Augmented Reality in Marketing: A Narrative Review of its Evolution, Key Features, and Retail Applications

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Abstract
In the digital marketing era, Augmented Reality (AR) has emerged as a transformative technology that enhances consumers' experience and engagement. This article aims to provide a narrative review of AR's evolution, distinguishing it from Virtual Reality (VR), key AR features that influence the consumer's behaviour in the retail industry, highlighting its benefits in marketing, and discussing AR Marketing paradigms and different types of mobile augmented reality apps. Articles from peer-reviewed journals were analyzed to provide insight into AR's role. The findings show that AR features discussed in the literature are reality congruence, aesthetics, personalized experience, system quality, novelty, interactivity, vividness, informativeness, and augmentation. The benefits of AR in retail are that it helps improve users' understanding and predicts the product's performance; it saves time and effort when shopping and improves decision-making skills. AR apps can increase conversion rates, reduce return rates of products and online cart abandonment, and reinvigorate stagnant physical inventories.
Keywords: Augmented Reality, Mobile Augmented Reality, Augmented Reality Features

Introduction
AR combines real and virtual worlds to enrich and enhance consumers' experience by seamlessly blending the real world with digital elements. It overlays sensory information such as objects, graphics, avatars, sounds, and labels. It enriches the consumers' auditory and visual perception of reality. AR technology superimposes a layer of digital information in users' real surroundings in real time without detaching consumers from their surroundings. It does not replace the physical surroundings but utilises the real environment as a background. The virtual elements primarily respond to gestures or movements, creating an interactive user experience (Wedel et al., 2020; Nagy et al., 2022; Tan et al., 2022; El-Shamandi Ahmed et al., 2023; Kang et al., 2023; Wang et al., 2023).

Studying Augmented Reality (AR) in marketing and retail is crucial because it is reshaping how brands connect with consumers and how people shop. AR creates highly interactive and immersive experiences, which significantly boost customer engagement and curiosity. Over 60% of shoppers prefer retailers that offer AR, and most say they would shop more often if AR was available (Chinthamu & Balaram, 2025)

The term AR first appeared in 1940 (Caboni & Hagberg, 2019). The prototype of AR was built in the 1950s by Morton Helig, a cinematographer. Later, in 1962, he built an AR prototype called Sensorama with sounds, smells, visuals, and vibration that was referred to as the future of cinema (Caboni & Hagberg, 2019; Kumar, 2022). In 1968, Ivan Sutherland developed an AR system using an optical see-through head-mounted display (Caboni & Hagberg, 2019) . He described it as a "window to the virtual world" (Kumar, 2022). Myron Krueger introduced the relationship between virtual objects and the user in the mid-1970s. The term became popular in 1980 when Thomas Caudell, an engineer, described the new technology as being practical for assembling and installing electronic cables on aircraft (Caboni & Hagberg, 2019). The debut of AR in commerce was marked in 2008 in the form of a 3-D simulation by the automobile industry. Numerous AR applications have since been developed, including projection mapping, content augmentation, virtual annotations (Google Glass), virtual try-ons, and holograms (Watson et al., 2018).

Initially, AR was used in military and medical applications (Caboni & Hagberg, 2019) . Over the years, it has been utilised in education, entertainment, tourism, manufacturing, healthcare, defence, construction, and retail industries (Saprikis et al., 2020; Qin et al., 2021; Arghashi, 2022). AR attracted the academic world's attention in 1997 when Ronald Azuma published the first survey study detailing the characteristics of AR along with a thorough definition encompassing the essential properties of this technology. In 2014, Philipp Spreer and Katrin Kallweit published the first significant study examining the acceptability of AR in retail. In the twenty-first century, significant publication was witnessed in this domain (Perannagari & Chakrabarti, 2020).

Studying Augmented Reality (AR) in marketing and retail is crucial because it reshapes how brands connect with consumers and how people shop.AR creates highly interactive and immersive experiences, significantly boosting customer engagement and curiosity. Over 60% of shoppers prefer retailers that offer AR, and most say they would shop more often if AR were available(Chinthamu & Balaram, 2025).AR tools like virtual try-ons and product visualizations help customers make confident purchase decisions, leading to higher conversion rates and reduced product returns. Some brands have seen conversion rates increase by up to 40% after implementing AR (Nikhashemi et al., 2021).AR allows customers to visualize products in their own environment, saving time and effort, and making shopping more convenient and enjoyable. This leads to higher satisfaction and loyalty.AR helps brands stand out in a crowded market, increases brand recognition, and creates memorable experiences that drive word-of-mouth and repeat business.By guiding customers in-store and providing instant information, AR can reduce the need for staff assistance and streamline the shopping process, resulting in cost savings for retailers (Pakharuddin & Kamarudin, 2023).

Researching Augmented Reality (AR) in marketing and retail is important because AR is rapidly transforming how consumers interact with brands and make purchasing decisions.

Understanding AR's key features and its impact on consumer behavior helps businesses design more engaging, personalized, and effective marketing strategies. Additionally, research provides valuable insights into how AR can improve customer experience, increase sales, reduce product returns, and enhance brand loyalty. As digital technologies continue to evolve, studying AR ensures that retailers can adapt to changing consumer expectations, optimize their investments, and maintain a competitive edge in an increasingly digital marketplace.

Milgram and Kishino (1994) Proposed the "reality-virtuality continuum", which shows that there are two subcategories, i.e., augmented virtuality and AR, between the virtual environment and the real environment. Over the decades, the power of augmentation through devices has increased tremendously, which is why the continuum fails to differentiate between different forms of AR in the definition. Dwivedi et al. (2021) definition is more relevant to the classification of new realities, where assisted reality and mixed reality are two endpoints of the AR continuum, and XR (new realities extended, expanded, or some new technology will include AR, VR, and new forms of realities as shown in the figure)
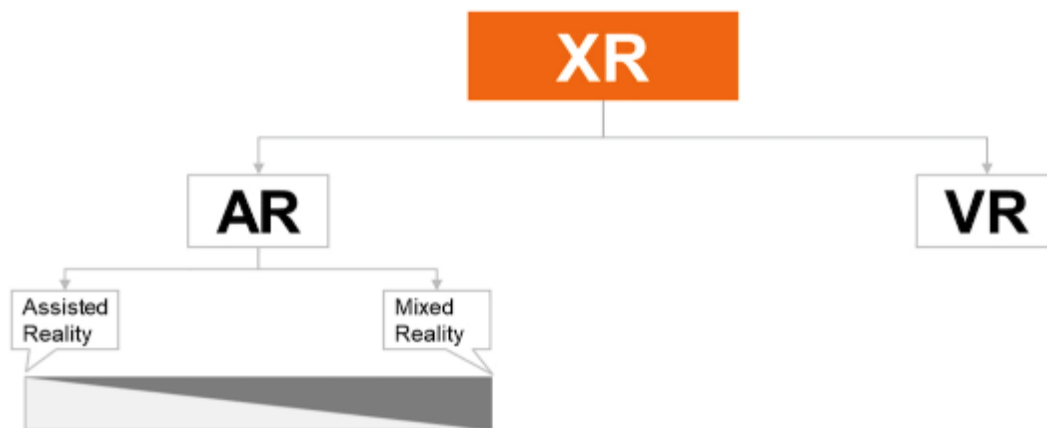

Figure **Error! No text of specified style in document.**.1 Augmented Reality, Assisted Reality, Mixed Reality and Virtual Reality by Dwivedi et al. (2021)

Augmented Reality versus Virtual Reality
AR has a counter technology known as Virtual Reality (VR), both aim to enhance consumers' experience, but address it differently (Caboni & Hagberg, 2019). Uhm et al. (2022) states that AR has three unique media functions: (1) it combines the virtual and real world, (2) it is interactive in real time, and (3) it is three-dimensional, in which the environment is real, but the objects displayed in the environment are digital. For instance, a webcam allows digital objects (target product) and physical objects (user's body part) to be displayed simultaneously on the user's video screen. This provides consumers with an enriched shopping experience by displaying digital product visuals on images of consumers' physical features. This makes AR a superior e-commerce tool compared to VR-based product presentation. AR is believed to offer greater potential than VR in e-tailing (Jayaswal & Parida, 2023). VR involves complete immersion in the digital world (Nawres et al., 2024). In VR the user is isolated from reality and immersed in a virtual environment (Rauschnabel et al., 2019; Wedel et al., 2020). It replaces the real surroundings (e.g., circumstances where the actual physical context is not desired or accessible, such as war situation training or fictitious games) (Jayaswal & Parida, 2023). The difference between AR and VR is that VR only uses virtual

information to create a perception of reality (Wedel et al., 2020). While AR enhances perceived reality, VR substitutes perceived reality. Extended reality (XR) or X-Reality is the umbrella term for AR and VR (Riar et al., 2022). Mixed reality merges both VR and AR (Wedel et al., 2020). Consumers can use AR on several types of devices, such as desktop personal computers (PC), in combination with web cameras, and hand-held devices, such as mobile phones and tablets, when browsing online (Watson et al., 2018; Riar et al., 2022). Compared to other technologies, it can be easily integrated into users' daily activities (Heller et al., 2019). In contrast, additional equipment is required for VR usage (Han et al., 2021).

AR Features
Key features of AR technology are outlined in Azuma (1997) early research. AR blends the real world with the digital world to provide a novel experience and real-time interactive features. AR is presented in 3D and provides a vivid and clear representation of objects. AR has numerous conceptually overlapping variables (Barhorst et al., 2021). Kowalczuk et al. (2021) state that the literature has investigated different but overlapping AR characteristics, which can be categorized into five categories: variables that deal with 1) interaction with digital products, 2) quality of processing, 3) displayed product information, 4) digital product presentation and quality, and 5) handling of personal information.

Although AR applications are presented in a heterogenous group, they differ significantly from each other in terms of features (e. g virtual try-on is the information layer of simulation), type of technology (project mapping, holograms, rendering) devices on which they are used (smart devices, fixed interactive screen, wearable and non-wearables) and the context of usage (AR featured fixed interactive display in public or semi-public, or private application by AR smartphones). Despite the differences, the common underlying link is that they create the illusion of an improved reality by simulating spatially situated image annotations or textual information (Javornik, 2016).

AR features discussed in the literature include reality c*ongruence,* which consists of real and digital products (Nagy et al., 2022). The extent to which a user believes that an augmented product matches the real product is critical to a positive consumer response (Kowalczuk et al., 2021). In online sales, product presentation/display, 3D authenticity captures this fit between the real and displayed objects (Nagy et al., 2022). If the product is poorly presented or the size is wrong, inaccurate, pixelated, or unrealistic, it lacks value to the consumers (Kowalczuk et al., 2021; Nagy et al., 2022). *Aesthetics* is also known as the visual appeal of the retail environment. In mobile AR apps, the design of the service and the screen influence how consumers feel. The aesthetic value is provided to consumers through visualization. Entertainment performance meets the immediate needs of users and provides real-time fun. In AR mobile services, the overall design of the shopping environment creates an atmosphere that contributes to how consumers feel when they are immersed (Wang et al., 2021). Chiang et al. (2022) the graphics style refers to how attractive the presentation of the online environment or experience is in the consumers' perception; arguably, it's the same terminology as aesthetics. *Personalized Experience* refers to mobile users obtaining information about products and services on their devices and creating tailored services. Consumers' displeasure can be reduced by eliminating irrelevant information and creating utilitarian value. While using an AR application, consumers can adjust styles and makeup

according to their choice, helping them to find a suitable product, This process enables them to create enjoyable experiences (Hsu et al., 2021). Evaluate the functionality of the system in meeting the user's needs, and whether the user faced any problems while trying the product (Gabriel et al., 2023). *System quality* evaluates a system's ability to operate precisely and reliably, providing services requested at a sufficient processing speed with the relevant quality. It is an essential element of constituting the consumer experience (Kowalczuk et al., 2021). *Novelty* refers to users' engagement in AR apps for seeking something new. Consumers who are innovative and open to new experiences are more likely to adopt new technologies to reveal their creativity. They will employ their technological knowledge to use digital products (Kang et al., 2023). This characteristic of AR examines how well the current virtual try-on feature in e-commerce gives users a personalised and fresh appearance that makes them feel like they are seeing themselves (Gabriel et al., 2023). Novelty is the combined aspects of unusual or new stimuli. In the context of an AR-based shopping app, It is not the newness of AR in retail but rather the innovative, personalised, unique, novel content experienced every time through the AR display (Sengupta & Cao, 2022). *Interactivity* shows how digital media can change the user experience instantly (Qin et al., 2024). It is the extent to which a user can directly interact with digital products. Interactivity is the ability to control what consumers see by combining their real surroundings with digitally enhanced sensory information (Kowalczuk et al., 2021; Nagy et al., 2022; Qin et al., 2024).

In consumer behaviour research, interactivity has been conceptualised and operationalized in 2 different directions: based on users' perceptions or technological attributes, also known as technological outcome, technical attribute, technological feature, media features, and feature-based interactivity (Yim et al., 2017; Nikhashemi et al., 2021; Prasad et al., 2022; Kim et al., 2023; Kumar et al., 2023). From a technological perspective, interactivity in AR results from the quality of the technology used or the technology's ability to make users easily interact and be involved with the content (Yim et al., 2017; Kumar et al., 2023). The interface functionality of synchronizing communication is the primary driver of interactivity (Prasad et al., 2022). Scholars from this school of thought emphasize that sub-components of technology should be enhanced to increase interactivity including; *Speed*, which refers to how quickly the content is manipulated in the mediated environment; *Mapping* refers to the similarity of controls employed in the real and the mediated environment.; *Range* refers to the extent to which the content in the mediated environment can be altered. For example, if a person encounters a delayed response when using a touchscreen phone in a video game, interactivity will be low due to the medium's delayed feedback (Yim et al., 2017). Users' perception focuses on traits of the individual that induce a sense of interactivity. Users cannot experience interactivity without the motivation to participate in interactive media. Users with low motivation will not experience interactivity even if they use advanced technologies that can create a high level of interactivity (Yim et al., 2017). User perception is based on how the consumer perceives technology features during the interaction. It is a critical factor in understanding the consumer experience with the technology (Javornik, 2016). The level of interactivity perceived by consumers is subjective; it is the psychological state experienced by the visitors during the communication process. It can be categorised into three types: (1) user-to-user; (2) user-to-content; and (3) user-to-system interactivity (Park & Yoo, 2020). User-to-user communication refers to face-to-face and online communication through email and technology-supported chat rooms. User-to-content interactivity means the interaction between users and the document/content. It can

be experienced through content created by others, such as audio/ video downloads, interactive fiction, or obtaining product information on websites after reading other customers' product reviews. User-to-system interactivity is based on interacting with the machine and is referred to as interaction with the technological features of the computer.

Vividness is the capability of technology to create a sensory-rich mediated environment (Yim et al., 2017; Nikhashemi et al., 2021; Whang et al., 2021; Sengupta & Cao, 2022; Kim et al., 2023) that allows users to have a realistic sensory experience with digital objects (Wang et al., 2021). The MAR shopping apps benefit greatly from their ability to create highly immersive environments. Increased vividness improves the consumer's ability to evaluate and interact with products as if they were physically present in front of them. By combining the sensory experience of the actual object with the non-sensory experience of an imaginary object, vividness creates a clear mental image of the product (Prasad et al., 2022). The sensory experience of actual objects is combined "with hallucination" which is the nonsensory experience of imaginary objects (Yim et al., 2017; Prasad et al., 2022; Prabowo et al., 2023). Other scholars refer to vividness,s as richness, realism, or realness (Yim et al., 2017). In the AR context, it can be defined as the sensory-rich mediated environment produced by the AR shopping app in terms of product presentation quality and aesthetic appeal (Yim et al., 2017; Nikhashemi et al., 2021; Prasad et al., 2022; Sengupta & Cao, 2022).

Informativeness is one of the significant factors influencing consumers' attitudes towards mobile and e-commerce. In online retail, product information can stimulate visual imagery, mostly presented via verbal and visual forms. The product image provides visual information whereas the product description about the brand, material, and size provides verbal information. This combination helps consumers to evaluate the information by forming a mental image of the product for future consumption experience (Rese et al., 2017). For example, images with a concrete usage background help consumers create better visual images than images with a solid colour background. For instance, a swimsuit with a beach in the background creates a positive behavioral intention compared to an image of a swimsuit with a solid white studio background (Yoo et al., 2023). Scholars have used different terms to refer to informativeness, such as information quality (Chiu et al., 2021; Prabowo et al., 2023), quality of information (Pantano & Servidio, 2012), perceived information (Hilken et al., 2018), and information seeking (Tom Dieck et al., 2023). When shopping online, users have less information about the product than in physical stores, where they can evaluate the products. AR can overcome online information deficits by simulating the shopping experience and allowing users to experience digital products directly (Kowalczuk et al., 2021; Nagy et al., 2022).

Augmentation refers to the extent to which the AR app makes users feel that the quality of augmented content is realistic (Rauschnabel et al., 2019; Hinsch et al., 2020) and relevant to their consumer object and distinguishes it from the perceived aesthetics of the AR app (Hinsch et al., 2020). When augmentation quality is high, consumers feel like they are living an authentic and situated experience where virtual content and physical reality blend seamlessly. If the augmentation quality is low, it results in an unrealistic consumer experience that consumers negatively perceive (Rauschnabel et al., 2019). Information processing becomes easier with high-quality augmentation, resulting in positive product preference and attitude (Hinsch et al., 2020). Thus, determining whether the consumer will be inspired to

interact with the technology will be how well the customer perceives the augmentation experienced (Nikhashemi et al., 2021). Types of augmentation in Marketing include augmentation of self (e.g. virtual try-on, virtual fitting rooms), augmentation of surroundings (e.g. those furniture apps that virtually place an item of furniture in a room), or augmentation of the object (e.g., product image recognition) (Javornik, 2016).

Advantages of AR in Marketing
The study of Augmented Reality (AR) in marketing and retail is highly significant because it benefits both businesses and consumers by transforming shopping experiences and driving business growth. For businesses, AR increases customer engagement, boosts sales, reduces product returns, and provides valuable insights into consumer preferences and behaviors, helping retailers make data-driven decisions and improve inventory management. It also serves as a cost-effective marketing tool that enhances brand awareness and allows even small retailers to compete by offering unique, immersive experiences.For consumers, AR offers personalized and interactive shopping, enabling them to make more informed decisions, save time, and enjoy a broader selection of products-even overcoming physical store limitations.Researchers, marketers, retailers, and technology developers all benefit from studying AR, as it helps them understand evolving consumer expectations, optimize marketing strategies, and stay competitive in a rapidly changing digital landscape.

Rauschnabel et al. (2019) state that AR marketing is a strategic concept that combines virtual objects or information into the individuals' perception of real surroundings, often with other media, to articulate, expose, or show consumers benefits to attain organizational objectives. This definition has four perspectives: first, AR marketing is a strategic capability of a firm that requires planning, adequate financial and organizational resources, and a deep understanding of consumer behaviour from different perspectives. Secondly, it does not specify the level of interactivity or degree of realism for integrating virtual and digital information; the definition remains open and flexible to incorporate a large number of AR technologies and techniques. Thirdly, it defines that the purpose of AR marketing is to achieve organizational goals that open AR marketing to profit-oriented activities, non-profit marketing, or political campaigns, and lastly, AR marketing can improve and expand the established approaches from storytelling to content making to advertising. AR marketing can be applied to technologies provided by users (tablets, mobile devices, or smart glasses) or by the company (virtual mirrors in-store). AR marketing addresses multiple goals along the consumer journey, including branding, triggering purchases, and improving after-sales service. Moreover, AR presents new opportunities for marketers to engage their consumers with its unique capabilities.AR technology can be used to (1) engage users, (2) provide knowledge to users, (3) help them evaluate product fit, and (4) enhance the consumption experience after purchase (Tan et al., 2022).

Engage: Retailers are using AR applications in-store, aiming to bring life to the point of sale by customizing experiences through AR. Monitors and videos are used to engage the customers and enhance the shopping experience. Consumers can try clothes virtually in front of the augmented mirror. It enables consumers to try more clothes in less time. Moreover, it allows consumers to take snaps from any angle, enabling them to compare different clothes, and they are also able to share images with others through social applications installed in the virtual mirror. Using AR applications, consumers can create mix-and-match outfits from the

broad variety of clothes available in-store. It also entertains consumers by checking the size of their clothes before purchasing them (Caboni & Hagberg, 2019). Marketers have used AR-enabled experiences to increase footfall in the physical store. For instance, Walmart set up the superhero-themed AR experience in collaboration with DC Comics and Marvel in selected stores where they had special thematic displays. It also motivated the customers to look at different store areas (Tan et al., 2022).

Educate: The interactive and immersive format of AR enables it to be an efficient platform for providing information and delivering content to customers. For example, Hyundai and Toyota use AR to demonstrate innovative technologies and key features in an appealing and vivid style. AR is also helpful in helping the consumer navigate through the store or influencing their purchase decisions in stores by highlighting the relevant product information. Companies like Lowe's and Walgreens have an in-store navigation app that helps consumers navigate to the location of products and informs them about promotional offers (Tan et al., 2022).

Evaluate: The ability of AR to augment the digital objects in the physical surroundings helps consumers to form a mental image of how products would appear in an actual usage context before purchase, allowing users to assess the product fit before purchasing it. For instance, IKEA's Place app uses AR to provide a preview to consumers of different furniture in their personal space by overlaying 3-dimensional models, true to the size of the product, onto the live view of the room. Without the hassle of measuring, the customer can identify whether the product can fit the space. AR is also used by fashion retailers Uniqlo and Topshop in their physical stores, offering convenience to the consumer by reducing the need for them to change different outfits. Another advantage of AR is that its lifelike virtual display of products helps to accommodate a wide assortment of products. This is particularly helpful for bulky or customized products. Audi and BMW car manufacturers use AR to provide a 3-dimensional, true-to-scale digital presentation of the car models based on personalized features such as interior aesthetics, wheel design, and paint colour. These examples illustrate the AR's ability to boost users' confidence in purchasing different products (Tan et al., 2022).

Enhance: To enhance consumers' shopping experience, retailers have incorporated three major AR applications. They are online web-based, mobile app, and in-store AR applications. Online web-based applications give consumers an immersive shopping journey while using their computers. This type of AR uses a webcam to track movement and customers' bodies, allowing them to try on different virtual clothes as they would in a real fitting room. Consumers use the computer screen as an AR mirror to see how the clothes look in real-time. Using hand gestures, they can change the size and color of the clothes. The first online web-based AR application in retail was the Ray-Ban virtual mirror (Caboni & Hagberg, 2019). Besides that, AR can refine and enhance product usage and consumption post-purchase. For instance, McDonald's uses animation and storytelling to tell customers about the origins of ingredients in the food they have purchased (Tan et al., 2022). Kang et al. (2023) state that AR and AR apps can encourage and influence strong consumer connections and engagements with the targeted products before consumers' actual purchase and offer a way to provide personalized pre-purchase evaluations with more certainty. Jessen et al. (2020) further adds that using AR increases consumer engagement and creativity, which leads to satisfaction compared to traditional websites. This is supported by the findings of Pantano and Servidio

(2012) and Barhorst et al. (2021) that AR increases user satisfaction compared to traditional shopping.

AR Marketing Paradigms
AR marketing paradigms are Bogus Window, Magic Mirror, Active printing and packaging, and Geo-layer. In bogus windows, normal glass windows such as TV screens are used to augment the space in the user's view (M. Kang, 2014). Magic mirror augments the object or space surrounding the consumer or the user itself with virtual objects. Usually, it is done via public display devices that may or may not be categorized as normal mirrors. Users can view themselves as a part of augmentation either directly in the digital mirror or by watching their actions on screen from the perspective of a third person (M. Kang, 2014). Cometic brands like Sephora and Loreal are utilizing AR magic mirrors (Butt et al., 2023). Using the front-facing camera on a mobile device, the AR app lets users virtually apply makeup products to their faces and see themselves as if they were in a mirror (Gatter et al., 2022). The VTO and the virtual artist app show individuals how various cosmetic products would look on them. These apps can engage consumers more and increase sales by providing personalized service (Tan et al., 2022).

Active printing/packaging: privately owned devices by users are used to scan digital objects. The augmenting targets are presented in product packaging, magazines, catalogues, out-of-home advertisements, or other printed material. In the geo-layer, devices owned by users are used to augment the space with digital objects around them. It might or might not be linked to geolocation (M. Kang, 2014).

Mobile Augmented Reality in Retail
The two main types of AR are mobile and fixed. Users can easily move while using Mobile augmented reality (MAR) (Yavuz et al., 2021). In contrast, desktop AR is fixed in one location (Kim, 2013). AR applications are usually installed on either mobile (e.g. smartphones), stationary (e.g. AR mirrors in retailing), or wearable devices (Rauschnabel et al., 2019; Pfeifer et al., 2023). Wearables include helmets, contact lenses (Yavuz et al., 2021), and augmented reality smart glasses (Pfeifer et al., 2023), whereas non-wearables are smartphones and PCs (Yavuz et al., 2021).

MAR applications are a relatively new terminology in literature, but their application is increasingly common in retail. MAR application allows users to explore the surroundings through handheld devices (e.g., smartphones, tablets, and cameras). Sephora and IKEA have introduced MAR apps to allow users to try products on themselves in specific spaces at home or elsewhere. Using smartphone cameras, consumers can merge real and augmented elements, interact with virtual content, and find and evaluate products. A significant development in the MAR app in recent years is the IKEA mobile app (Caboni & Hagberg, 2019) , which uses the augmentation of space (Javornik, 2016) to allow users to see a particular place and to add digital content from IKEA (Zimmermann et al., 2023). Sephora, L'Oréal, and Ray-ban use self-augmentation to engage consumers with the brand and boost user satisfaction through more interaction, information, and utility (Caboni & Hagberg, 2019).

Mobile Augmented reality can be categorized into three groups according to how they display digital images in real context. The first group is how digital images are overlayed onto the real

camera screen. The overlay application is further divided into two types of software: marker-based and marker-less. The second group is the location-based application, which uses location-aware technologies such as Wi-Fi Protected Setup (WPS) and Global Positioning System (GPS). The third group is based on GPS, and it is associated with social network services (SNS) (Kim, 2013).

There are four types of MAR apps: shopping apps, entertainment apps, information apps, and social media apps. The shopping app facilitates consumers' purchasing process and experiences through user personalization and product customization (Smink et al., 2022). This app enables the individual to visualize the product. For instance, the "Youcam Makeup" app allows users to apply makeup virtually (Park & Yoo, 2020). Entertainment apps provide users with interactive and entertaining content. AR app displays entertaining digital content or game elements in the user's real surroundings. For example, the Pokémon Go AR game projects the game directly into individuals' physical surroundings. Information apps provide information to users, and they have utilitarian functions. AR is used to gain more information about the location or physical objects in the user's surroundings to perform a task. For instance, the Google Translate AR function directs translation to text via the camera. Apple's Measure app uses AR to measure the size of physical objects. Social Media apps allow individuals to create content and exchange content. Facebook, Instagram, and Snapchat have integrated AR functions. Users can take pictures or make videos with AR content, which can be sent or shared with other users using the app. There is an overlap between social media and entertainment apps the main difference is that these are social-centric apps (Smink et al., 2022).

Conclusions

This article comprehensively reviews AR technology and its evolution over the years. Moreover, the advantages of AR in marketing are discussed, along with different types of AR marketing paradigms. Key AR features, such as interactivity, informativeness, augmentation, novelty, and personification, are discussed in detail. In the retail industry, AR on mobile phones is preferred over desktop PCs because their maneuverability unlocks the greater potential of AR technology (Riar et al., 2022). It allows consumers to access the experience without any space or time limitations (Wang et al., 2021; Riar et al., 2022). AR enhances users' understanding of products and helps predict their performance (Fan et al., 2020). It saves time and effort when shopping (Kowalczuk et al., 2021; Chiang et al., 2022; Aleem et al., 2024) and improves decision-making skills (Romano et al., 2021). AR apps can increase conversion rates (Kang et al., 2023; Yoo et al., 2023; Nawres et al., 2024), reduce return rates of products (Poushneh, 2018; Gong & Park, 2023), reinvigorate stagnant physical inventories (Kang et al., 2023), and reduce the rate of online cart abandonment. This results in a significant improvement in the organisation's financial performance (Lavoye et al., 2021; Gong & Park, 2023). Future reviews can look at mobile augmented reality apps, smart glasses, and holograms in the retail industry. Additionally, future research can investigate different types of augmentation and their impact on consumer behaviour.

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