

REVIEW ARTICLE

AUGMENTED REALITY: THE MODERN DRIFT IN FASHION INDUSTRYReema Varshney^a, Nimisha Rana Chaudhary^b^a Vidya Institute of Fashion Technology, Vidya Knowledge Park, Meerut.^b Department of Home Science, Dayalbagh Educational Institute (Deemed University), Agra, Uttar Pradesh, India*Corresponding Author Email: nimisharana3@gmail.com

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ABSTRACT

This paper deals with the focus on the anticipated future capabilities, advancements, and limitations of augmented reality, this study examines the evolution and modifications throughout the period of AR adoption in the primary application areas. When it comes to engaging consumers and creating creative ideas, one of the fastest-growing and most innovative industries is without a doubt the textile and fashion industry. Augmented reality (AR), a strong and convincing tool, will improve marketing efforts and increase consumer involvement, which will boost revenue. Anything that is deemed popular attracts early adopters, as shown in the fashion retail industry, either in the physical or online marketplaces. By 2022, approx. 44% of the global populace intends to use AR, according to a Digi-Capital prediction. With a focus on the anticipated future capabilities, advancements, and limitations of augmented reality, this study examines the evolution and modifications throughout the period of AR adoption in the primary application areas. We conclude by thinking about the disruptive effect that VR/AR/MR/ITF is going to be competent to have in scientific domains as well as in human interaction and communication.

KEYWORDS

Augmented reality, Virtual reality, Fashion Industry, Fashion Technology, Fashion Advancement, Fashion Innovations.

1. INTRODUCTION

A surprising yet ideal fit for fashion retail is AR, a realistic system that overlays images generated by computers on the actual surroundings to combine both the real and virtual worlds. By utilizing augmented reality,

fashion businesses can make any space a fitting room, eliminate clients' sizing issues, and close the gap among internet shopping and brick-and-mortar buying.

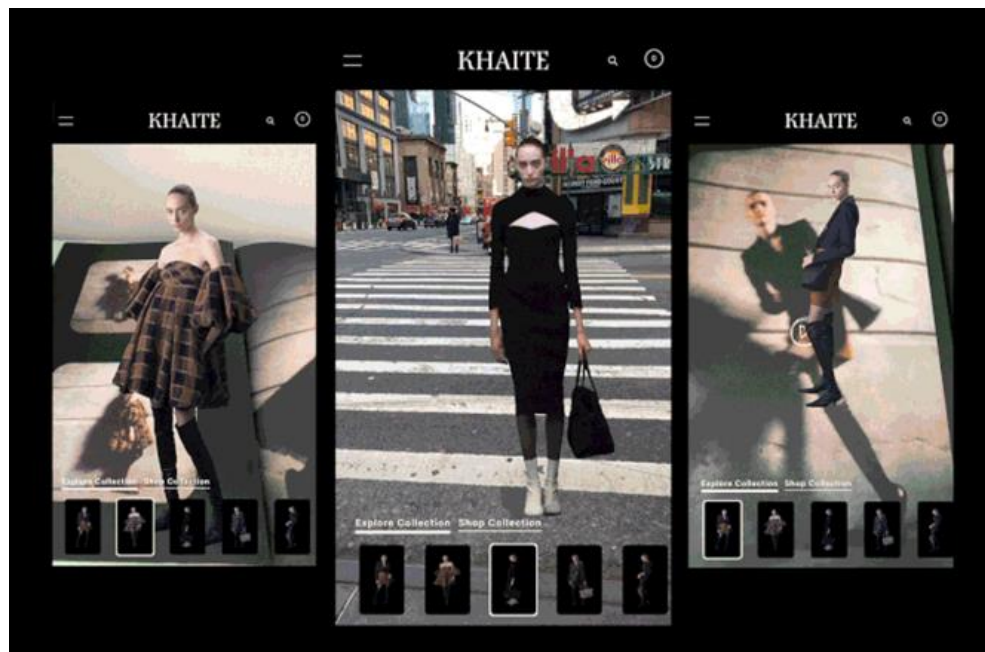


Figure 1: Augmented Reality (Source: www.khaite.com)

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Nowadays, barely one percent of retailers are using fully immersive technologies to improve the interaction with customers. Even though it's anticipated that sales conversion levels will increase as greater numbers of individuals make purchases via the internet, top businesses are utilizing augmented reality (AR) capabilities to deal with client experience problem areas. According to Retail Brew, since approximately forty per cent of US Gen Z and Millennial consumers have already utilized augmented reality (AR) as an aspect of their purchasing experience, young buyers may begin to embrace purchasing with AR (CHI Conference on human Factors in computing system, 2021). Setting the example will improve customer retention, reduce returns, and increase the rate of conversion.

For retailers of clothing, augmented reality is a creative method to interact with customers. The use of technology provides organizations an advantage over their competitors by providing clients with a unique and holistic opportunity to examine the products personally in a virtual

setting. Giving the customer the chance to try the product out in the comfort of their own domicile provides them more control over what they decide to buy. Ultimately, content and involved customers are more inclined to return (Boyles, 2017).

2. AUGMENTED REALITY MARKET SHARE IN FASHION INDUSTRY

According to Statista, the augmented reality industry will expand from its present \$30.7 billion valuation to \$50 billion by 2024. In a 2021 Deloitte Digital survey, 76% of frequent buyers stated they would like to use augmented reality. The numbers don't end there. According to Gartner, 100 million consumers will use AR in 2020 (CHI Conference on human Factors in computing system, 2021). The market penetration of augmented reality in retail is expected to rise as additional businesses recognize that their clients want to fully immerse themselves in more sophisticated technology shopping experiences.



Figure 2: Augmented Reality Market Share in Fashion Industry (Source: centricdigital.com)

ABI Research predicts that more than 120,000 stores will adopt augmented reality by 2022. It is projected that 4 billion AR-capable gadgets will be in use globally (Beck, 2019). Fashion AR is transforming the manner in which brands communicate with customers. Due to this advancement in technology, consumers may virtually evaluate products from the convenience of their residences. Because AR helps customers comprehend what they're paying for, it can make it easier to meet the demands of clients. Ultimately, this improves after the sale experience and loyalty to the brand.

This enormous shift to augmented reality has already begun to sink in with the fashion industry. "Technology utilizing AR is radically changing businesses. As stated by Jordan Yim, the capacity to view beauty and fashion goods in real time is an example of just how augmented reality (AR) may be utilised to enhance the interaction and involvement of the

experience of shopping. Shoppers are currently accepting this evolution as well, and it's not solely the outcome of brand initiatives to change. According to a survey, Greg Jones, Google's head of VR and AR, stated that 61% of consumers would rather make purchases from businesses that use augmented reality. "Conventional and electronic retail can now come together with AR (Popescu et al., 2017)."

3. AUGMENTED REALITY VS. VIRTUAL REALITY

Both AR and VR technologies are distinct even if they share certain characteristics. For engaging graphic encounters, each provide 3D high-quality audiovisual interactions. The primary difference amongst both technologies is that VR completely immerses the individual using it, while AR merely does so to a certain degree.



Figure 3: Augmented v/s Virtual Reality (Source: augray.com and news.illinois.edu)

VR offers a truly realistic virtual experience that replaces the physical world. One may acquire sight, sound, as well as different senses using digitized devices. Augmented reality (AR) provides an actual environment as an interface. Through the use of three-dimensional content as well as picture overlays on top of real objects, the technology is able to create realistic environments. It is possible to give an augmented reality experience without a headset. Augmented reality can be installed on non-specialized equipment, smartphones, and projectors.

While the two types of technology fall beneath the umbrella of a "combine reality" technologies, yet vary greatly from each other with regard to the techniques employed and the experiences provided. While AR introduces digital elements to the actual world, VR completely engulfs the individual in the virtual world.

Unlike augmented reality, virtual reality requires the user to wear a headgear device in order to access and explore 3D virtual surroundings. In the fashion industry, virtual reality refers to goods and experiences that are replicated inside these environments. This can be corporate gatherings and shows that are entirely held online, or virtual reality clothing that users can dress up in. Augmented reality interactions are unique and may be accessible with just one smartphone equipment, even though they both allow users to see and discover things that are only accessible in the digital world (Guddoniene and Rukauskiene, 2019; Chen et al., 2016).

3.1 Fashion's Gains from Augmented Reality

Customers and apparel executives want to use augmented reality (AR) technology for an explanation (Popescu et al., 2017).

3.1.1 A Comprehensive Customer Relationship

When it pertains to fashion, buyers prefer to touch and feel an item of clothing entirely prior to putting it in their wardrobe. Using AR to put on apparel, customers may assess how the layout will suit their personality etc.

3.1.2 Increased Earnings through Lower Returns

Internet buying can be challenging because it's easy to misjudge an item's size anticipated based on the picture. Because of this, 30–40% of things customers buy are returned to the store, which has an impact on the brand's profitability. Because AR clothing gives customers a better knowledge of how the items will fit into their wardrobes and complement their personal styles, purchases are made with more assurance. Because of this, it has already improved the brands' profitability through AR and is anticipated to do so further.

3.1.3 AR Sets the Brand Apart from the Competition

Despite the fact that more and more customers are expecting merchants to use augmented reality technology, 52% of them say they are apprehensive about doing so. Because of this, apparel businesses that include augmented reality stand apart from their rivals while also exceeding consumer expectations.

3.1.4 AR Will Help Your Content Get Popularity

Hardly anyone did not utilize the social media filters at some point. You can't resist the urge to research how you'll appear with red hair or what type of eyewear would suit the best. Fashion brands have already dabbled with filtration in addition to AR technology to get their posts to go global. These include Gucci, H&M etc.

3.1.5 Customer Belief in the Brand

Augmented reality technology aims to increase the trust of customers in a particular brand. Customers can tell that a brand cares when they can sense how passionately they want them to experience the products they provide. With each posting on social media post and virtual try-on, buyers become acquainted with the company better.

3.1.6 Greater Analytics Data

For marketers and data analytics, augmented reality (AR) is a priceless source of information when it creates designers satisfied by making customers aware about these concepts, attractive designs etc. Technology has been so successful in data that it developed into its own horizon, called

augmented analytics. It is beneficial to learn what clients think of the new product range, get feedback, and take corrective measures accordingly.

3.1.7 AR is good for the planet

Using AR, eco-friendly attire companies go above and beyond. Sustainable manufacturers developed digital clothing to combat the trend of utilizing clothing as an item that one wears only once. They can be worn, photographed, and shown by bloggers, fashion influencers, and everyone else without harming the environment.

3.2 Augmented reality shopping experiences

If augmented reality is used for shopping, consumers will be able to complete transactions more quickly. Business will have advantage in terms of conversion rates, prolonged involvement, enhanced customer loyalty etc. (Sirohi et al., 2020).

3.2.1 Custom-made

The first try-on and sizing tool in the business, YourF it from 3DLOOK, offers augmented reality in clothes.

3.2.2 Engagement

An e-commerce site's visitors are more likely to make a purchase the longer they stay there. Since AR provides a fun and creative way for clients to browse things, it increases the likelihood that they will remain engaged with it. As per Threakit, AR has the potential to sustain customer curiosity for up to 2.7 times more, hence boosting conversions, motivating subsequent purchases, and fostering brand loyalty among newly acquired clients.

3.2.3 Turnovers

While traditional businesses are believed to have a rate of return on investment of 20–40%, fashion online merchants only have a standard conversion rate of 1.8%, according to Littledata. Customers can explore and communicate with lifelike real object depictions on mobile devices, helping transform the shopping experience at the store. Given that 62% of consumers who have used virtual fitting facilities for clothing said that the experience encouraged them to decide on a purchase, innovation may eventually close the rate of conversion difference between in-store and online shopping.

3.2.4 Returns

According to McKinsey, poor fit or style is at blame for 70% of fashion returns. This problem is made worse by online buying, where return rates are around three times higher than in-store. Also, AR try-on is a fantastic example of a sustainable fashion technology because it aids shops in reducing their carbon footprint directly, as well as the quantity of samples they offer, which greatly reduces returns.

3.2.5 Loyalty

By utilizing AR, loyalty retailers can provide a stable and smooth customer experience. Studies suggest that using augmented reality (AR) to solve client issues could have a big impact on sales in the future. Seventy percent of buyers say they will be more loyal to brands who offer AR-enhanced purchasing experiences.

3.3 AR fashion solutions helping cutting-edge merchants

Immersion innovations are predicted by PWC to boost the world business by \$1.5 trillion by 2030. Due to a range of creative approaches that are becoming available, augmented reality (AR) in the fashion industry is currently enabling trend-setting enterprises to produce additional value (Boyles, 2017; Popescu et al., 2017; Cieri et al., 2021).

3.3.1 Content for augmented reality

A creative approach for enterprise to communicate with and market its customer base. Clients could access "hidden" content which is invisible in real space by utilizing a smartphone device to scan tangible objects like posters or clothing.

For instance, Balmain previously promoted the use of its app with AR material. By identifying signs scattered throughout Paris, customers were able to gain access to augmented reality content, such as a 360-degree walk of the brand's Saint Honoré flagship store.



Figure 4: Balmain App (Source: Image credit: culturewhisper.com)

3.3.2 Virtual showrooms

Customers can browse products online with the use of virtual showrooms. By rotating their mobile devices across the space, consumers can explore the surroundings and engage with items precisely as they might in an actual store.

The Kohl's AR Closet was just released by store of America by Kohl's. Customers may explore a variety of virtual clothing try-ons, also combination of things to drape fashionable clothing.



Figure 5: The Kohl's AR Closet released store of America by Kohl's (Source: WWD)

3.3.3 Mystical mirrors

Customers may imagine various outfits and possibilities without taking off their clothes thanks to AR, located on various floors and changing rooms in stores. Buyers may view various possibilities on their body instantaneously by simply swiping while standing in front of the mirror.

In the cosmetics market, a lot of companies are playing around with AR, including MAC. Working with facial recognition startup ModiFace, the business has begun to place mystical mirrors in its retail locations so that customers may try out different shades of cosmetics.



Figure 6: Magic Mirror at MAC Store (Source: perchinteractive.com)

3.3.4 Online try-on capabilities

Enables customers to get their hands on products using a device that has a cam. A depiction of the product virtually is superimposed above an actual picture using augmented reality (AR) technology to show customers how it might appear on their body. Some of the sneaker labels like Reebok, Gucci, etc. have incorporated AR features at virtual storefronts owing to services like Want Kicks. Consumers can now check a shoe's perfect fit on their foot using a smartphone.



Figure 7: AR 'Try-On' by Gucci (Source: FashionNet)

4. WHAT KIND OF ROLE WILL AR PLAY IN THE NEAR FUTURE IN TERMS OF CLOTHING?

Fashion shops are finding that 3DLOOK's YourFit fashion software of AR helps them link prospective consumers with products that suit them accurately and produces excellent outcomes. In this regard, the clothing company Farfetch has started experimenting with the concept of virtually clothing followers to market their new line of pre-ordering items. Farfetch is outfitting followers with lifelike 3D renderings instead of providing them tangible products. This ingenious application of AR in apparel may lower shipping expenses for the planet in addition to saving businesses money as well as time on the distribution of samples.

In the same way, companies like DRESSX are looking into similar consumer applications. Customers can buy the completely virtual clothing from the cutting-edge fashion retailer to flaunt this on feeds. Buyers upload photo, by using fashion AR tools, over their physical appearance, the digital clothing is overlaid, producing realistic photos that can be shared in a matter of days (Cieri et al., 2021).

4.1 Fashion Industry and AR

4.1.1 Digital Change Room

One of the biggest drawbacks of buying things via the internet is the amount of uncertainty involved in figuring out if products that are viewed online will fit well and flattering, on top of the trouble of having to arrange

for returns if things fail to fit as expected. Fashion merchants now have an advanced selling technology in AR that allows prospective buyers to experience their products prior to purchase, helping solve this issue. Apps from both traditional brick-and-mortar stores and online retailers.



Figure 8: Virtual Dressing Room (Source: www.google.com)

4.1.2 In-Store Experiential Marketing

Augmented reality isn't just boosting home and online fashion purchases, it is now making an impact in stores too, by enhancing the customer experience through visually interesting material. Customers were given the opportunity to "shop the look" by holding their phones up to the window and in-store displays during a two-week experience that Zara rolled out across 120 stores. Customers could then seamlessly make purchases using their phones, unlocking particular clothing lines by bringing digital models to life. Other brands are using AR to create stunning marketing content that connects with customers in situ, as well as being shared online virally. Nike and Footlocker's LeBron James AR poster campaign did just that by using Snapchat's AR marker technology to bring a 2D poster of LeBron James to life, morphing into a 3D digital model slam-dunking into the store. The results were astonishing; customers in-store were astounded by the content's astounding creativity as it reached a global audience of over 1.25 million views within an hour of its release through social media sharing (Cieri et al., 2021).

In order to achieve this, Footlocker's LeBron James Nike and AR board promotion used Snapchat's AR marker technology to transform a 2D poster of LeBron James into a 3D digital model that slam-dunks into the store. The outcomes were remarkable; in a few hours of its announcement, internet spreading took the content from an in-store audience of one to over 1.25 million views worldwide, leaving customers stunned by its incredible originality (Cieri et al., 2021).

4.1.3 Building Brand Allegiance

In the era of social media, building a sense of community among your target demographic is crucial to building loyalty to your company and driving sales. By bringing a broader demographic nearer to the practice, augmented reality can assist fashion companies in achieving this goal and democratize the retail experience. Through the use of AR and digital storytelling, Balmain's Behind the Scenes app blurs the lines between entertainment and fashion, providing its users with both an immersive behind-the-scenes experience and front-row access to the brand's catwalk shows.

4.1.4 Online Catwalks

Prominent fashion houses are beginning to recognize that digital reality may provide genuinely unique and memorable runway experiences.

Designer Steven Tai collaborated with ILMxLAB and the Fashion Innovation Agency (FIA) to provide the catwalk audience with an incredible live augmented reality experience at London Fashion Week in 2018 (Sirohi et al., 2020). Throughout the two-hour fashion show, the exterior of London's Foreign & Commonwealth Office's Durbar Court was gradually covered with scenes from Steven Tai's home city of Macau. A virtual model appeared on the runway alongside real models, dressed in computer produced clothing.

4.1.5 Online Outfit Collections

Additionally, some fashion companies are creating ground-breaking digital clothing to generate income streams rather than just using AR as an instrument to interact with prospective customers. Social networking and throwaway clothes are contributing to the apparel industry's raised pollution and harm to the environment. Eco-friendly fashion labels, like Carlings, are paving the way for AR digitized clothes as many buyers purchase apparel for use only once in order to make photographs for their social media accounts.

5. CONCLUSION

Using augmented reality (AR) technology in the fashion industry is a long- and short-term profitable answer. While some businesses are trying out at augmented reality, the sector has been sluggish to adopt interactive technologies in general. But AR is going to become an even greater tool for fashion firms to present, promote, and promote their products as buyer behavior continues to shift. Innovations related to technology are critical to acceptance. Any profound experience needs to consider the fashion industry's obsession with sensorial and artistic perfection. With 5G coming soon, getting high-quality AR content will be simpler and, perhaps most significantly, more accurate. These advancements truly give us a taste of the possibilities that it would entail to substantially erode the boundaries between the actual and virtual worlds in the not too distant future.

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