Original Research Article

Exploring the role of augmented reality in online shopping: A secondary research study on applications, benefits, and challenge

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Abstract

With the changing time, the technological advancement has been the part of each and every industry talking about augmented reality. It has emerged as a transformative technology. The era of online shopping, offers immersive and interactive product experience to the consumers buying online. This study mainly focuses on secondary research. It investigates the impact of augmented reality on consumer behaviour, E-Commerce engagement and purchase decisions. Various PA review articles, K studies and industrial reports were being referred. The findings revealed that augmented reality adds on a valuable customer experience while shopping online, which increases their satisfaction level. It reduces the return rate. It also boosts the sale of the companies. However, there are challenges as well, such as technological barrier data, privacy concerns and implication cost of augmented reality and its technology. This paper majorly highlights the key Insights into the applications benefits and limitations of augmented reality.

Keywords: Augmented Reality (AR), Online shopping, Challenges of AR, Benefits of AR, AR driven online platforms

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1. Introduction

The consumer purchase intention has always given more importance to feel of the product, touch the product, understand the product, analysing and then take a buying decision when it comes to offline shopping. Whereas online shopping apart from giving more benefits and advantages still has disadvantages of touch and fill and lots of people buy the products offline, but with the help of emerging technology and adding augmented reality, the online shopping has made a greater change as it has covered the gap by creating interactive digital experience that allows consumer to virtually get engaged with the product before buying.

This study examines the impact of augmented reality on shopping online through the secondary research. Its synthesis on existing literature cases and studies.

This research identifies that Augmented reality influences the consumer's decision-making choices and due to its unique feature it increases the customer engagement while visiting the portals and websites for shopping online. On the other hand its an advantage for e-commerce platforms who are selling the products online by using different websites and application. The key focus of this study includes augmented reality's benefits, Challenges.

2. Online Shopping and AR

Online shopping is also with reference to E- Commerce reference for purchasing different goods and services that are being provided with the help of internet through different medium, such as mobile application and webpage application. It has bought a revolutionary change in the retail industry by providing the consumer backup. With a convenient and efficient way to shop from whenever and where ever at any point of time.

With the changing time, the online shopping platforms has emerged with new technological advanced tools globally.

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By offering all the different kinds of products to the consumers. The major key features of online shopping includes convenience, variants for different products price comparison, and personalisation.

Augmented reality is a technology that creates computers based real world interactive experience. The image generation is done by using sensory stimulation on the real world base interaction with the help of mobile devices or smart glasses, an individual can see the difference of image that is generated and can also experience the product differently.

It creates a composite view that blends the physical world with the virtual elements and object in the real-time and gives a completely different experience to the consumers who are going to buy the product by using different online platforms.

2.1 Table of AR

Company	Key uses	AR Features	Impact	Location
IKEA	Shopping of furniture	The placement of virtual furniture in home.	Increase the confidence of customer in making purchase decision and provide better shopping experience	Global (Including India)
Flipkart	Home décor, electronic products visualization	AR view of the products, Visualizing	Reduces the return, and increases the customer trust	India
Lenskart	Recommends different frames on the basis of face shape	Virtual eyewear and different try-ons	High customer satisfaction	India
Amazon	Visualization of home decor in real world settings, it provides customer to try apparels and accessories virtually	AR views for different products to try on virtually	Informed decision of shoppers	Global
Myntra	Provides the different experience on try on apparels	Virtual try on for the fashions	Impact the purchase decision due to experience	India
Tata Cliq	Offer the facility of previewing the products online	AR visualization for different products	Boost customer engagement, enhance the trust of the customer towards the product	India

Apart from this there are various companies and online selling platforms using augmented reality for selling the product online and provide different experience to the consumer. Few of the examples are Nykaa, Nike Fit, Pepperfry, Shopclues, Snapdeal and various similar websites and platforms use AI for online selling shopping.

3. Literature Review

Augmented reality enhances the online shopping by providing user to visualise products into their physical space comparing A.R, that is IKEA space app with web base shopping. The study considers six attributes out of which the this study majorly highlights that interactivity and novelty had positively impact on the experience of users and their purchase intention in AR mode.[1]

AR is an important tool in digital marketing. Enhancing the consumer engagement an online purchase intention. This study highlights 3 major points, influencing augmented reality in retail Technical experimental and social. The study shows that while consumer waste the cost and benefit of augmented reality base technology, experimental factors like social influence and immersion often have a strong impact on the purchase intention.[2]

The study states that augmented reality in online retail enhances the consumer experience. It drives positive attitude and decision, making also engagement through utilitarian. And heredonic an experimental values.[3]

The study address common issue of incorrect clothing size while purchasing online. The study focus on how the 3D application allows the individuals to virtual try ons the outfits before making the purchase.[6]

The study focuses on the AR technological in retails. It analysis the technological features and assessing their psychological and behavioural impact on shoppers. It aims to give and overview how AR is been used in online and in store shopping to enhance hedonic and utilitarian shopping experience.[7]

The research and augmented reality shows that privacy control and augmented qualities are the key to user satisfaction high quality A.R based experience enhances the engagement process while control over personal information

significantly impacts the satisfaction of the consumers. Balancing these factors are crucial for optimizing the augmented realities effectiveness across various different contexts.[8]

The study highlights how augmented reality is transforming the online shopping through fit your application. It is a virtual trial room that uses 3D image and face recognition allows different customers to try on the clothing , accessories and footwear virtually, addressing the common issues like sizing and reducing the percentage of the return. The application provides benefits to e commerce platform by improving the satisfaction level of the users, attracting and retaining customers along with providing better shopping experience.[9]

The augmented reality in retail has gained attention for the enhancing experience for the shoppers through personalising advertisement providing real-time information on the product. This paper explores dynamic conceptualization through augmented reality aiming to provide. Immersive consumer friendly shopping assistance with minimalistic user effort.[10,11]

4. Benefits of Augmented Reality in Online Shopping

4.1 Reduce the percentage return

Augmented reality has given a different realist approach to the consumer as it provides realistic preview of the product to the shopper before making the purchase decision as a reason more informed decision can be taken. There is a percentage of reduce into returns. One of the biggest problem that can be considered for online salary is the higher percentage of rate of return that occurs often due to the mismatch between customer expectation and product reviewed online. While making the purchase decision with the help of integration of augmented reality with online shopping, there is a reduction in the percentage return of the product because. It has provide detailed information on the products. And better visualisation. As a result, customers have taken the purchase decision. Confidently about the product that they are going to buy.[12,13]

4.2 Increase engagement of the customer

The technology creates a different user experience for customer as it creates immersive and interactive environment for customer that leads to rich visualization of the product features and product information.

The product stand out and improve the customer experience

The traditional online shopping often leaves the consumer with an uncertainty about the product. How the product might fit or how it might look which leads to hesitation to the buyer to purchase the product. The conversion rate of shopping might be lesser, but with an increase of AR base technology, the customer experience has completely changed. It has

started offering better features for shopping weather it try-ons or virtual placement of product by us of AR based technology it has increased the customer engagements.

4.3 Personalization and improved product visualization.

AR tools can provide tailored base recommendation on the basis of user preferences and needs. Its customer can see a preview of a product which can help them to make a precise decision for purchase. On the basis of customer prior selection about the product, whether it's a clothing, styling, furniture or design or any other kind of product purchases, similar recommendation can be given. It's a tailor base customer recommendation that provides a personalized touch.

Visualization has added on a different product experience by using AR it integrates a real time shopping experience for the shoppers.

5. Cost Saving

Considering the benefits with the help of online shopping platforms. There are various sellers who can easily list and sell it all over the world with the help of online shopping platforms an individual can target multiple customers at same point of time .In comparison of selling the product through physical store by selling the product online, it is more cost savvy instead of setting a physical store the operational cost can be lesser when it comes to comparing selling the product online to the physical store.

There are various online shopping platforms that are using augmented reality technology to sell the product to the consumers. Different sellers gets the accessibility of this technology to sell their products to buyers. As a result, it is an added on advantage for individuals who are selling the products online. And on the other hand it provides a benefit to the consumers as well to see the product. How it will look with the help of augmented reality, which gives them a realistic touch an approach on the products.

6. Challenges of Augmented Reality in Online Shopping

As it can be understood that everything has its own benefits and challenges. Similar way. Augmented reality in online shopping also has its own challenges when it comes to implication. While using the technology listing down few of the challenges that can be a major road block when it comes to implication of the technology and its uses.

6.1 Technological knowledge

It is essential that each and every individual who are going to use AR for shopping platforms should have a technological knowledge about using those features that are being provided by websites or applications while making a purchase decision. Not each and every consumer might have that knowledge of accessing different features on the website to

provide them. Proper education is essential. If not provided correctly, the user might not be able to access those kind of advantages and benefits that are being provided to them to get a better user experience for shopping the product online.

6.2 Dependency on the device and accessibility

Looking at the current scenario the way technological advancement is taking place. It can be expected that each and every individual might have accessibility of devices that provides better facility when it comes to online shopping or using different technological base features or application but not all the consumer have the accessibility of this kind of latest devices that are capable of supporting advance technology and create unique user experience. Due to this , it creates a greater barrier of adoption of AR based technology while shopping online shopping in specific regions. The device may not be supporting the capability of camera processing and technological support which are must needed for using the A.R based application. User experience while shopping online The model might differ and may not support.

6.3 Connectivity and bandwidth

The augmented reality base features are really heavily reluctant on stable network connection. AR features especially those with real time image generation and 3D models and image generation process can be data intensive users with slow internet speeds and lesser bandwidth may not be able to access this kind of features and facility properly as a result they might get dissatisfied or frustrated due to the experience they face while using this kind of services. As a result, this affects or hinders the adoption of augmented reality based shopping globally.

6.3 High initial investment and cost of maintenance

Each and every individual or business owners who is establishing an online website can't provide AR base experience. Well, established companies can reach to this stage of providing a different user experience for the shoppers because the higher initial investment cost of integrating AR technology into e-commerce platform leads to difficulties. On the other hand if an individual manages to invest and set up the A. R base technology, the maintenance cost are also high. Business needs to have a proper developed A.R enabled applications or website features and it needs a continuous updates and maintenance as it's a completely technological base services. At some point of time, it also leads to a hardware base cost for the individuals or companies who are investing into AR based glasses or similar kind of services. All the startups and small firms cannot afford these kind of services to be provided at initial level. It takes a lot of time to establish and reach to a stage where and well equipped. AR based technology has been set up for user experience and selling the products online.

6.4 Privacy concerns

When it Comes to AR technology lots of privacy questions are being raised as it analyses the physical environment and collects the data. Considering with an example if in case where an AR based application requires the accessibility to visualise the product, it need to collect the data with the help of camera of the surrounding to process on how the products might fit. It leads to a privacy concern that the information of consumer are vulnerable. It might not be misused or breached, this makes challenging for the company to ensure the security & privacy of the data. Nowadays, consumers awareness are increasing and they are at a higher concern about how the personal information is being handled by the companies to address the privacy issues. Consumers are expecting transparency form the seller along with getting a different user experience.

7. Research Methodology

The study is descriptive research based study where data is been collected from existing literature, different articles case studies, and papers.

The study explores the current trend and impact of AR in online shopping.it allows for referring the broader perspective by analysing different publish studies and report.

7.1 Data sources

The data is being collected from different sources. Such as Papers, reports publications, journals, existing literature review, academic data base, books and other reference.

7.2 Data collection

The data for the research study is been collected by referring various different sources. Various key points were consider such as AR in online shopping, benefits and challenges, its future adoption and advance technologies.

8. Research Objectives

1. To Study an analysis the use of augmented Across different online shopping platform.
2. To evaluate the Different challenges and benefits that are associated with adoption of augmented reality.
3. To identify the potential opportunity for AI based integration in online shopping.

9. Findings

1. AR is a widely adapted technology in online shopping, particularly with reference to furniture, fashion beauty and other products to provide enhanced visualised experience to shop. It also provide a virtual try on experience while shopping different product online into different category, and even for a room placements of different products on

the platform, like IKEA and amazon, and many similar ones while shopping , larger furniture's an interior in décor and other products.

2. Augmented Reality has greater potential to expand into various different sector. Further advancement in AR base adoption technology by overcoming the different challenges can increase the reach of technology and provide seamless experience for online shopping.

3. AR provides the opportunities to the business growth into various sector. Tt provides improving product interaction and accessibility in emerging markets while offering a seamless experience to the user across the devices.

10. Conclusion

Lots of companies have started using augmented reality since the technological advancement has taken place. The revolutionary change that took place in online shopping by providing consumer with more interactive and engaging environment for shopping has made a greater change into this industry. Yes, it enhances more on visualisation, providing balanced information so that a consumer can make confident purchase decision, which results into lesser, rate of return in the products shopped online. It creates a personalised and different shopper experience for an overall purchase. However, the challenges cannot be overcome that easily. The future perspectives showcases that the advancement in the technology is getting more user friendly as better benefits for both sellers and buyers are being provided. It has a potential to redefine how consumer interact with the product. In the online shopping platform the road blocks cannot not be oversea, more emphasis to solve this kind of problem can be done which can lead to better scenarios of acceptance of technology.

Thus, it can be said that more the AI technology continues to play its role, with the change in time, it will integrate at the higher percentage in the online shopping scenario and increasingly will have a seamless and better impact on e-commerce industry and provide better online shopping experience.

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None.

12. Conflict of Interest

None.

References

1. Ebrahimabad, F. Z., Yazdani, H., Hakim, A., & Asarian, M. (2024). Augmented reality versus web-based shopping: how does Ar improve user experience and online purchase intention. *Tele Informat Rep*, 15, 100152.

2. Erdmann, A., Mas, J. M., & Arilla, R. (2023). Value-based adoption of augmented reality: A study on the influence on online purchase intention in retail. *J Cons Behav*, 22(4), 912–932.

3. Tom Dieck, M. C., Cranmer, E., Prim, A. L., & Bamford, D. (2023). The effects of augmented reality shopping experiences: immersion, presence and satisfaction. *J Res Inter Mark 17:*(6), 940–58.

4. Beurer-Züllig, B., Rozumowski, A., & Klaas, M. (2022). Let me entertain you: the influence of augmented reality on purchasing intention in e-commerce. In *55th Hawaii International Conference on System Sciences (HICSS), Virtual, 3-7 January 2022* (pp. 4933–42). University of Hawai'i at Manoa.

5. Kumar, H. (2022). Augmented reality in online retailing: a systematic review and research agenda. *Int J Retail Distrib Manag* 50(4), 537–59.

6. Ali, A., Saikia, K., Nayak, B., Muchahari, M. K., & Kumar, P. (2021). Augmented reality based online application for e-shopping. *Int J Adv Res Eng Technol* (IJARET), 12(3)

7. Riar, M., Korbel, J. J., Xi, N., Zarnekow, R., & Hamari, J. (2021). The use of augmented reality in retail: A review of literature.

8. Poushneh, A. (2018). Augmented reality in retail: A trade-off between user's control of access to personal information and augmentation quality. *J Retail Consum Serv*, 41, 169–76.

9. Priyah, R., & Vinod, V. (2014). Digital Online Shopping Using 3D in Augmented Reality. *Int J Web Technol* ISSN, 2278–89.

10. Zhu, W., Owen, C. B., Li, H., & Lee, J. H. (2004). Personalized in-store e-commerce with the promopad: an augmented reality shopping assistant. *Electr J E-comm Tools Applicc*, 1(3), 1–19.

11. Guo, C., & Zhang, X. (2024). The impact of AR online shopping experience on customer purchase intention: An empirical study based on the TAM model. *PloS one*, *19:*(8), e0309468.

12. https://www.sap.com/india/products/scm/industry-4-0/what-is-augmented-reality.html#:~:text=Augmented%20reality%20definition,real%2Dlife%20environments%20and%20objects.

13. https://www.intelivita.com/in/blog/augmented-reality-in-ecommerce/

14. https://en.wikipedia.org/wiki/Online_shopping