EFFECTIVENESS OF AUGMENTED REALITY IN ENHANCING ONLINE SHOPPING EXPERIENCE

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***Abstract*—Despite the promise that augmented reality (AR) and virtual reality (VR) can help experiential merchants integrate online and offline experiences, there is a lack of guidance on how to choose or combine these technologies. In three experiments, we fill this research gap by looking at the individual and combined effects of AR and VR on important marketing objectives. First, we show that AR is more successful than VR in driving purchase intentions because of its potential to let clients engage in fluent, product-focused mental imagery. Second, we show that VR is better suited to enhancing brand attitudes than AR because it allows buyers to build fluent, context-focused mental images. Third, we demonstrate that combining AR and VR can increase both purchase intentions and brand attitudes, but only if the deployment sequence is AR followed by VR. This is because experiential retail aligns more closely with the customer's online-to-offline journey. When used the other way around, we see a negative impact on purchase intentions and a potential negative influence on brand attitudes. Our study presents a comprehensive theoretical viewpoint on AR and VR in marketing as well as evidence-based advice for experiential retailers to incorporate AR and VR into their online retailing strategies.**

I. INTRODUCTION

As a ground-breaking invention in the contemporary digital era, augmented reality (AR) technology is gradually changing the retail sector.AR technology transforms the retail sector by offering a shopping experience that is unmatched in depth. This is accomplished by superimposing virtual data over the user's actual vision.

It also encourages closer communication between shoppers and merchants. This degree of interaction not only draws customers in, but it also makes them feel more involved and happy about their shopping experience, which encourages them to make a purchase.

The proliferation of smart gadgets and continuous improvements in Internet technology have created a varied and augmented reality (AR) technology is being widely used in the retail sector. With virtual fitting rooms and real-time product displays, augmented reality (AR) technology improves the shopping experience for customers by helping them better grasp product attributes and, as a result, increasing their confidence to make a purchase. Alternatively, merchants can use augmented reality (AR) technology to seamlessly link their online and offline operations, creating a new shopping channel and providing customers with a more personalized and convenient shopping experience. This gives customers more options for where to shop and expands the sales channels available to companies.

The primary objective of this review is to analyze a range of important research and publications that cover many aspects of augmented reality (AR) technology in the retail sector. First, we reference the study by Mona H. Mussa (2022), which looked at how augmented reality (AR) could improve online shopping and increase consumers' intent to buy, particularly in light of the COVID-19 epidemic. Using online questionnaires and quantitative research methods, the study found substantial relationships between augmented reality (AR) technology, customer experience, and purchase intent.

II LITERATURE REVIEW

- This study was based on the Technology Acceptance Model (TAM) and the theory of intermediate technology (Ihde's theory). According to Ihde's post-phenomenological studies [20], cited by [21], technology plays a vital role in mediating human interactions [22].
- Ihde defined four distinct relationships between humans and technology: embodiment, hermeneutical, alterity, and background relationships [12–23]. In the embodiment relationship, users incorporate technology into their lives, creating a connection between the person and their environment through the technological artifact [24].
- Alterity relationship occurs when people interact with technology in a way similar to their interactions with other people [25].
- Background relationships switch the focus from the technology in the foreground to the technology present in the background [26]. The hermeneutical relationship provides a representation of reality that requires interpretation instead of direct access to reality [24].

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• The dependent variable is the Technology Acceptance Model (TAM). The model was designed to evaluate the impact of design decisions on user acceptance and to show information flow systems, providing insight into an individual's adoption of an information system. TAM considers three key structures in determining an individual's use of an information system: perceived benefit, ease of use, and attitude toward use. The model is based on the idea that a person's attitude toward using the system is a significant factor in their use of it [27]

III AN OVERVIEW OF MIXED REALITY

The technology known as augmented reality (AR) combines digital data with physical settings to improve the by superimposing virtual pictures, videos, or data over the user's field of vision, one can alter their experience of reality. The basic idea is to use computer- generated perceptual augmentations to improve people's understanding and interaction with the physical world.AR technology is applicable to a variety of gadgets, including tablets, smartphones, and AR glasses specifically designed for the purpose. Mussa (2022) highlights the critical role that augmented reality (AR) technology plays in enhancing the online shopping experience and raising the likelihood that a transaction will be made. According to the study, the use of augmented reality (AR) technology greatly improves the customer purchasing experience by creating a more engaging and dynamic retail environment, which increases the likelihood that a consumer will make a purchase.

Additionally, augmented reality technology gives businesses a fresh way to actively communicate and engage with customers. Through the use of interactive augmented reality. Through augmented reality (AR) advertising, customers can have a deeper understanding of a product's features and functionalities. Social media platforms that include augmented reality (AR) offer new ways for users to share and engage with content. Through the use of augmented reality (AR) games and filters, consumers may interact captivatingly with companies. This gives brands a fresh way to market their goods or services in addition to increasing customer engagement. All things considered, augmented reality (AR) technology breakthroughs and innovations have drastically changed the way consumers make purchasing decisions. Prospective Patterns and Paths

It is projected that augmented reality (AR) technology will see further expansion and development in the retail sector as customer needs change and technology advances. The subsequent are plausible future developments:

Improved experience when shopping: By leveraging data analytics and machine learning technology, augmented reality (AR) applications are expected to progress and provide a more customized shopping experience.By providing precise product recommendations based on customers' buying tastes and behaviors, augmented reality (AR) systems can increase the effectiveness and happiness of purchase decisions (Mussa, 2022). Customers will feel more satisfied and understood as a result, which will encourage them to make additional purchases.

With the use of augmented reality (AR) technology, online and offline shopping experiences will be more seamlessly integrated in the future. By utilizing augmented reality (AR) Thanks to technology, customers may virtually try out or experience items in real stores. This increases the convenience and diversity of purchasing by giving people access to more information and purchase possibilities via the online store (Xue et al., 2023).

By providing a more immersive and dynamic environment, the fusion of social media platforms and augmented reality (AR) technology will improve the social buying experience for customers. According to Thakkar et al. (2023), augmented reality technology facilitates the virtual try-on of clothing with friends and the sharing of the AR fitting experience on social media, hence fostering social connection and the sharing of shopping experiences.

The ability of augmented reality (AR) technology to offer customized and situational purchasing experiences is highlighted in the paper. It is possible for customers to use augmented Reality (AR) to see different products in their own setting, such décor or furnishings. This enables them to get a deeper comprehension of how the product will work with their interior design. In summary, the adoption of augmented reality (AR) technology in the retail sector has led to positive changes in consumer purchasing decisions. Still,

There are concerns with acceptance as well as technological challenges that need to be addressed. As technology develops and augmented reality (AR) becomes more widely accepted, there is a lot of potential for its use in the retail sector in the future. This offers a thrilling chance to keep a close eye on its possibilities in the retail industry.

Online Purchases (with AR) and Purchasing Decisions

Based on theories of technology acceptance, the researcher attempted to evaluate studies that addressed online purchases made using augmented reality or other technological mediums in order to better understand the dimensions of augmented reality. Regarding variables, the researcher looked at studies that addressed online purchases made with augmented reality. The research focused on how people Sustainability Out of 19, 4 people embrace new technologies. This idea was applied by the researcher to calculate the extent of augmented reality.

The study identified factors that facilitate the usage of augmented reality applications on mobile devices, based on the Unified Technology Acceptance Theory (UTAUT). This study, which involved several Greek students, discovered that the adoption of purchasing intent was influenced by anticipated performance, creativity, enjoyment, and

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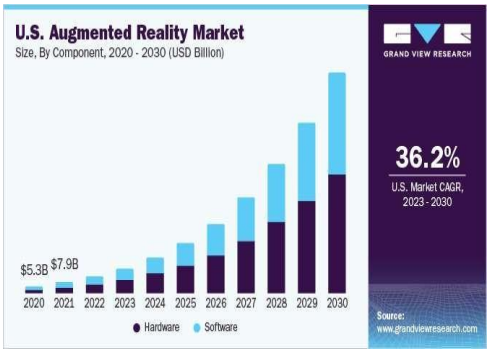
facilitation.Arab World Consumers' Perceptions on Online Shopping Owing to the paucity of research on the views of Saudi consumers toward internet shopping, this study draws on studies conducted in the Arab world, which has shared characteristics, particularly among the Arab Gulf nations.

(Jeddah Chamber, 2019) offered a study to determine how e-commerce might help the business sector contribute more to economic growth. With 38.6% of the sample size consisting of 311 individuals, the results showed that the age group between 30 and 39 was the most frequent online shopper. Those with a university degree accounted for the largest share, at 60.7%. Over 50% of participants make at least one, if not three, monthly purchases online.

IV FRAMEWORK FOR RESEARCH

It is clear from the prior research on augmented reality in marketing and predicted purchase patterns that AR will have a favorable effect on Saudi customers' decision to buy.

Therefore, the purpose of this study is to determine what features and elements of AR influence Saudi consumers' purchasing decisions. As a result, a 50-item survey was created. The dependent variable is based on the Technology Acceptance Model, which has been the foundation of most prior studies that address multiple variables, such as technical factors related to AR and variables related to dimensions of consumer technology use while shopping. The independent variable is based on the following relationship model proposed by Ihde.



In the first years of augmented reality's emergence, the technology quickly garnered a reputation as an effective medium of entertainment with Pokemon Go, Snapchat filters, and video games. However, in 2024, augmented reality continues to evolve past these bold beginnings and is taking shape as an effective business tool. Let's delve into 12 augmented reality trends making moves in 2024 and explore each of them to see how they can benefit your business.

Trend 1: The AR future is powered by artificial intelligence

Developments in augmented reality and artificial intelligence have always been closely related. When it comes to tasks like face and room scanning, AI models outperform human- written algorithms significantly. But 2024 will see advancements in augmented reality technologies beyond AI-powered sensor data interpretation. AI is making significant progress toward a few key goals to augment and improve augmented reality experiences:

Creating lifelike human models and item scans: AI has enabled augmented reality (AR) to progress beyond only identifying facial features and toward the actual reconstruction of a face or other object into a lifelike, three-dimensional model that can be utilized as an avatar or other virtual environment asset. Machine vision is capable of detecting and labeling items. Trend #2: USE AR TECHNOLOGIES TO STEAL FROM THE METAVERSE

The metaverse and its supporting technologies have continued to evolve even though the early buzz surrounding them soon subsided. During the hype cycle of the metaverse, decentralization, cryptocurrencies, and blockchain received a lot of attention. But augmented reality seems to be the more dependable and long-lasting technology that's frequently linked to metaverse case studies, even as interest in these subjects wanes. One example of the possibilities for augmented reality technology is Apple's Vision Pro headgear.

Trend #3: MOBILE AUGMENTED REALITY: BUSINESS TOOLS AND GAMES

Mobile augmented reality technologies started off as a fun toy. But over time, they have developed into an immensely helpful tool for carrying out a variety of important activities, such as scene analysis and navigation. More than ever, businesses are utilizing mobile augmented reality, particularly for activities like product visualization, training, and remote assistance.

V CONCLUSION

This study's shortcomings include its small sample size and geographic scope, which make it challenging to extrapolate the results to other demographics. The results are further constrained by time since they only depict the state of the market and customer preferences at a specific point in time and may not take into account the prevailing tendencies.

This paper presents a summary of the influence of Augmented Reality (AR) technology on the process of consumer decision-making when making purchases. It emphasizes the significant role of AR in improving the shopping experience, increasing confidence in purchasing, and offering more detailed product information. Here is a concise overview of the main ideas presented in the paper: The paper highlights that augmented reality (AR) technology greatly improves consumers' confidence and intention to make purchases by offering an engaging and

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interactive shopping experience. AR fitting mirrors and apps allow consumers to preview garments in a virtual environment, which reduces returns caused by size or style discomfort and enhances the shopping experience.

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