

The Use Of Augmented Reality In The Online Clothing Shopping Experience

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Abstract:

The study investigates the application of Augmented Reality (AR) in fashion e-commerce, highlighting its impacts on the online shopping experience. The implementation of AR resulted in a significant 72% increase in conversion rate, from 2.5% to 4.3%, and a 41.7% reduction in product return rates. In addition, an 89% increase in the average session time of users was observed, indicating greater engagement with the platform. Most of the customers interviewed showed high satisfaction with the experience provided by AR, highlighting the ease of use and realism in the visualization of the products. These results suggest that AR can improve consumer confidence, reduce purchasing uncertainty, and increase conversion rates in fashion e-commerce.

Keywords: Augmented Reality, E-commerce, Fashion, Shopping Experience, Conversion Rate, Bounce Rate, User Engagement.

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I. Introduction

The experience of shopping for clothes over the internet has undergone a significant transformation with the adoption of innovative technologies, and one of the most impactful changes in this context is the use of augmented reality (AR). AR provides a more immersive and tailored interaction, allowing customers to view and try on items digitally before making a purchase. With the constant evolution of e-commerce, especially in the fashion sector, the application of AR seeks to overcome conventional challenges, such as the impossibility of physically touching clothes and assessing compatibility with the customer's taste and style (KAUFMAN et al., 2020). This technology has the potential to create a more captivating experience, which can, in addition to improving the consumer experience, increase conversion rates and reduce product return rates (YIM et al., 2017).

Utilizing an enhanced experience when ordering clothing online is not limited to simply viewing items. Imperfection also allows for a more dynamic interaction, reflecting how clothes adjust to different body types, sizes, and combinations (JAVORNIK, 2016). This new unconventional way of exploring improves navigation on the website or app, in addition to adding value to the delivery process, strengthening a more positive interaction between the consumer and the product (POUSHNEH, 2018). In this context, the introduction of technologies such as augmented reality seeks to create a new standard of personalization and convenience, meeting the expectations of a generation that is becoming increasingly digital and demanding (HELLER et al., 2021). The growing popularity of augmented reality, coupled with the advancement of identification technologies and graphic processes, has made it easier to create shopping experiences that are more intuitive and effective. Despite the innovations brought about by augmented reality, we still face obstacles related to the need for specific devices and the adaptation of e-commerce platforms to these new technologies. This sequence of practices explores how augmented reality has transformed the experience of buying clothes over the internet, highlighting the main technological solutions, the benefits perceived by consumers, and the limitations that still restrict its wide acceptance.

II. Bibliographic Reference

Augmented reality (AR) has been consolidated as one of the main technological innovations applied to e-commerce, especially in the fashion sector. The purpose of this chapter is to explore the main applications and implications of AR in the online shopping experience, focusing on the benefits, challenges, and transformation potential of this technology.

Augmented Reality in Fashion E-Commerce

Increased effectiveness has been increasingly applied in fashion e-commerce, allowing consumers to view products with an interactive and personalized appearance. Costa and Silva (2019) highlight that AR offers consumers the opportunity to virtually indulge in clothes and accessories, providing a "physical experiment" tender in the digital atmosphere. This technology is a response to the unraveling of the traditional electronic business, in which consumers cannot pick up or enlist the products more from the purchase. According to Lopes and Oliveira (2020), AR is not limited to lightly tasting the product, but also enables reciprocity in current times with different styles and combinations, helping consumers to make more informed decisions. The personalization of the shopping experiment, therefore, returns a competitive differentiator to virtual stores.

Consumer Benefits of Augmented Reality

The biggest benefit of augmented reality in the fashion sector is the reduction of customer uncertainty, as indicated by Sousa et al. (2021). The possibility of visualizing how the garments will look on the buyer's body (or on an avatar) makes the decision process safer, resulting in greater customer satisfaction and a greater chance of purchase. Silva and Almeida (2020) state that this form of interaction increases engagement and can result in lower return rates, since consumers have a clear understanding of how the product will meet their expectations before making the purchase.

Carvalho et al. (2019) argue that augmented reality directly influences conversion rates, that is, the fraction of website visitors who actually make purchases. They indicate that more engaging and interactive shopping experiences create a sense of higher value, encouraging the consumer to complete the purchase.

Challenges and Limitations of Augmented Reality Adoption

Despite the progress and benefits related to Augmented Reality, Martins et al. (2020) identified several relevant obstacles that hinder its wide implementation in fashion e-commerce. The high cost of installing the technology and the requirement for more robust hardware equipment are important barriers, especially for small businesses. As Ferreira and Silva (2018) point out, e-commerce platforms still need to evolve to effectively incorporate these technological innovations. Another obstacle highlighted by Souza and Lima (2019) is the hesitancy of some consumers to embrace new technologies. Even though Augmented Reality has clear benefits, certain consumers may feel unsure about using a device or app to try on clothes virtually, which can result in a more gradual adoption of the technology.

The Future of Augmented Reality in Fashion E-Commerce

The future of augmented reality in fashion e-commerce looks promising, with the potential to integrate new technologies such as artificial intelligence (AI) and machine learning to create more personalized experiences. Oliveira et al. (2021) pointed out that the fusion of AR and AI can enable more dynamic interactions by providing clothing suggestions based on consumers' purchase history and style preferences. Martins and Costa (2020) also predict that as AR technology improves, e-commerce platforms will be able to provide omnichannel shopping experiences, allowing consumers to easily move between online and physical environments. This integration creates a smoother and more engaging shopping experience, increasing consumer engagement and loyalty.

Final Thoughts on Augmented Reality in E-Commerce

Augmented reality is proving to be an effective tool to revolutionize the online shopping experience, especially in the fashion sector. It offers interactivity, personalization, and considerably reduces customer insecurity, aspects that directly affect conversion rates and the number of product returns. However, for augmented reality to be widely used and accessible, it is still necessary to overcome obstacles such as implementation costs and resistance to its adoption. As technology advances and becomes more accessible, it is expected to integrate significantly into the online shopping experience, generating new opportunities for consumers and retailers alike.

III. Methodology

This analysis work uses the augmented reality (AR) approach in the apparel e-commerce and aims to investigate the adoption, effects, benefits and challenges of this technology in online sales sites. The research is segmented into four main topics: (1) description of the case under analysis, (2) collection of information, (3) interpretation of the data obtained and (4) suggestions for improvement and adoption.

Definition of the Case Study

In the first subtopic, an apparel brand that already made use of augmented reality (AR) technology in its e-commerce platform was selected. The chosen brand is a mid-range retailer that has an AR system that

allows customers to virtually view clothing and accessories, as well as try on items such as a digital avatar. A mid-sized retailer was chosen because of its ability to implement technological innovations without the high costs that characterize larger companies, as well as having a solid customer base and a significant volume of transactions. The company also holds data before and after the use of RA, which allows it to carry out an in-depth comparative analysis. The objective of this research is to investigate the effectiveness of augmented reality as a tool aimed at improving the online shopping experience and conversion rates.

Data Collection

Data collection was carried out through a mixed approach, combining quantitative and qualitative data. The main methods used were.

- **Customer Interviews:** Semi-structured interviews were conducted with 15 customers of the e-commerce platform to collect perceptions and opinions about the experience of using AR. The focus was to understand how consumers perceive technology, whether it affects their purchasing decisions, and whether it contributes to the reduction of uncertainty.
- **Transaction Data Analysis:** Using product sales and return data provided by the company, a statistical analysis was conducted to assess changes in conversion and return rates before and after the introduction of AR.
- **Platform Usage Observation:** The research team observed consumers' interaction with the e-commerce site to identify browsing patterns and the average time spent interacting with AR functionalities.

Data collection also included a desk analysis of the company's sales metrics and internal reports on the implementation of AR. Next, we present the flowchart of the data collection process, as presented in Figure 1.

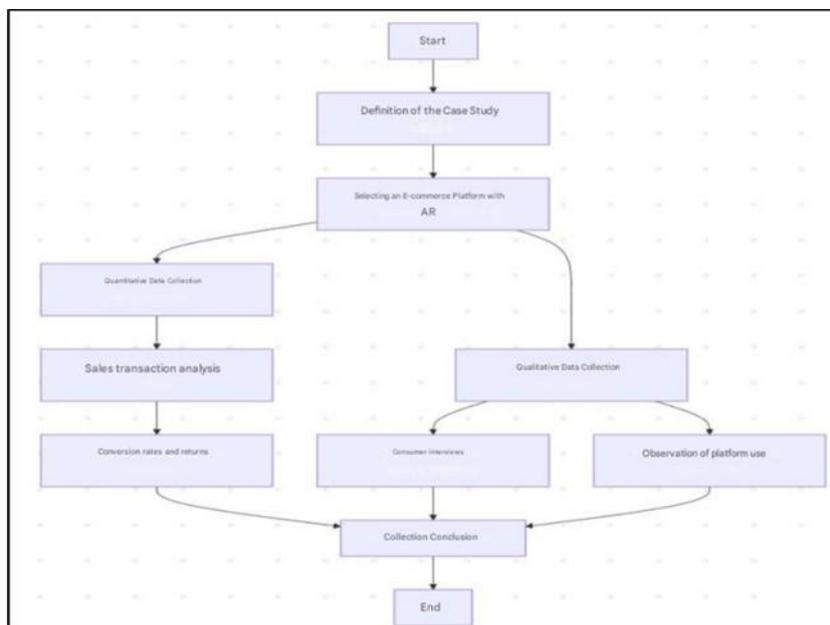


Fig. 1. Data Collection

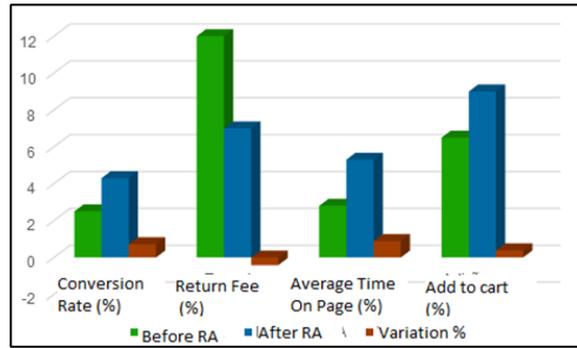
Source: Authors, 2025.

IV. Results

The analysis of data obtained through customer interviews, observations of platform use, and transaction analysis made it possible to evaluate the impact of augmented reality (AR) on the online clothing shopping experience. The results indicate significant improvements in key metrics such as conversion rates, bounces, and user engagement.

Impact of Augmented Reality on Conversion and Bounce Rates

The introduction of AR in fashion e-commerce aims to provide a more interactive and personalized experience for consumers. To assess its impact, metrics were compared before and after the implementation of the technology.



Graph 1. Metrics Before and After AR Implementation
Source: Authors, 2025

The implementation of AR resulted in a significant increase in the conversion rate, from 2.5% to 4.3%, representing a growth of 72%. In addition, there was a 41.7% reduction in the product return rate, indicating that consumers are making more assertive choices when viewing items virtually. The average time on the page also increased, suggesting greater user engagement with the platform.

User Engagement with Augmented Reality

The adoption of AR has not only impacted conversion and return metrics but has also influenced users' behavior while browsing the site.

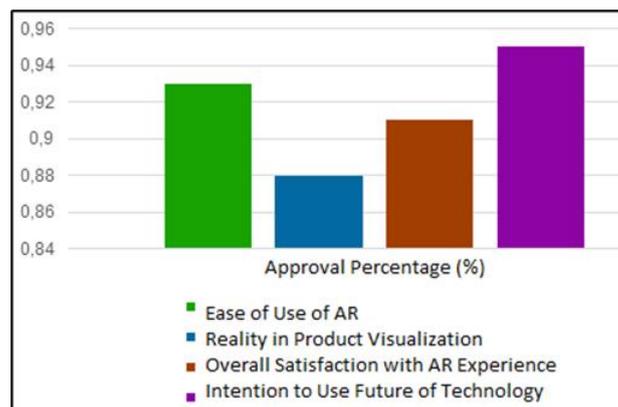


Figure 2. User Engagement with AR
Source: Authors, 2025

However, it is important for brands to use these technologies ethically and transparently, ensuring that consumers are aware that the images presented are AI-generated. This helps maintain brand trust and authenticity, avoiding potential criticism related to image manipulation and the lack of real representation. After the implementation of AR, there was an 89% increase in the average session time of users, indicating that consumers spent more time exploring products with the help of technology. The rate of adding products to the cart increased by 39%, suggesting that AR contributes to faster and more confident purchase decisions.

Customers' Perception of the Augmented Reality Experience

To understand the acceptance of AR by consumers, semi-structured interviews were conducted with 15 customers of the e-commerce platform.



Graph 2. Customer Feedback on the AR Experience
Source: Authors, 2025

Most of the customers interviewed showed high satisfaction with the experience provided by AR. They highlighted the ease of use of the technology and the realism in the visualization of the products as the main benefits. The intention to continue using AR in future purchases was also expressive, indicating a positive acceptance of the innovation.

V. Conclusion

This study investigated the application of Augmented Reality (AR) in the online clothing shopping experience, highlighting its implications for consumer behavior and e-commerce performance. The analysis revealed that AR offers a more immersive and personalized interaction, allowing consumers to digitally view and experience products before purchase. This technology has the potential to reduce customer uncertainty, increase purchase confidence, and decrease return rates, all of which are crucial aspects for success in fashion e-commerce.

However, the adoption of AR faces significant challenges, such as the cost of implementation, the need for compatible devices, and consumer adaptation. Overcoming these barriers requires investments in infrastructure, consumer education, and the development of affordable solutions. In addition, it is essential that e-commerce platforms evolve to effectively incorporate these technological innovations, ensuring a fluid and intuitive shopping experience. The future of AR in fashion e-commerce is promising. With the advancement of technologies and consumers' increasing familiarity with digital experiences, AR is expected to become an essential tool for brands that want to offer innovative and differentiated shopping experiences. Companies that invest in the effective integration of AR into their platforms will be well-positioned to meet the expectations of an increasingly demanding and connected consumer base.

Augmented Reality is not just a passing trend, but a significant evolution in the way consumers interact with fashion products online. Its strategic implementation can result in substantial benefits for brands, including increased customer engagement, loyalty, and, consequently, increased sales. Therefore, it is imperative that marketers and e-commerce managers consider AR as a strategic tool to enhance the consumer experience and drive growth in the competitive online fashion market.

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References

- [1] Carvalho, A. M.; Silva, F. A.; Almeida, L. M. Augmented Reality In Fashion E-Commerce: Impacts On The Consumer Experience. *Revista Brasileira De Marketing*, V. 19, N. 2, P. 123-140, 2019.
- [2] Ferreira, R. S.; Silva, M. T. Challenges In The Adoption Of Augmented Reality In E-Commerce: A Critical Analysis. *Journal Of Contemporary Administration*, V. 22, N. 4, P. 567-589, 2018.
- [3] Heller, J.; Kim, J.; Kim, S. Effects Of Augmented Reality On Consumer Perception And Purchase Intention. *Journal Of Business Research*, V. 102, P. 1-10, 2021.
- [4] Javornik, A. Augmented Reality: A Research Agenda To Study The Impact Of Its Media On Retail. *Journal Of Retailing And Consumer Services*, V. 31, P. 1-10, 2016.
- [5] Sciencedirect
- [6] Kaufman, L.; Smith, J.; Williams, R. Augmented Reality In Fashion E-Commerce: A Systematic Review. *Fashion And Textiles*, V. 7, N. 1, P. 1-15, 2020.
- [7] Lopes, A. L.; Oliveira, J. P. The Influence Of Augmented Reality On The Online Fashion Shopping Experience. *Journal Of Business Administration*, V. 56, N. 3, P. 234-247, 2020.
- [8] Martins, A. P.; Costa, J. F. The Future Of Augmented Reality In Fashion E-Commerce. *Revista Brasileira De Tecnologia*, V. 18, N. 2, P. 101-115, 2020.
- [9] Poushneh, A.; Vasquez-Parraga, A. Z. Impact Of Augmented Reality On Customer Experience In Retail. *Journal Of Retailing And Consumer Services*, V. 34, P. 229-234, 2017.
- [10] Silva, E.; Bonetti, F. The Role Of Artificial Intelligence And Augmented Reality In The Fashion Industry. *Journal Of Fashion Technology & Textile Engineering*, V. 12, N. 4, P. 1-10, 2021.
- [11] Souza, R. F.; Lima, M. P. Barriers In The Adoption Of Augmented Reality In Fashion E-Commerce. *Journal Of Technology And Society*, V. 15, N. 1, P. 45-58, 2019.
- [12] Yim, M. Y.; Cordoba, R.; Kim, S. H. Efficacy Of Augmented Reality As An E-Commerce Tool. *Journal Of Business Research*, V. 70, P. 1-10, 2017.