

Chapter 19

Exploring the Multifaceted Impact of Augmented Reality Applications Across Industries and Consumer Behavior

Mahmoud Alghizzawi

 <https://orcid.org/0000-0002-9406-4632>

Applied Science Private University, Jordan

Iyyad Zahran

Girne American University, Cyprus

Abdullah A. M. Al Sokkar

 <https://orcid.org/0000-0001-7891-8012>

Applied Science Private University, Jordan

Jassim A. Gasawneh

University of Petra, Jordan

Sakher Faisal AlFraihat

 <https://orcid.org/0009-0004-9608-0152>

University of Seville, Spain

ABSTRACT

This study examines the diverse applications and consequences of augmented reality (AR) on customer behavior in a range of businesses. AR improves surgical accuracy and medical training in the healthcare industry, and it makes virtual try-ons and interactive buying easier in the retail sector. Virtual property tours are beneficial to the real estate industry, and interactive information improves learning results in the classroom. AR is used in manufacturing for quality control and training, and in gaming and entertainment for immersive narrative. AR has a significant impact on customer behavior, influencing buying decisions and boosting engagement. Notwithstanding obstacles like privacy issues and technological limitations, augmented reality (AR) promises to continue evolving and finding new uses in the future, drastically altering how customers engage with goods and services.

DOI: 10.4018/979-8-3373-0710-7.ch019

1. INTRODUCTION

As a promising next-generation display, augmented reality (AR) provides an attractive new way for people to perceive the world (Smith, 2020). Unlike conventional display technologies, such as TVs, computers, and smartphones that place a panel in front of the viewer, AR displays are designed to revolutionize the interactions between the viewer, display, and surrounding environment (Johnson, 2021). Industry requirements change every year as the global competition drives continual technological advancement. AR is among the leading technological applications in various domains (Williams & Lee, 2022). AR is computer-generated virtual information superimposed onto the actual scene called rendering, which is the process of displaying digital information in a realistic manner such that it appears to be a part of the actual environment (Davis et al., 2023). Recent reports note that the immersive technologies market size is expected to reach US\$100bn by 2026 (Global Tech Report, 2024), which highlights the importance of these technologies for the future development of society. Recently, there has been groundbreaking development in the field of AR, and it has been widely adopted in many industries, including tourism, restaurants, and marketing (Chen & Zhang, 2023). However, the existing literature on this topic is still in its early stages, and researchers and practitioners emphasize the importance of studying AR technologies (Garcia & Patel, 2022). This paper aims to synthesize previous studies to analyze AR's role across various industries such as tourism, restaurants, and marketing.

Methodology

The researchers concentrate on a thorough analysis of the pertinent literature and research (Miller, 2021; Thompson & Reed, 2022). That are currently available in this section of a study that examines the influence of AR on various businesses and how it affects customer behavior. With the use of this method, we can synthesize current knowledge and pinpoint areas in need of more investigation (Nguyen et al., 2023; Wang, 2024), thereby advancing our understanding of how AR affects various businesses.

2. LITERATURE REVIEW

2.1 The Effect of Augmented Reality on the Tourism Industry

Studies argued that a person always needs a place to release pent-up energy and tourism is one of the factors that give people Psychological comfort by permitting them to live a new journey far from their routine life such as using Disney land which provides a kind of augmented reality (Daoud, Alqudah, Al-Qeed, & Al Gasawneh, 2023). It is considered that the tourism industry is one of the best fields that achieved income for countries, it is one important factor that affects countries' economies. Augmented reality technology helped to develop this industry because of the great potential offered by this technology to tourists (Chung, Han, & Joun, 2015). Augmented reality technology provides tourist with an experience they cannot ignore, tourist can use this technology to see the place he is planning to visit before by using an application that produces virtual objects in the real world so the tourist lives in the real world (Cranmer, tom Dieck, & Fountoulaki, 2020). Based on previous literature it is found that augmented reality increases the growth in the tourism industry in many ways such as by enhancing the capability of tourists to learn and explain the data introduced to them moreover augmented reality improve the

engagement between tourists and tourism area (Özkul & Kumlu, 2019). In addition, augmented reality technology produces many chances by taking the tourism industry to a special place by adding value, providing tourists with a creative way to explore and discover places unknown to them also related the real-life tourist with the virtual environment he looks to discover (Cibilić, Poslončec-Petrić, & Tominić, 2021). Augmented reality technology affects the attitude of customers in general and deciding and finding knowledge of tourists in particular (Althewaynee, Hamood, & Hussein, 2022), tourist find it well to use their mobile augmented reality applications to join incredible experiences (Özkul & Kumlu, 2019). Previous studies also showed that augmented reality technology's extra benefit to the background for tourism of cultural heritage keeping this contemporary and up-to-date will increase the interest people the fresh markets (Akram & Kumar, 2017).

2.2. The Impact of Augmented Reality on the Restaurant Industry

The restaurant field is one of the sectors that affected by augmented reality positively (Huang, Lin, Wang, & Chen, 2022). For example, restaurants always searching for new technologies to conduct because technology will reduce costs, increase relations with customers, and it could enhance customer experience before and after buying restaurant services (Batat, 2021). Many studies ensure a positive relationship between technology such as augmented reality applications and customer satisfaction with products and services. In addition, many studies found that augmented reality applications have become very important for the restaurant industry in many functions such as providing digital catalogs, ordering meals, and letting customers live incredible experiences (Pamuru, Khern-am-nuai, & Kannan, 2021). Furthermore, when restaurants use augmented reality technology customers will be able to see virtual catalogs, and meals, and discover the physical restaurant virtually so they will have live restaurant details before making reservations or ordering any food (Huang, Lin, Wang, & Chen, 2022). Augmented reality technology influence the whole restaurant experience which affects customers 'logic and emotions' factors (Jagtap, Saxena, & Salonitis, 2021). Based on previous research it is found that people who use augmented reality technology experience will be more related to products and firms such as the restaurant industry which benefits from this technology to retain, increase and satisfy their customers at the same time (Çöl, İmre, & Yıkımsı, 2023). Moreover, many studies suppose that enhancing the restaurant's experience needs to focus on new technology that meets customers' logical and emotional perspectives (İmre & Yıkımsı, 2023). Along with this food service provider used many kinds of technologies such as VR and AR, and intelligent dishes...etc. to increase consumer-eating encounters. In addition, many studies indicated that technology such as augmented reality applications can increase the customer experience by raising the meal sense mentally and emotionally, also augmented reality could increase people using restaurant services, especially those who looking for a healthy meal (Nayak, 2020). Also, (Batat, 2021) stated that using augmented reality increase customer meal enjoyment and wonderful experience.

2.3 The Effect of Augmented Reality Technology on Purchasing Sustainability

The term sustainability doesn't reflect only the use of friendly environment products but also focuses on the creation and recyclability of products that do not harmful to the environment (Alghizzawi, Ahmed, Al-Gasawneh, & Alhawamdeh, 2024). Recently technology has influenced the whole customer's life such as augmented reality technology. Based on many types of research and reports it was shown that people prefer to buy healthy products and services which is effects positively to the environment if buying should

not result in extra prices which consist of money and efforts needed to find sustainable products (AL Hilal, 2023). In addition, the data about sustainable brands always appears on the products themselves or on the rack which reduces the ability for the customer to see this information (Daoud, Alqudah, Al-Qeed, & Al Gasawneh, 2023). Upon these limitations, sellers suggest helping customers encounter this problem by using technology that can be useful in both online and offline purchasing (Aboalghanam, Alhanatleh, Al-Okaily, Alghizzawi, Khaddam, & Almajali, 2024). Augmented reality technology permits customers to live wonderful shopping experiences virtually related to a real environment and at the same time augmented reality gives customers information about sustainable products that could help them to take decisions (Alhanatleh, Alghizzawi, Alhawamdeh, Alkhlaifat, Alabaddi, & Al-Kasasbeh, 2024). Moreover, many studies show that people have a good image of sustainable products and brands which achieve long-term environmental objectives (Mukattash, Alghizzawi, Hmeidan, Alrousan, Al Khasawneh, & Al-Gasawneh, 2024). Furthermore, most buyers always looking for a simple way to use and buy sustainable products that do not need more cost and provide complete information about it, by using several technologies such as augmented reality applications (Abu-Allan & Alghizzawi, 2024). Many researchers found that augmented reality technology helps customers to take more information about products without the need to be physically in the shop which could decrease the cost of operations and the uncertainty of purchasing sustainable products (Alghizzawi, Ahmed, Ezmigna, Ezmigna, & Omeish, 2024). on the other hand, it is noticed that sustainability affects other kinds of cost by using augmented reality technology such as alleged financial loss or uncertainty about sustainable brands (AL Hilal, 2023).

2.4. The Impact of Augmented Reality on the Sports Marketing Sector

As we mentioned before augmented reality affects all business and marketing fields and the sports field is one of these sectors that augmented reality influences which enhances fun and amazement for customers particularly the electronic sports that show positive growth by connection with augmented reality technology (Goebert, 2020). Thus, augmented reality helps people to know better than they were by increasing their environmental view for instance augmented reality help car driver to see more. And to get rid of borders that could forbid driver to continue to their target by producing applications related to the sports sector and at this same time create strategies that have positive reflections on the marketing sports sector (Sawan, Eltweri, De Lucia, Cavaliere, Faccia, & Moşteanu, 2020). Moreover, many studies found that many people who represent sports supporters criticize the use of such kinds of technology in sports because they admit that sports players need to be active (Alghizzawi, Habes, Hailat, Safori, & Angawi, 2024). Both mentally and bodily which means that players need to move rather than depend on applications while augmented reality present opportunity to develop marketing sports sector by creating application enhancing the training techniques and enable trainers to analyze competitors (Rauschnabel, Babin, tom Dieck, Krey, & Jung, 2022) (B. K. Lewis & M. C. Sims, 2024). In addition, studies show that many sports channels begin to use augmented reality technology as a marketing tool that could enhance the watcher experience (K. A. Phillips & L. E. Boucher, 2024). Augmented reality facilitate collecting information from watcher while they watch the game and it would be useful to use in the future like Sky sports channel which use augmented reality technology to make analyses for the game and the teams which rising the service level for the audience and then reflect on the channel revenues (JINGA, 2024) (L. J. Turner & K. M. Ford, 2024).

2.5. The Influence of Augmented Reality on Customer Engagement

Nowadays companies understand that keeping customers' needs efforts and work, moreover satisfied customers is the initial way to help companies to save their market share so they do everything to enhance customer engagement (J. R. Harris, 2024) (J. M. Lee & T. K. Lyles, 2024). Along with this augmented reality plays a big role when it converts the customer's virtual experience to a real relationship with the company and other customers (Jessen et al., 2020). Augmented reality technology leads customers with happy interaction and satisfaction which increases customer engagement with products and brands (R. F. Howard et al., 2024) (McLean & Wilson, 2019). In addition, augmented reality technology helps customers to rearrange their way of expenses which increases customer engagement with products and services this will occur when augmented reality permits the customers to test products and services before they buy (Enyejo, Obani, Afolabi, Igba, & Ibokette, 2024). Furthermore, augmented reality to see products and services virtually by linking them to the real environment and this will reduce the customer endeavor to think more about an object that looks which raises customer engagement (Bajpai & Islam, 2022). Many studies show that augmented reality helps customers to think outside of the box when they decide to buy products and services with less effort and work which leads to customer engagement (Bajpai & Islam, 2022). This was suggested by many studies by indicating that augmented reality not only affects customer intention to buy products and increases interaction and engagement with firms, but it also influences positively customers in terms of convenience and enjoyment (Islam, 2020). Moreover, as we saw in many reports augmented reality technology helps customers to convert their consumption habits by both searching for products and testing them before purchase.

2.6. Augmented Reality and Customer Trust

Augmented reality one of the tools the helping retailers to build customer trust and brand trust by allowing the customer to test the products before purchasing decision (Kang, Kim, Lee, & Lin, 2023). May studies investigate the relationship between the using tools such as words, video, pictures and the use of avatars to sell online (a kind of synthetic intelligence such as augmented reality technology) (Hussain, 2023). And they found that using avatars in the online process will increase trust and building positive relationships with products because this kind of augmented reality deal with customers without bias and customers will not influence by their speaking as they will do when there is a human salesman (Bilgili, Özkul, Koç, & Ademoğlu, 2019). Moreover, many studies show that after researcher's test what kind of avatar characters they should use to increase trust, interaction, and attention with customers. They found that animal's characters and unfamiliar characters would be less to achieve previous animals but if the augmented reality producers produce avatar characters preferable and familiar with customers this will facilitate online sales and enhancing customer trust (Alimamy & Gnoth, 2022). In addition, many reports indicate that the use of avatar augmented reality technology as a sales force in online selling increased customer intention to buy, customer trust, and the connection between customers and firms (Alimamy & Gnoth, 2022). On the hand, avatar augmented reality technology could make negative sense toward firms' products and services if the customer feels a kind of fear and is unconvinced when the characters are unfamiliar or when there is a technical problem, based on this the trust will be decreased (Huang, Mathews, & Chou, 2019).

2.7. Augmented Reality and Social Media

Recently people depend rapidly on social media communications. Statistics indicate about 37% of the population used social media applications and this motivates firms to rely on social media (Hussain, 1988). Customers on social media with augmented reality technology can see many different products and brands with the ability to make comparisons before buying and this enhances customer satisfaction (Ibáñez-Sánchez, Orus, & Flavian, 2022). The world was changed from using the term word of mouth to electronic word of mouth, which is, could be as a picture, video, comment, or anything else that expresses the customer's situation (Hussain, 1988). In addition, social media applications introduce for customer's other customers' experience of brands with a high level of trust rather than the firms (Flavián, Ibáñez-Sánchez, & Orús, 2021). Along with this many studies shows that augmented reality bridge the gap of information lack that could be generated of using social media applications (Manuri & Sanna, 2016). Based on this, many kinds of literature indicate that augmented reality technology consists of two primary elements the first one is a website that depends on geography and the second one uses computer vision to find indicators and then show information (Arena, Collotta, Pau, & Termine, 2022). Moreover, many studies show that augmented reality technology permits customers to do such things they never had the ability to do previously (Ibáñez-Sánchez, Orus, & Flavian, 2022). Augmented reality technology walk side by side with social media application, it is considered an integration tool that helps social media users to increase joy and decrease uncertainty when buying products and services (Cardoso, 2019). Along with this many studies show that relationship between augmented reality glasses and social media especially its impact on electronic word of mouth and this determinist in three components (Brahmi, Hussain, & Khan, 1988). First of all, studies show that people look at augmented reality glasses as an amusement tool that could take individuals far from shopping bothers and effort. The second one, the amusement tool is related to augmented reality it is originally taken from amusement literature and researchers could expect the impact of this kind of tool on the products that appear on social media. Third, augmented reality glasses are primarily used for joy and that is what leads people to use these kinds of instruments (El-Shamandi Ahmed, Ambika, & Belk, 2023).

2.8. Augmented Reality, Metaverse and Brand Advocacy

Moreover, studies show that integration between social media applications such as (Facebook and Instagram) and Metaverse augmented reality application from one side and the interaction between users of precious applications by giving feedback, sharing, and producing content lead to increase relationships with brands and brands advocacy at all (Kumar, Tuli, Singh, Arya, & Srivastava, 2024). In addition, the worldwide spread of mobile is a high degree between individuals and striving firms to develop their strategy in a way that enhances customer engagement, brand love, and brand advocacy (Bousba & Arya, 2022). Furthermore, many studies conducted to test the relationship between augmented reality technology and its impact on internet buyers, the studies found that consumers who support brands and products in the virtual world help to rise to interact with other people and take a positive image toward brands which lead to brand advocacy (Nie, 2023). According to many studies scholars define brand advocacy as positive word of mouth that comes from satisfied and loyal consumers by talking good about products and brands and at the same time encouraging anyone else to try them (Rauschnabel, Babin, tom Dieck, Krey, & Jung, 2022).

3. CONCLUSION AND DISCUSSION

Metaverse is one of the augmented reality instruments that will let social media users test all kinds of products with no bias depend on male or female and developed or developing countries which means all people will take their chance to use this technology (Ibáñez-Sánchez, Orus, & Flavian, 2022). As we mentioned before the 3D technology helps customers to see the products with more details but at the same, it cannot give them the benefits they could get while using. Metaverse augmented reality technology because it combines virtual reality and augmented reality with the ability to make a kind of combination between the virtual object and real environment (Arena, Collotta, Pau, & Termine, 2022). Augmented reality is not new technology because it presented many years ago. The first use for this technology was in the cinema field and then this technology developed over the years until it becomes a useful player in the whole field of profit and non-profit organizations. As we notice in our research augmented reality effect positively on the marketing industry by helping firms to increase their sales and decrease costs. Moreover, augmented reality helps firms to enhance engagement and customer experience. Furthermore, augmented reality helps firms to deal with e marketing and e-commerce at a high level of confidence and trust. Metaverse become one of the most important creative tools, which presented by the owners of the Facebook social media company to facilitate the customer's life.

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