and decision-making psychology.

In recent years, due to the rapid growth of e-commerce, consumers' shopping behavior and psychological expectations are also in a dynamic and changeable state. A large number of studies have focused on how to use new technologies to optimize e-commerce operations and improve profitability [1]. Preliminary findings reveal that, for example, artificial intelligence and augmented reality can significantly improve consumer satisfaction with their purchases. However, the more microscopic and deeper dimensions of how these technologies actually act on consumers' mental processes, how they affect their cognition and emotions, and the dangers and challenges that may arise in this need to be explored in more depth.

In this context, the core object of this research is to explore the specific application of new technologies in the e-commerce environment, and focus on how they interact with consumers' psychological mechanisms to further determine consumers' shopping experience and decision-making. The application of new technologies has undoubtedly brought revolutionary changes to the e-commerce field, but their profound impact on changing consumers' cognitive, emotional and behavioral patterns is particularly worth digging into [1].
Firstly, this article will review the application background and current status of new technologies in the e-commerce field, and secondly, discuss in depth the interaction between these technologies and consumer psychological mechanisms and their impact on shopping experience and decision-making [2]. The article will also cover the current mainstream research directions, the research conclusions obtained, and the questions that remain to be answered. Finally, this study will present methodological recommendations and expected academic contributions to the study.

Finally, it is hoped that this review can provide new perspectives and ideas for researchers and practitioners in the field of e-commerce, promote more research on the interaction between new technologies and consumer psychology, and help the field of e-commerce to develop in a deeper and broader direction.

2. Application Situation of New Technologies in the Field of E-commerce

The following types of new technologies will be the focus of this article. The first is virtual reality technology, which is mainly composed of multi-sensor technology, real-time three-dimensional pattern generation technology, multi-sensor interaction technology, etc., to create an immersive shopping environment for consumers [3]. Now it is mostly used in the field of product experience during the shopping process. The second is virtual fitting technology, through computer recognition technology, graphics and other technologies, consumers can conduct virtual fitting, bringing intuitive judgment to consumers [4]. Finally, there is artificial intelligence technology. It systematically uses artificial intelligence technology to understand user demands in the background, analyze the cause and effect of problems, give answers or suggestions, and communicate with consumers through anthropomorphic text and language [5]. Now it is mostly used in the field of after-sales intelligent customer service.

The new model formed by the application of new technologies in e-commerce is obviously different from the traditional e-commerce in the past. In the past, traditional e-commerce relied on 2D pictures or videos to introduce products to customers, but with the emergence of false publicity and quality problems, people's attitudes towards traditional e-commerce have changed, and consumers' psychological needs are multi-level and complex [6]. Therefore, when faced with the choice of some valuable items, consumers will choose to return to the physical store to buy. The application of the above technologies in different fields has solved some problems better. For example, many online shopping platforms have also introduced new virtual reality technology. During the event on Tmall Double 11, the Tmall platform combined VR and AR technology to create a "virtual block". The virtual block combines the shopping environment with goods and virtual reality technology to create an immersive shopping environment for consumers. At the same time, virtual reality technology has also greatly improved the interaction between goods and consumers, improving the single visual sensory experience of traditional e-commerce. Virtual fitting technology is a derivative of virtual reality, but its application is more common today. Large e-commerce platforms such as Taobao and Tmall have joined virtual fitting technology, which effectively improves the efficiency of shopping and presents it to consumers in the most intuitive way. The last one is artificial intelligence technology. On Taobao, the intelligent customer service "Dian Xiaomi" was launched, which provides consumers with simple after-sales service in an anthropomorphic way after sales, effectively improving shopping satisfaction; another type of application is in shopping. In recent years, JD.com has launched an AI smart shopping guide, which can rely on big data to analyze consumers' preferences and needs and provide consumers with corresponding purchase suggestions. As a result, the application of several technologies covers different areas and links in shopping, solving many existing problems.

Relevant studies have shown that in consumers' cognition, shopping methods such as online shopping have a less obvious negative impact on consumers' perception and diagnosis, so it is necessary to further improve the interaction between consumers and products to improve consumers' shopping experience [7]. In this way, promote consumer desire to shop. At the same time, under the
influence of visual, tactile and other perceptual factors, it can create an immersive atmosphere for consumers, and immersion also has an extremely significant impact on consumers' final purchase intention [7]. So, as far as the current research is concerned, the shopping experience that new technologies such as virtual reality bring to consumers is positive. At present, many companies have begun to apply new technologies to online shopping. For example, Apple will use the product as a communication medium through the mobile phone in the way of AR on the sales surface of the company's official website, so that customers can perceive the size and size of the product in the environment at home, and observe the appearance and material of the product from various degrees, so as to change the problem of consumers' lack of perception of goods when shopping online.

3. Virtual Trial Technology and Consumer Consciousness: Analysing the Different Stages of Consumer Behaviour

3.1. Awareness Phase: Stimulating Demand

At the earliest stages of shopping, consumers begin to perceive the presence of a product or service. The application of virtual fitting technology triggers positive psychological stimulation at this stage. When consumers learn that they can actually simulate trying on clothes in a virtual environment, this not only makes shopping more interesting, but also gives them more certainty and stimulates demand. Studies have shown that sensory experiences are essential for elicit emotional resonance, so the application of virtual fitting technology can help elicit a positive emotional response during the shopping awareness stage [8]. Consumers begin to form an emotional connection with the product, which is a key starting point for the psychology of shopping.

3.2. Examination Phase: Mitigating Uncertainty

During the inspection phase of the shopping process, consumers often compare different products or brands to find the option that best suits their needs. The psychological impact of virtual fitting technology at this stage is mainly reflected in reducing shopping uncertainty. Traditional online shopping may lead to doubts about size, color, etc., but virtual fitting technology can alleviate those doubts and increase the certainty of shopping by allowing consumers to simulate try-ons. This certainty creates a sense of trust that facilitates decision-making and product selection. Consumers gradually eliminate hesitation at this stage, allowing them to make purchasing decisions faster [9].

3.3. Decision-making Phase: Strengthening Brand Relationships

The decision-making phase is a critical moment in the shopping decision. At this stage, the combination of big data and artificial intelligence enables e-commerce platforms to provide personalized product recommendations that match consumers' personal preferences. This personalized recommendation creates a strong psychological connection, consistent with the "confirmation bias" theory in psychology. Consumers are more likely to trust and buy products that match their existing preferences, which strengthens their relationships with e-commerce platforms and increases satisfaction. Virtual fitting technology provides more data to e-commerce platforms at this stage, making personalized recommendations more accurate and further enhancing consumer loyalty to the brand. This is a major psychological impact in the e-commerce space and directly affects the making of shopping decisions [10].

3.4. The Shopping Experience: The Emotional Connection of Immersive Technology

Immersive technologies, such as augmented reality (AR) and virtual reality (VR), inject new elements into the shopping experience. Consumers can get a more complete picture of the product through these technologies and even try them on in a virtual environment. This emotional connection helps satisfy consumers' sense of "belonging" and "self-efficacy. “Of psychological needs. Through virtual fitting technology, the emotional bond between consumers and brands becomes stronger,
thereby enhancing their shopping satisfaction and loyalty. This emotional connection provides consumers with a deeper and richer shopping experience, which stimulates a stronger desire to buy and strengthens their emotional bond with the brand.

Overall, the use of virtual fitting technology not only stimulates positive psychological stimulation at different stages, but also reduces uncertainty, strengthens brand relationships, and enriches the shopping experience. These psychological influences directly affect consumers' shopping decisions and satisfaction [11]. Therefore, under the interaction of technology and consumer psychology, the prospects of the e-commerce industry are full of infinite possibilities. The development of new technologies will continue to lead innovation in the e-commerce space, providing a better shopping experience while continuously influencing consumer psychology and behavior.

![Figure 1. SOR model analysis of new technology application business model.](image)

Also, the application of new technology in business can also be demonstrated through SOR model (figure 1). Technology intervention VR (including virtual reality technology, artificial intelligence) multi-sensory interaction (direct visual perception and sound perception) is used as a stimulate. The organism behaves as perceive, emotion and physiology. All of this is going to be response to consumer psychology, consumer's decision and shopping satisfaction.

4. Strategies for the Use of New Technologies

New technologies bring new opportunities for e-commerce marketing. E-commerce companies can use new technologies for precise targeting and personalized recommendations to create rich interactive experiences. Virtual reality technology allows consumers to virtually "try" products and increase their desire to buy. Virtual fitting technology makes online clothing shopping easier. Virtual technology enhances consumers' shopping experience and consumption decisions. Artificial intelligence technology allows e-commerce companies to better meet user needs and increase sales conversion rates. Chatbots interact with consumers in real time to provide shopping assistance. In general, artificial intelligence technology makes e-commerce marketing more accurate and intelligent. In terms of specific marketing applications, new technologies provide e-commerce enterprises with richer, more refined and more intelligent marketing methods, thereby improving user experience and conversion rate. Specifically, new technologies play an important role in the following five ways.
4.1. Commodity Display Form

New technology has improved the product display form, making it more realistic and diversified. E-commerce platforms can use new technologies such as 3D modeling, animation simulation, and AR/VR to show the appearance, function, details, and more of products. Consumers can view products through multi-dimensional, zoom, rotate, virtual trial, etc., thereby enhancing shopping confidence and satisfaction. For example, Taobao's 3D fitting room feature allows consumers to virtually try on clothing on their phones, choosing the right size and color based on their body shape and preferences [12].

4.2. Shopping Interactions

New technologies enrich the shopping interaction experience, making it more immersive and fun. E-commerce apps can design a variety of AR interactive games, virtual communities, live streaming, and more to attract users to enhance their sense of engagement. These methods can not only provide product information and reviews, but also increase social interaction and trust between users. For example, JD.com's AR fun shopping feature allows consumers to experience AR games on their phones by scanning QR codes or recognizing images, and earn coupons or points [13].

4.3. User Profile Analysis

New technology enables more refined user profile analysis, making it more accurate and in-depth. E-commerce companies can use big data technology to analyze consumption records, click behavior, social relationships and other data to achieve accurate insights into customer interests and consumption habits for targeted marketing. This data can not only help e-commerce companies optimize product structure and pricing strategies, but also help e-commerce companies predict market trends and consumer demand. For example, Alibaba's big data analytics platform can provide comprehensive data services for e-commerce enterprises, including data collection, data warehousing, data analysis, data visualization, etc [14].

4.4. Personalized Recommendations

New technologies enable smarter personalized recommendations, making them more relevant and meet user needs. E-commerce platforms can use artificial intelligence algorithms to analyze the characteristics of each user and match a large number of products to achieve personalized and accurate recommendations. These recommendations can not only improve the user's shopping efficiency and satisfaction, but also be mentioned High product exposure and sales. For example, AMISON's personalized recommendation system can be based on data such as the user's browsing history, purchase history, and evaluation history Users recommend relevant products, content, advertisements, etc [15].

4.5. Reach Methods

New technologies have also enriched the reach channels of e-commerce marketing, making them more diversified and convenient. E-commerce companies can conduct precision marketing through social media platforms, and can also maintain continuous contact with users such as app messages and mini programs. These channels can not only expand user coverage and increase user stickiness, but also increase users' willingness to forward and share. For example, WeChat's mini program function allows e-commerce companies to build their own applications within WeChat to provide users with convenient shopping services [16].

From the above marketing applications, it can be seen that new technologies can provide more abundant means for e-commerce enterprises. First, new technologies can improve the format of commodity display. E-commerce platforms can use new technologies such as 3D modeling and animation simulation to show the realistic appearance of goods. Consumers can view product details through multi-dimensional and zoom in. This is a better reflection of the real performance of the
product than the traditional image display. Second, new technologies can enrich the interactive shopping experience. E-commerce apps can design immersive shopping experiences such as interactive AR games and virtual fitting rooms to engage users with enhanced engagement. Third, new technologies can enable more refined user profile analysis. E-commerce companies can use big data technology to analyze consumption records, click behavior and other data to achieve accurate insights into customer interests and consumption habits for targeted marketing. Fourth, new technologies enable smarter, personalized recommendations. E-commerce platforms can use artificial intelligence algorithms to analyze the characteristics of each user and match a large number of products to achieve personalized and accurate recommendations. Fifth, new technologies can enrich the reach channels of e-commerce marketing. E-commerce companies can conduct precision marketing through social media platforms, and can also maintain continuous contact with users such as app messages and mini programs. Overall, new technologies provide e-commerce companies with richer, more refined and smarter marketing means.

Looking forward to the future, with the further development of new technologies, its application in e-commerce marketing has broad prospects. First, personalized marketing will be more precise. The application of biometrics technology can enable e-commerce to conduct precise marketing based on more private user data. Second, immersive experiences will become more popular. With the popularity of AR and VR devices, e-commerce can create more realistic virtual shopping environments. Third, location precision marketing will expand its application, and the mobile Internet allows e-commerce to carry out precision marketing according to the real-time location of users. Fourth, artificial intelligence technology will be expanded and applied, such as intelligent voice assistants and intelligent customer service robots. Fifth, the combination with more new technologies will produce more innovations, such as the combination with blockchain technology will make e-commerce marketing more transparent. Sixth, e-commerce companies also need to think about marketing and strategic planning for future technologies such as autonomous driving. In short, new technologies will make e-commerce marketing more intelligent and personalized, evolving towards creating more immersive smart shopping experiences. However, enterprises also need to pay attention to the strategic nature of technology application, effectively combine new technologies with business models and user needs, and make new technologies truly create value for enterprises and consumers.

5. Conclusion

New technologies have led to profound changes in the e-commerce sector, redefining consumers' shopping experience and shopping decision-making psychology. Emerging technologies such as virtual reality technology and virtual fitting technology provide consumers with a more interactive shopping environment, reduce the problem of product size uncertainty in traditional e-commerce, and improve shopping certainty and satisfaction. These technologies emphasize user experience, strengthen users' trust in e-commerce platforms, and also comply with the "confirmation bias" theory, which promotes the conversion rate of users. The application of big data and immersive technology further improves the user experience, provides consumers with personalized product recommendations and immersive shopping experience, deepens the emotional connection between consumers and brands, meets their psychological needs, and promotes the generation of flow experience.

Although this study has highlighted the profound changes caused by new technologies in the e-commerce field, redefining consumers' shopping experience and shopping decision-making psychology, there are also some objective limitations that need to be improved in future research. First, the pervasive impact of technology on different consumer groups needs to be studied in depth, as consumers of different ages, cultures, and preferences may react differently to the same technology application. Second, the maturity of the technology, the sophistication of the hardware, and the matching between the actual product and the virtual experience can all negatively impact the shopping experience, and these nuances can sometimes influence consumers' purchasing decisions at key
moments. Finally, although this article attempts to cover multiple shopping scenarios, more context-related research is needed to better understand the effects of technology in different contexts. These improvements will help further deepen the understanding of the interaction between e-commerce technology and consumer psychology, providing more for future research and innovation in the e-commerce industry support and guidance.

The future e-commerce world will become more exciting and innovative. The shopping experience of consumers will be more intelligent and personalized, and the integration of big data, artificial intelligence and machine learning will enable e-commerce platforms to better understand and meet consumer needs and improve their satisfaction. At the same time, virtual reality and augmented reality are expected to change the way shopping is made, allowing consumers to experience goods more personally. In addition, e-commerce will integrate social media and entertainment elements more deeply, making shopping a social activity. Therefore, e-commerce companies must maintain continuous attention and investment in technological innovation to keep pace with the times, meet increasing consumer expectations, and lead the development of the future e-commerce field, creating huge opportunities.

Finally, the significance of this study is to provide valuable insights for researchers and practitioners in the field of e-commerce, emphasizing the importance of technology and consumer psychological interaction. It is hoped that this study can inspire more in-depth research on consumer behavior and psychology on the application of new technologies in e-commerce, and promote the deeper and broader development of the e-commerce field. At the same time, it is also necessary to recognize that this research has certain objective limitations, for example, the focus of the study still needs to be further refined, and the effects of different technology applications may vary depending on the context. Future research could further expand these areas to more fully understand the impact of new technologies on e-commerce. Research in this area will continue to drive the development of e-commerce and provide strong support for future innovation.

Authors Contribution

All the authors contributed equally and their names were listed alphabetical order.

References


