

How Does Augmented Reality Contribute to Enhancing Consumer Experience?

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ABSTRACT

This research aims to investigate the role of Augmented Reality (AR) in improving consumer experiences in the retail sector after the global pandemic through a qualitative approach. Involving in-depth interviews and participant observation, the research found that the use of AR in Optimization Marketing was effective in increasing brand visibility, consumer interaction and sales growth. The level of consumer interactivity with AR also significantly influences positive perceptions of brands and products, forming the basis for the formation of long-term loyalty. The implications of this research show that investment in Optimization Marketing with AR can be a strategic key in improving consumer experience and building loyalty in the post-pandemic retail sector.

INTRODUCTION

Currently, the world has experienced significant dynamics due to the global pandemic. Its existence has penetrated various aspects of human life, including the economy and consumer behavior (Laato et al., 2020; Pantano et al., 2020). The retail sector, as one of the main elements in the global economy, is forced to face challenges that have never been imagined before. Social distancing, physical store closures, and dramatic changes in consumer preferences have pushed retail industry players to look for new innovations to remain relevant in the face of post-pandemic dynamics. (Sheth, 2020).

Facing the complexity of changes that are occurring, the role of technological innovation is the main key in adapting (A. Kumar et al., 2020). Amidst this uncertainty, Augmented Reality (AR) is emerging as an attractive and potential solution to renew the consumer experience in the retail sector. The use of AR technology has become a major concern, not only as a response to changes in consumer habits induced by the pandemic, but also as a strategic move to face the future of an increasingly dynamic retail industry (Ayman, 2023).

The choice of AR as the focus of this research was not merely an arbitrary decision. AR was chosen because it has a unique background, with a long history of technology development and its increasingly widespread applications, especially in the retail sector. The adoption of AR by leading brands, such as IKEA, Sephora, L'Oréal, and Ray-Ban, marks the technology's success in creating authentic and innovative consumer experiences (T. Kumar, 2021a). Therefore, this research not only presents a conceptual analysis of AR, but also provides a concrete view of how this technology is implemented in real situations by retail industry players. (Alves & Luís Reis, 2020).

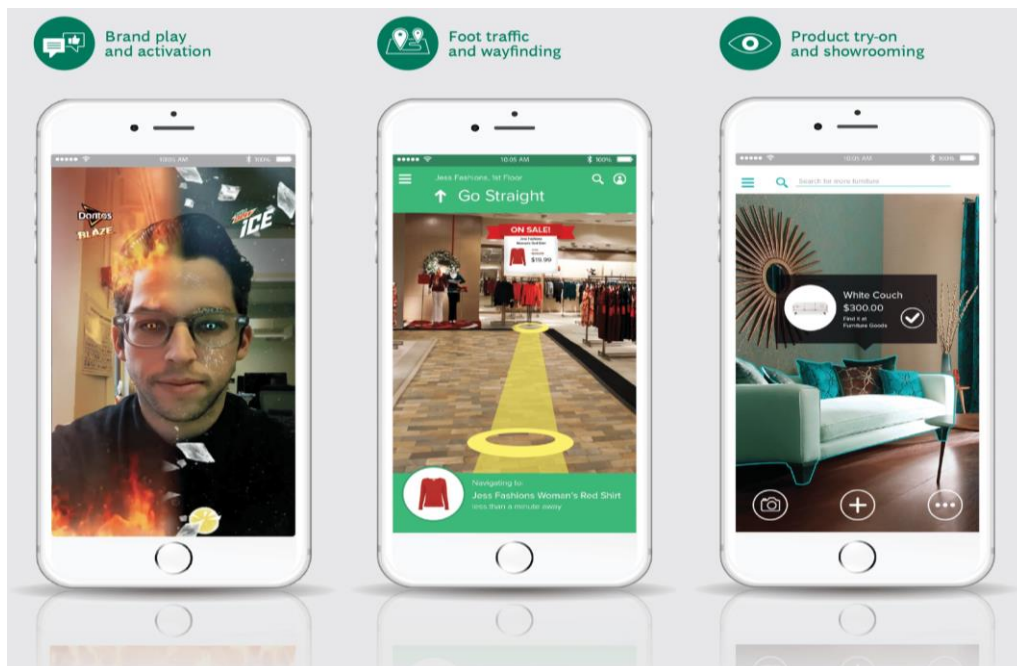


Figure 1. Opportunities to Use AR in Marketing
Source: (Bona et al., 2018)

The challenges faced by the retail sector in improving the consumer experience raise fundamental questions that need to be answered. How, specifically, can AR improve the consumer experience in the retail sector? What impact will post-pandemic marketing have on business and consumer strategies in this sector? These questions are the main focus in seeking a deep understanding of the role of AR and its relevance in facing post-pandemic challenges.

Through this research, existing knowledge gaps can be filled by exploring how AR can be the key to marketing success in the post-pandemic retail sector. Thus, this research not only provides new insights into the role of technology in the transformation of the retail sector, but also provides conceptual and practical contributions to post-pandemic marketing developments.

LITERATURE REVIEW

Pandemic's Impact on Retail Sector

The significant upheaval caused by the pandemic indirectly affects consumer behavior in the retail sector. People around the world are experiencing changes in their preferences and shopping habits due to social distancing, lockdowns and health concerns. Consumers are becoming more selective in their purchases, prioritizing essential needs, and increasing demand for online services (Du et al., 2022; Rejeb et al., 2023). Empirical studies document a significant shift from offline to online purchasing, forcing retailers to adapt in unprecedented ways (Pantano et al., 2020).

Retail industry players are not only faced with the challenge of changing consumer behavior, but also changes in business governance and marketing strategies (Hilken et al., 2022). Successful retailers are those who are able to quickly adapt their business models by integrating digital solutions, improving online presence and optimizing customer experience (King & Murillo, 2023; Massa & Ladhari, 2023; Wang et al., 2023a). Post-pandemic marketing will not only focus on selling products, but also on building consumer trust and providing added value that meets new needs and expectations.

Consumer Behavior and Technology Adoption

Technology adoption by consumers is influenced by various factors, including individual, social, and situational factors. Research on technology adoption has highlighted the importance of consumers' perceptions of the usefulness and ease of use of technology (Saprikis et al., 2020). Additionally, factors such as trust, security and personal needs also play a key role in motivating consumers to adopt new technologies (Buhalis et al., 2019; Song et al., 2019). In a post-pandemic context, the need for technological solutions that enable minimal physical contact and a safe shopping experience could be a key driving factor.

The importance of AR technology has become increasingly prominent in the post-pandemic context, where consumers are looking for safer and more efficient shopping experiences. AR not only provides innovative solutions to

facilitate online purchases(T. Kumar, 2021b), but also presents new ways for consumers to interact with products virtually. In a situation where social distancing and physical distancing policies still apply, AR has become an important tool in meeting consumers' needs to shop without leaving their homes(T. W. E. Suryawijaya et al., 2023).

Augmented Reality in Retail

Augmented Reality technology has developed rapidly and created a wave of innovation in the retail sector. Initially known in gaming and entertainment applications, the use of AR in the retail sector continues to grow, contributing to a more interactive and personalized shopping experience. Leading companies like IKEA have successfully integrated AR into their marketing strategies(Alves & Luís Reis, 2020), creating a virtual shopping environment that provides added value to consumers. The application of AR in the retail sector has enriched the consumer experience by providing an additional realistic and interactive dimension(T. Suryawijaya & Aqmala, 2023). Consumers can virtually try on products, change colors and see how they integrate into their daily lives(Gatter et al., 2022). In the context of the pandemic, where physical visits to stores are limited, AR provides an alternative solution for consumers to stay involved in the shopping process without leaving the comfort of their homes.

Based on the literature above, this research seeks to explore how the application of AR in the retail sector can be an effective strategy for improving consumer experience amidst post-pandemic dynamics, as well as providing insight into the factors that influence adoption of this technology by consumers through a research conceptual framework (Figure 1).

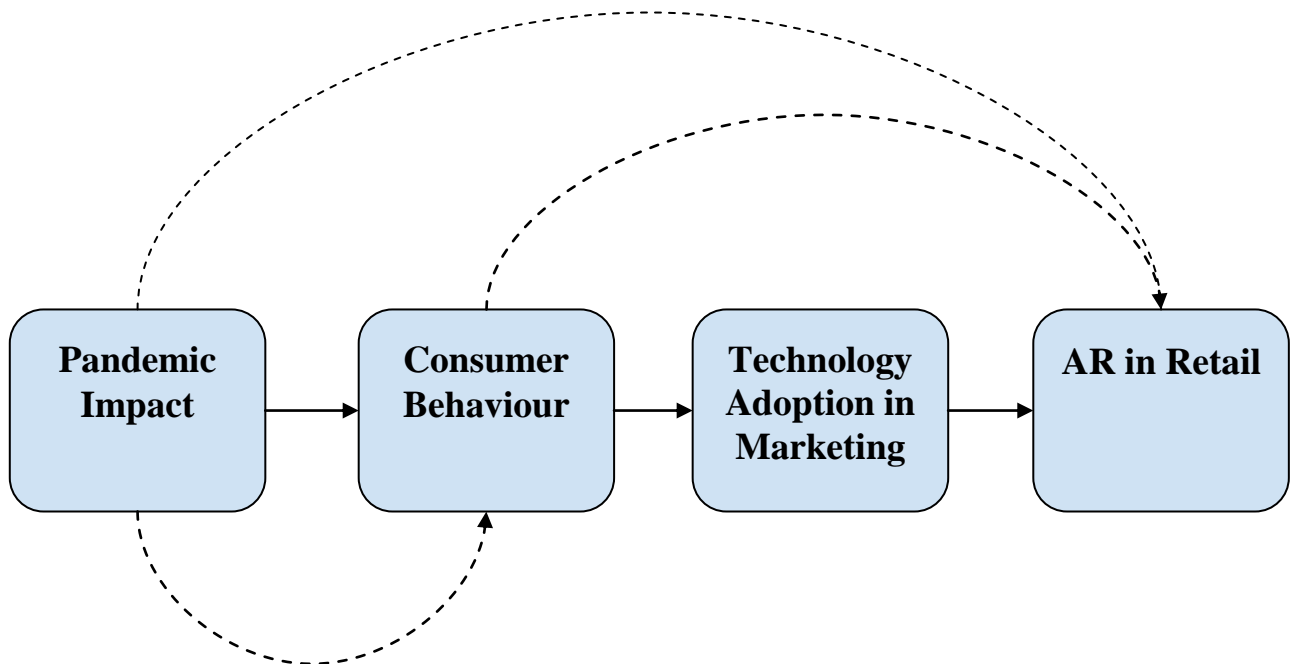


Figure 2. Research Conceptual Framework
Source: Author's Elaboration, 2023

METHODOLOGY

This research methodology is designed to thoroughly explore the role of Augmented Reality in improving consumer experience in the retail sector. A qualitative approach was adopted to gain an in-depth understanding of perception (Denzin et al., 2023), experiences and consumer responses to the integration of AR technology in their shopping activities (Silverman, 2016). This method is considered the most suitable for extracting high-quality information that can provide comprehensive and contextual insights regarding the phenomenon under study (Cocchi, 2019; Lancaster, 2005).

This research will involve in-depth interviews with consumers who have experience using AR technology in the context of post-pandemic retail shopping. The selection of respondents will be carried out purposively (Denzin et al., 2023; Levy & Lemeshow, 2008), ensuring inclusivity of various demographic backgrounds and levels of experience in the use of AR technology. Participatory monitoring will be adopted by monitoring consumer interactions with AR technology in specific retail environments. This will provide real-world context regarding how consumers interact with AR technology during the shopping process, enabling contextual and detailed data collection. Data analysis will be carried out using a thematic approach, where thematic patterns emerging from interviews and observations will be identified and analyzed in depth (Braun & Clarke, 2022). This process will involve identifying key categories emerging from the data, creating interrelated themes, and developing a narrative that reflects AR's role in enhancing consumer experiences.

RESULT AND DISCUSSION

Optimization Marketing Based on AR

This research in-depth explores the concept of Augmented Optimization Marketing (AOM) as the main focus point for understanding how Augmented Reality can be optimized to achieve more effective marketing results (Zhu, 2022), especially in a post-pandemic context. The retail sector in the post-pandemic era is facing unique challenges that are forcing significant changes in consumer behavior (Cocchi, 2019). A deep understanding of the new preferences that emerge in these situations is key to designing successful business strategies (Tan et al., 2022). This research mainly focuses on developing the concept of Augmented Optimization Marketing (AOM) as an innovative solution to overcome these challenges. By understanding how AOM can increase brand visibility, consumer engagement, and sales growth, we can detail AR's role in responding to increasingly sophisticated and dynamic customer needs (Tom Dieck et al., 2018).

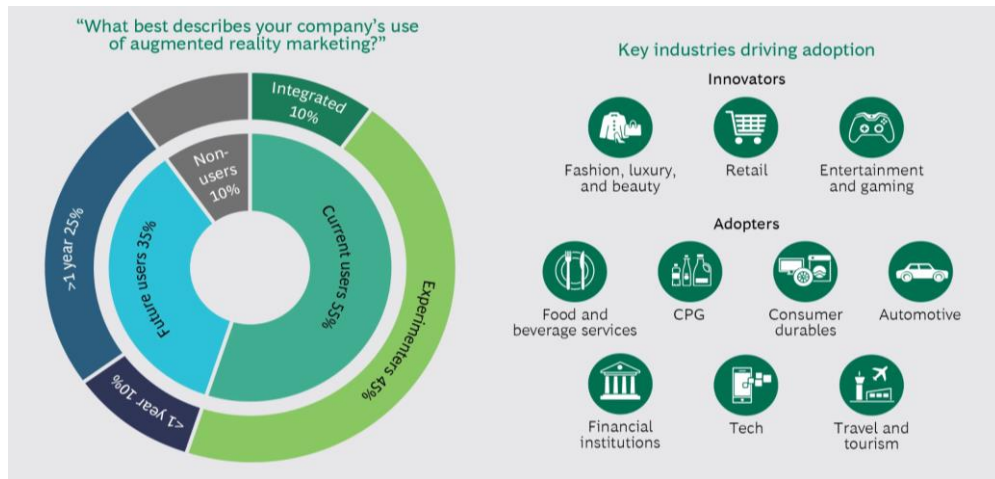


Figure 3. How Advertisers See and Use AR
Source: (Bona et al., 2018)

Figure 3 shows that the choice of AR as a research focus is not just based on an arbitrary decision, but rather is a response to a shift in consumer paradigms and the need for innovation in the marketing realm (Wu et al., 2023). By involving the concept of Augmented Optimization Marketing, this research not only covers aspects of using AR to increase brand visibility, but also explores how AR can be applied to increase consumer interactivity and, ultimately, support sales growth. Through case studies involving leading brands that have successfully implemented AOM strategies in facing post-pandemic challenges (Bona et al., 2018; T. Suryawijaya & Aqmal, 2023), this research compares the real picture of its potential and impact.

In the post-pandemic situation, consumers are likely to choose shopping experiences that not only meet their needs, but are also safe and efficient (Buhalis et al., 2019). AOM emerged as an innovative solution that combines AR technology with marketing strategies to create a more personalized, interactive and safe shopping experience. An in-depth analysis of how AOM can respond to post-pandemic consumer preferences and overcome security challenges in physical and online shopping environments is the main focus of this research (Villagran-Vizcarra et al., 2023).

Case studies involving well-known brands that have successfully implemented AOM are the main highlight in this research (Blokdyk, 2022). An in-depth analysis of AOM strategy and implementation by brands such as IKEA, Sephora, L'Oréal and Ray-Ban provides insight into how AR technology can increase brand visibility in a dynamic post-pandemic environment (Hsu et al., 2021; Song et al., 2019; Wang et al., 2023b). By understanding these best practices, we can identify common patterns and successful strategies that other retail industry players can adopt.

The use of AR within the AOM framework does not only focus on increasing brand visibility; instead, this technology allows for a greater level of consumer interactivity in virtual shopping environments (Blokdyk, 2022). This research in-depth explores how this level of interactivity influences consumer perceptions of brands and products. By utilizing AR technology, consumers can

try products virtually, customize product features, and actively participate in the shopping process, creating a more satisfying and personalized experience (T. Suryawijaya & Aqmala, 2023).

The importance of an enhanced consumer experience is a key focus in AOM. How consumers respond to the use of AR in a shopping context, the impact of this technology on purchasing decisions, and the increase in consumers' feelings of control and convenience are the questions analyzed in depth in this research (Kotler et al., 2017; Lemon & Verhoef, 2016).

In an effort to explore the full potential of AOM in optimizing post-pandemic marketing, this research also involves a conceptual analysis of how AOM can be widely implemented in the retail sector (Dwivedi et al., 2021). By detailing implementation steps, identifying possible challenges, and describing long-term benefits (Wedel et al., 2020), this research provides practical guidance for retail industry players who want to leverage AR technology to improve their consumer experience and marketing effectiveness.

What is the Level of Customer Interactivity?

An important finding that highlights this research is the crucial role of the level of customer interactivity with Augmented Reality technology in forming positive perceptions of brands and products. In-depth analysis shows that as the level of interactivity increases (see Figure 4), consumers tend to have a more positive perception of products presented through AR (Rauschnabel et al., 2022; Wedel et al., 2020). These findings consistently show that consumers' active participation in the shopping process through AR makes a significant contribution to the level of satisfaction and a more satisfying shopping experience



Figure 4. Interactivity Concept
Source: (Alves & Luís Reis, 2020)

Higher levels of satisfaction, as reported by consumers who engage in high interactivity with AR technology, reflect the successful implementation of

AR in a retail context(Rauschnabel et al., 2019). Through AR, consumers are not just passive spectators in the shopping experience, but they are actively involved, creating an environment that allows them to explore products in more depth. The research results show that such interactivity creates a closer relationship between consumers and brands, forming a strong basis for the formation of long-term loyalty(T. Suryawijaya & Aqmala, 2023).

It's important to note that customer interactivity doesn't just include consumers' ability to try products virtually or customize product features to their liking(H. Kumar et al., 2023). Interactivity also includes the emotional involvement that is built during consumer interactions with AR technology(Massa & Ladhari, 2023; Rejeb et al., 2023). The emergence of this emotional attachment, which can be measured through emotional responses, better product understanding, and enhanced feelings of control, becomes a key element in forming positive perceptions and persuading consumers to feel deep satisfaction with the brand(Hackl & Wolfe, 2017; H. Kumar et al., 2023).

These findings are consistent with a theoretical framework that emphasizes the importance of customer interactivity in a marketing context(Dwivedi et al., 2021; Hilken et al., 2022; Villagran-Vizcarra et al., 2023). This concept has long been recognized as a key element in creating deeper and more meaningful experiences for consumers. The application of this concept within the scope of AR technology adds a new dimension to the notion of interactivity, allowing consumers to experience products in a more direct and personal way(Rauschnabel et al., 2022). In other words, AR is not only a visual tool, but also a field of exploration and interaction that makes a significant contribution to how consumers respond to brands and products (see in Figure 5).

Consumer Testing by AR

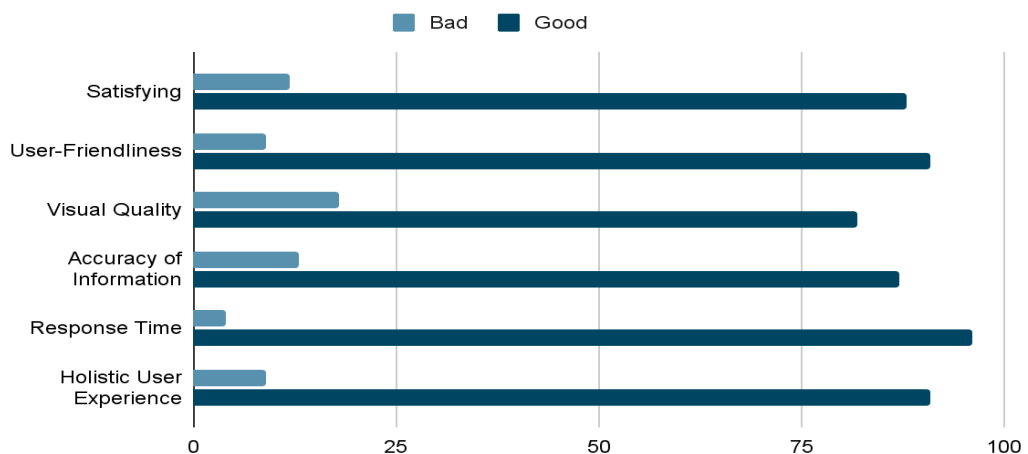


Figure 5. Consumer Test Results on AR Features
Source: Author Data, 2023

The higher levels of satisfaction and emotional engagement gained through customer interactivity with AR technology also have valuable long-term implications(Hinsch et al., 2020; Rauschnabel et al., 2022). This increased

level of satisfaction and emotional attachment creates the basis for the formation of sustainable consumer loyalty (Carmigniani & Furht, 2011; Voicu et al., 2023). As a result, brands and retailers can build closer relationships with their consumers (Hidayat, 2022), ensuring that consumers not only make one-time purchases, but also become loyal customers who contribute to long-term business growth (Swamp et al., 2020; T. Suryawijaya & Aqmala, 2023).

In considering the implications of these findings, we must view customer interactivity with AR as more than just a technological innovation. This is a strategic investment in brand and consumer relationships that can create long-term value. This research provides a deep understanding of how customer interactivity with AR technology is not only changing the way consumers shop, but also how brands and retailers can design more effective and relevant marketing strategies (Poushneh & Vasquez-Parraga, 2017). The implications of these findings can form strategic guidance for retail and marketing industry players in optimizing customer interactivity with AR technology to support business growth and create unforgettable consumer experiences.

Augmented Reality Based Consumer Experience

On a deeper level, this research dives into the consumer experience delivered by Augmented Reality in the post-pandemic retail landscape. In an era where physical interactions are limited and social distancing is maintained, AR offers an innovative solution by creating a new dimension in the shopping experience (Tan et al., 2022). The research results prove that the use of AR not only adds a realistic element to the shopping experience, but also provides paradigm-changing interactivity.

When consumers can test products virtually before making a purchase, reported satisfaction levels reach their peak (T. Suryawijaya & Aqmala, 2023). AR creates an environment where consumers can experience and integrate products directly, reducing the uncertainty that may arise when shopping online (T. Kumar, 2021b; Tom Dieck et al., 2018). Experiences conditioned by AR seem to bring consumers into the world of the product, minimizing risks and increasing their confidence in making the right purchasing decisions.

Furthermore, in the face of physical distancing situations, where visits to physical stores are limited or less desirable, the virtual shopping environment delivered by AR gives consumers a greater feeling of control over the purchasing process (Buhalis et al., 2019; Gatter et al., 2022). They can explore and examine products freely, creating a more personalized experience tailored to their individual preferences (Song et al., 2019; T. W. E. Suryawijaya et al., 2023). This creates a much-appreciated feeling of convenience, as consumers can customize the shopping experience according to their own convenience and time.

Additionally, consumers' participation in virtual shopping environments gives them a sense of power and control that may have been overlooked in conventional shopping experiences (Hilken et al., 2022; Wu et al., 2023). They are not just passive spectators, but main actors in directing their shopping experience (Lemon & Verhoef, 2016). With the interactivity offered by AR,

consumers can customize products, try different colors or models, and even feel as if they are in a physical store without having to leave the comfort of their home. (Wang et al., 2023b).

Through this viewpoint, it can be identified that AR not only provides a tool to visualize products, but also creates a shopping experience that meets consumers' psychological and emotional needs. (You et al., 2022). The feelings of satisfaction and confidence resulting from active participation in the purchasing process through AR create a strong foundation for the formation of customer loyalty. By giving consumers control over their shopping experience, AR is not just a transactional tool (Hilken et al., 2022; Lemon & Verhoef, 2016), but also becomes a bridge to building deeper and more sustainable relationships between brands and consumers.

In conclusion, consumer experiences with AR in a post-pandemic retail context are not just about additional dimensions added to **reality** (Carmigniani & Furht, 2011; T. W. E. Suryawijaya et al., 2023), but also about empowering consumers to take a central role in their shopping experience (Rejeb et al., 2023; T. Suryawijaya & Aqmal, 2023). By delving into these aspects, this research reveals that AR is not only an innovative marketing tool, but also a key driver in creating meaningful and satisfying consumer experiences.

CONCLUSIONS AND RECOMMENDATIONS

Answering the call of the post-pandemic era, this research uses the concept of Augmented Optimization Marketing as a basis for understanding and optimizing the role of Augmented Reality in the retail sector. Through this approach, the research succeeded in exploring the positive impact of AOM on brand visibility, consumer interaction, and sales growth. The choice of AR as the main focus is not only a response to shifts in consumer behavior, but also as an innovative solution to create a safe, efficient and more personalized shopping experience.

Case studies of leading brands, such as IKEA, Sephora, L'Oréal, and Ray-Ban, provide a deep understanding of AOM best practices and implementation strategies. This analysis proves that AOM is not just a theoretical concept, but can be implemented successfully in facing post-pandemic retail dynamics.

This research also highlights the crucial role of the level of customer interactivity with AR technology. High levels of satisfaction, resulting from consumers' active participation in the shopping process via AR, create a strong foundation for the formation of long-term loyalty. The emotional attachment that emerges during consumer interactions with AR adds a new dimension to the shopping experience, creating a closer connection between consumers and brands. Consumer experiences with AR, especially in testing products virtually before purchasing, make a major contribution to the level of consumer satisfaction and confidence in decision making. In situations of physical restrictions and social distancing, AR is an innovative solution that gives consumers a feeling of control and comfort, making the virtual shopping environment a safe place for exploration.

As an implication, these findings provide strategic guidance for retail and marketing industry players. AR-based marketing optimization can be the key to success in meeting consumer demands post-pandemic. The level of customer interactivity with AR is not just a technological innovation, but a strategic investment in brand and consumer relationships that leads to the formation of long-term loyalty. Thus, this research not only illustrates the potential of AR in enhancing consumer experiences, but also contributes to our understanding of how technology can reshape the retail marketing paradigm in the post-pandemic era.

This study has several limitations that need to be noted. First, in terms of context and generalization, the findings and implications are limited to case studies of specific brands and post-pandemic situations. Therefore, generalizations to other retail or pandemic contexts need to be done with caution. Second, in terms of time and technological change, the rapid evolution of technology, including Augmented Reality, can make these findings quickly obsolete. Changes in AR technology or consumer behavior may affect the relevance of these findings, so research results need to be interpreted within a specific time frame. Third, consumer participation is based on responses that may be influenced by certain characteristics, such as level of technological fluency. Therefore, the findings may not fully cover various consumer groups. Fourth, in terms of methodology and measurement, qualitative methods provide in-depth insights but have limitations. Quantitative or mixed methods research can provide further confirmation, and keep in mind that measuring consumer experience is subjective. Finally, external factors such as regulatory changes, economic situations, or environmental factors may not be fully considered in this research.

ADVANCED RESEARCH

This research still has limitations, so further research needs to be done related to the topic "How does Augmented Reality Contribute to Improving Consumer Experience?". Future research can use different consumer experience objects to add insight for readers.

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