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Consumer engagement with augmented reality (AR) in marketing: Exploring the use of ar technology in marketing campaigns and its impact on consumer engagement, brand experiences, and purchase decisions

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ABSTRACT

This research paper aims to investigate the role of augmented reality (AR) technology in marketing campaigns and its influence on consumer engagement, brand experiences, and purchase decisions. The study explores the various applications of AR in marketing, analyzes its effectiveness in capturing consumer attention, and examines the outcomes of AR-based campaigns on consumer behavior. Through a comprehensive review of relevant literature and empirical analysis, this paper provides insights into the potential of AR as a strategic tool for enhancing consumer engagement and driving brand success in the modern marketing landscape.

Keywords: Augmented reality, Marketing, Consumer engagement, Brand experiences, Purchase decisions, AR technology, AR campaigns, Consumer perception, Product evaluation, Decision-making, Brand recall, Brand storytelling, Brand authenticity, AR adoption barriers, Technical limitations, User experience, Privacy concerns, Ethical considerations, Opportunities, challenges, Successful AR marketing campaigns, Case studies, Best practices.

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1. Introduction

1.1. Background and rationale

Augmented reality (AR) technology has gained significant attention in recent years, revolutionizing the way businesses

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interact with consumers in the marketing landscape. AR overlays digital information onto the real world, creating immersive and interactive experiences that bridge the gap between physical and digital realms. This technology holds immense potential for marketers to engage consumers in novel ways, enhance brand experiences, and influence purchase decisions. As AR continues to evolve and integrate into marketing campaigns, it is crucial to explore its impact on consumer engagement, brand experiences, and purchase behavior.

2. Literature Review

2.1. Definition and concepts of augmented reality in marketing

Augmented Reality (AR) in marketing refers to the utilization of technology that overlays virtual elements onto the real-world environment to enhance marketing campaigns, engage consumers, and provide interactive brand experiences (Chatterjee, 2020).

AR allows users to interact with virtual objects, visualize products in real-world contexts, and access additional information or experiences beyond traditional marketing mediums (Xu, Dong, & Li, 2020). It involves the overlaying of virtual content onto the real world, providing users with real-time interactions and engaging multiple senses (Kumar et al., 2019).

Through AR, marketers can deliver personalized and customized experiences to consumers, tailoring AR content to their preferences and needs (Pantano, Priporas, & Sorace, 2019). AR enhances marketing efforts by providing enhanced product information, visualizations, and interactive features that go beyond what can be conveyed through traditional channels (Chatterjee, 2020).¹⁻³

Furthermore, AR facilitates interactive engagement, encouraging active participation from consumers through features such as virtual games, quizzes, or challenges (Gao, Li, Liu, & Wang, 2020). It seamlessly integrates virtual overlays with the user's environment, creating a cohesive and natural experience (Kumar et al., 2019).⁴⁻¹⁰

Overall, AR in marketing harnesses technology to create immersive and personalized brand experiences, enabling consumers to interact with virtual elements in real-world contexts and enhancing their engagement with marketing campaigns (Chatterjee, 2020).

2.2. Theoretical frameworks and models related to AR and consumer engagement

1. *Technology Acceptance Model (TAM)*: The TAM, developed by Davis (1989), is a widely used theoretical framework that explains users' acceptance and adoption of technology. It posits that perceived usefulness and perceived ease of use influence users' attitudes and behavioral intentions towards using a

particular technology, including AR. In the context of AR in marketing, TAM can help understand consumers' acceptance and engagement with AR-based marketing campaigns (Chatterjee, 2020).

2. *Extended Technology Acceptance Model (TAM2)*: TAM2 expands on the original TAM by incorporating additional factors such as subjective norms, image, and voluntariness of use. It recognizes that social influence and subjective norms can also impact users' acceptance of technology. Applied to AR in marketing, TAM2 can provide insights into the social factors that influence consumers' engagement with AR experiences (Kumar et al., 2019).
3. *Experiential Marketing Model*: The experiential marketing model proposes that consumer experiences play a crucial role in shaping their perceptions and behaviors towards brands. AR in marketing provides opportunities to create immersive and interactive experiences, aligning with the principles of experiential marketing. This model highlights the importance of designing AR experiences that elicit positive emotions, engagement, and memorable brand experiences (Xu et al., 2020).
4. *Consumer Engagement Model*: The consumer engagement model focuses on understanding the factors that drive consumer engagement with brands and marketing activities. AR can serve as a tool to enhance consumer engagement by providing unique and interactive experiences. This model examines the cognitive, emotional, and behavioral dimensions of consumer engagement and can be applied to analyze consumers' engagement with AR-based marketing campaigns (Pantano et al., 2019).
5. *Flow Theory*: Flow theory, proposed by Csikszentmihalyi (1975), describes the state of optimal engagement and immersion in an activity. Applied to AR in marketing, the flow theory suggests that well-designed AR experiences can create a sense of flow, where consumers are fully absorbed and engaged. This theory emphasizes the importance of providing challenging yet manageable AR interactions to enhance consumer engagement (Gao et al., 2020).

2.3. Factors influencing consumer engagement with AR

1. *Perceived usefulness*: The perceived usefulness of AR technology in marketing campaigns plays a crucial role in driving consumer engagement. If consumers perceive AR as a valuable tool that enhances their shopping experience, they are more likely to engage with AR content and interact with brands.
2. *User experience*: The quality of the user experience with AR affects consumer engagement. Factors such as ease of use, interactivity, responsiveness, and visual appeal influence how consumers perceive and

engage with AR content. A positive and seamless user experience enhances engagement levels.

3. *Personalization and relevance*: The extent to which AR experiences are personalized and relevant to individual consumers influences their engagement. When AR content is tailored to the preferences and needs of consumers, it enhances their interest and engagement by providing a more personalized and meaningful experience.
4. *Novelty and entertainment value*: The novelty and entertainment value of AR experiences capture consumer attention and stimulate engagement. AR offers a unique and immersive experience that can be entertaining and enjoyable, making consumers more likely to engage with AR content and spend more time interacting with brands.
5. *Social influence and social sharing*: Social influence and the ability to share AR experiences with others can impact consumer engagement. When consumers see their peers engaging with AR content or sharing positive experiences, it can influence their own engagement levels and motivate them to participate.
6. *Brand credibility and trust*: The credibility and trustworthiness of the brand offering AR experiences influence consumer engagement. Consumers are more likely to engage with AR content from brands they perceive as credible and trustworthy, as it enhances their confidence and belief in the brand.
7. *Contextual relevance and utility*: The context in which AR is employed and its utility in fulfilling specific consumer needs influence engagement. When AR experiences are contextually relevant to the product or service being marketed and provide practical utility or value to consumers, they are more likely to engage with the content.
8. *Technological factors*: The technological aspects of AR, such as device compatibility, internet connectivity, and performance, can influence consumer engagement. Seamless and reliable AR experiences that work well on different devices and networks enhance engagement by minimizing technical barriers.

3. Applications of AR in Marketing

3.1. AR-based product visualization and demonstrations

One significant application of augmented reality in marketing is the use of AR to enhance product visualization and demonstrations. AR allows consumers to virtually experience products before making a purchase, enabling them to see how a product would look or fit in their physical environment. For example, furniture retailers can use AR to superimpose virtual furniture pieces in real-time onto the customer's living space, allowing them to visualize how the

furniture would appear in their home.^{11,12}

3.2. Interactive AR experiences for brand engagement

AR provides opportunities for brands to create interactive and immersive experiences that engage consumers on a deeper level. Brands can develop AR applications or filters that overlay digital content onto the physical environment, offering unique and memorable experiences. For instance, cosmetic brands can create AR makeup filters that allow users to virtually try on different shades of makeup or experiment with various looks. These interactive experiences increase consumer engagement, foster brand loyalty, and encourage social sharing, thus amplifying brand reach and awareness.

3.3. AR gamification in marketing campaigns

Gamification is another compelling application of AR in marketing. By incorporating game elements into AR experiences, marketers can captivate and motivate consumers to interact with their brands. AR gamification can take various forms, such as treasure hunts, quizzes, or challenges, where users use their smartphones or AR devices to explore and interact with virtual elements in the real world. This approach not only enhances brand engagement but also creates a sense of excitement, competition, and rewards, further motivating consumers to participate and share their experiences, thereby amplifying brand visibility and engagement.

3.4. AR for personalized product recommendations

Personalization is a key driver of consumer engagement, and AR can be leveraged to deliver personalized product recommendations. By analyzing user data and preferences, brands can develop AR-based recommendation systems that suggest relevant products to consumers based on their individual needs and preferences. For example, retail apps can use AR to scan and analyze a customer's body measurements and provide personalized clothing recommendations that fit their specific size and style preferences. This personalized approach enhances the shopping experience, increases consumer satisfaction, and improves the likelihood of purchase.

3.5. Consumer engagement with AR in marketing

Consumer engagement with augmented reality (AR) in marketing refers to the extent to which consumers actively interact, participate, and form meaningful connections with AR-based marketing campaigns and experiences. AR has the potential to captivate and immerse consumers in interactive and personalized brand encounters, leading to heightened engagement levels. Understanding consumer engagement with AR in marketing is crucial for marketers

to design effective campaigns and experiences that resonate with their target audience.

3.6. Emotional and sensory experiences with AR

AR has the potential to evoke emotional and sensory experiences that enhance consumer engagement. By overlaying digital elements onto the physical world, AR can stimulate multiple senses and trigger emotional responses. For example:

1. *Emotional engagement:* AR can create emotional connections with brands by eliciting positive emotions such as excitement, curiosity, surprise, or delight. Engaging consumers emotionally enhances their overall experience and fosters stronger brand connections.
2. *Sensory engagement:* AR can engage multiple senses, including visual, auditory, and haptic experiences. Visual stimuli through realistic graphics and visuals, accompanied by appropriate sounds and tactile feedback, can enhance the sensory experience and increase engagement levels.

3.7. Consumer perception of AR-based marketing campaigns

Consumers' perception of AR-based marketing campaigns plays a crucial role in determining their engagement levels. Factors that influence perception include:

1. *Novelty and uniqueness:* AR experiences that offer novel and unique interactions are more likely to capture consumer attention and generate higher engagement levels. Uniqueness can create a sense of excitement and intrigue, driving consumers to explore and engage with the AR content.
2. *Relevance and value:* Consumers assess the relevance and value of AR experiences in relation to their needs, interests, and preferences. When AR content is perceived as relevant and valuable, consumers are more inclined to engage and invest their time and attention.

3.8. Measuring and evaluating consumer engagement with AR

Measuring and evaluating consumer engagement with AR in marketing is essential to assess the effectiveness of campaigns and experiences. Various methods can be employed to measure engagement, including:

1. *Behavioral metrics:* Tracking consumer interactions, such as the duration of engagement, the number of interactions, or the completion of specific actions within the AR experience, provides quantitative data on engagement levels.

2. *Self-report measures:* Surveys or questionnaires can be used to gather consumers' subjective perceptions of their engagement with AR campaigns. These measures capture consumers' attitudes, satisfaction, and emotional responses, providing qualitative insights into their engagement experiences.
3. *Social media analytics:* Monitoring social media platforms for consumer-generated content, such as posts, comments, and shares related to AR campaigns, can provide insights into the level of engagement and the reach of the AR experiences.

3.9. Impact of AR on brand experiences

1. *Brand Recall and Recognition through AR:* AR can significantly impact brand recall and recognition by creating memorable and interactive experiences. When consumers engage with AR-based marketing campaigns, they are more likely to remember and recognize the brand associated with the experience.
2. *Enhanced Brand Storytelling and Narrative through AR:* Brands can use AR to present their stories in engaging and dynamic formats, incorporating animations, videos, or 3D models. This enhanced brand storytelling through AR fosters emotional connections, deepens consumer engagement, and helps create a lasting impression.
3. *AR and Brand Authenticity:* Brands can leverage AR to provide virtual product demonstrations, allowing consumers to see the actual product features, textures, and functionalities. AR can also be used to show behind-the-scenes glimpses, providing a sense of transparency and authenticity.
4. *The Role of AR in Shaping Brand Experiences:* AR allows for personalized interactions, where consumers can customize their experiences based on their preferences and needs, leading to a more tailored and immersive brand encounter.

Additionally, by adopting AR technology, brands can differentiate themselves from competitors, capture consumer attention, and position themselves as industry leaders in embracing cutting-edge technologies.

3.10. AR and purchase decisions

AR technology has a profound impact on consumers' purchase decisions by influencing product evaluation, reducing uncertainty, and shaping purchase intentions and behaviors.

1. *Influence of AR on Product Evaluation and Decision-Making:* Research suggests that AR enhances consumers' cognitive processing and improves their ability to evaluate products compared to traditional methods. For example, AR allows consumers

to virtually try on clothing and accessories, see how furniture fits in their space, or experience the functionality of a new gadget. This increased product evaluation efficacy through AR positively influences consumers' decision-making by reducing the uncertainty associated with product choices.

2. *AR as a Tool for Reducing Consumer Uncertainty:* Uncertainty is a significant barrier to purchase decisions, as consumers often face concerns about whether the product will meet their expectations or fulfil their needs. AR addresses this uncertainty by providing consumers with a realistic preview of the product, thereby reducing the perceived risk associated with the purchase. AR allows consumers to bridge the gap between online and offline shopping experiences
3. *Impact of AR on Purchase Intentions and Behavior:* AR generates a sense of novelty, engagement, and excitement, which positively influences consumers' attitudes and perceptions of brands. The interactive and immersive nature of AR experiences enhances consumers' emotional connections with products and brands, leading to increased purchase intentions and a willingness to pay a premium.

3.11. Challenges and opportunities of AR in marketing

1. *Technical Limitations and User Experience Issues:* AR technology still faces several technical limitations that can impact the user experience. These limitations include tracking accuracy, device compatibility, and processing power. Inaccurate tracking can lead to misalignments between virtual and physical objects, diminishing the immersive experience. Additionally, the performance of AR applications can be influenced by the capabilities of the user's device, potentially limiting the quality of the AR experience. These technical challenges need to be addressed to ensure seamless and high-quality AR marketing campaigns. (McGill, 2020; Schwind, 2019)
2. *Privacy Concerns and Ethical Considerations:* AR in marketing raises privacy concerns as it often involves collecting and processing user data. AR applications may require access to the user's camera, location, or personal information. Marketers must be transparent about data collection practices and ensure compliance with privacy regulations to maintain consumer trust. Ethical considerations also come into play when using AR to overlay content in public spaces or manipulate consumer perceptions. Balancing the benefits of AR with privacy and ethical considerations is essential to create responsible and trustworthy AR marketing experiences. (Li, 2018; Yovcheva et al., 2019)
3. *AR Adoption Barriers and Implications for Marketers:* Despite the growing popularity of AR, there are still adoption barriers that marketers need to address. These

barriers include the cost of AR development, the need for specialized skills and resources, and consumer unfamiliarity with AR technology. Marketers must carefully consider the cost-benefit ratio and ROI when implementing AR in marketing campaigns. Additionally, educating consumers about the benefits and functionality of AR and providing user-friendly experiences can help overcome adoption barriers and drive greater engagement. (Chen et al., 2020; Chatterjee, 2020)

3.12. The challenges in implementing AR in marketing campaigns also present opportunities for marketers

1. *Enhanced Customer Engagement and Interactivity:* AR offers unique opportunities for marketers to create highly engaging and interactive experiences. By leveraging AR, marketers can capture consumers' attention, increase dwell time, and create memorable brand encounters. The interactive nature of AR allows consumers to actively engage with products and experiences, fostering stronger brand connections and driving consumer engagement. (Gao et al., 2020; Pantano et al., 2019)
2. *Personalized and Tailored Experiences:* AR enables personalized and tailored experiences by allowing consumers to customize their interactions based on their preferences and needs. Marketers can leverage AR to deliver personalized product recommendations, virtual try-on experiences, or customized content overlays. This personalization enhances the relevance and value of the brand experience, leading to increased consumer satisfaction and loyalty. (Zeng et al., 2019; Raj et al., 2021)
3. *Innovative Branding and Differentiation:* AR provides opportunities for brands to differentiate themselves and stand out in a crowded marketplace. By incorporating AR into marketing campaigns, brands can demonstrate innovation, creativity, and a forward-thinking approach. AR experiences can help brands create a unique identity, generate buzz, and position themselves as industry leaders, thus gaining a competitive edge. (Kumar et al., 2019; Xu et al., 2020)

4. Case Studies and Examples of Successful AR Marketing Campaigns

1. *Pokémon GO by Niantic:* Pokémon GO is a prime example of a successful AR marketing campaign that captivated millions of users worldwide. The mobile game combined augmented reality with location-based technology, allowing players to catch virtual Pokémon in real-world settings. The game achieved unprecedented levels of engagement, with millions of users actively exploring their surroundings to capture

Pokémon. The campaign demonstrated the power of AR to create immersive and interactive experiences that drive user engagement and generate significant brand buzz. (Bak, 2016)

2. *IKEA Place by IKEA*: IKEA Place is an AR application that allows users to visualize and place virtual furniture in their real-world environments. By leveraging AR technology, IKEA empowers customers to see how furniture items will look and fit in their homes before making a purchase. The app provides accurate scaling and realistic rendering, enhancing the overall shopping experience. IKEA Place exemplifies how AR can address customer uncertainties and enhance product evaluation, leading to increased confidence and informed purchase decisions. (Schmidt, 2017)
3. *Snapchat AR Lenses*: Snapchat's AR Lenses feature allows users to overlay interactive and dynamic filters onto their selfies or the world around them. Brands have successfully utilized Snapchat AR Lenses for marketing campaigns, creating engaging and shareable experiences. For example, Taco Bell launched a Lens that turned users' heads into giant tacos, effectively promoting their brand in a playful and memorable way. By integrating branded AR experiences within Snapchat, brands can reach a large user base and drive user-generated content, expanding their brand reach and engagement. (Hughes, 2020)

5. Conclusion

In conclusion, this review paper explored the topic of consumer engagement with Augmented Reality (AR) in marketing and its impact on brand experiences and purchase decisions. The key findings from the literature review and analysis of various aspects of AR in marketing campaigns are summarized below:

1. AR in marketing offers unique opportunities for enhancing consumer engagement by providing interactive, immersive, and personalized experiences. It enables consumers to visualize products in real-world contexts, reduces uncertainty, and influences product evaluation and decision-making.
2. Factors such as psychological and cognitive factors, emotional and sensory experiences, and consumer perception play significant roles in shaping consumer engagement with AR in marketing campaigns.
3. AR has a positive impact on brand experiences by enhancing brand recall and recognition, enabling enhanced brand storytelling and narrative, and contributing to brand authenticity. It also plays a pivotal role in shaping consumer perceptions and emotional connections with brands.
4. AR influences purchase decisions by facilitating product evaluation, reducing uncertainty, and

increasing purchase intentions and behaviors. It allows consumers to interact with virtual products, customize their experiences, and create a sense of ownership, leading to increased confidence and willingness to purchase.

Suggestions for future research in the field of consumer engagement with AR in marketing include:

1. Investigating the long-term effects of AR experiences on brand loyalty and repeat purchase behavior
2. Exploring the role of social influence and social sharing in amplifying the impact of AR marketing campaigns.
3. Examining the cross-cultural differences in consumer engagement with AR in marketing and its implications for global marketing strategies.
4. Analyzing the effectiveness of different types of AR content (e.g., gamification, virtual try-ons) in driving consumer engagement and purchase decisions.

By addressing these research gaps, marketers can gain deeper insights into the potential of AR in marketing and develop more effective strategies to engage and influence consumers.

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7. Conflict of Interest

None.

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