

Original Article

AR-Driven Customer Engagement : An Innovative Approach to CRM

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Abstract - This research paper explores how the integration of augmented reality (AR) technology into customer relationship management (CRM) strategies can significantly enhance customer engagement and satisfaction, driving both loyalty and sales. The literature review examines the evolution of CRM and the emergence of AR, highlighting how AR technology can be seamlessly integrated into CRM systems to offer unique, value-added experiences to customers. The benefits of AR for customer engagement are discussed, including personalizing customer interactions, providing real-time product information, and allowing customers to visualize products in their own environment. Case studies and success stories are presented from various industries, such as retail, automotive, and hospitality, demonstrating the positive impact of AR on customer engagement. These examples provide insights into the innovative ways companies are using AR to create unique, immersive experiences, as well as the challenges and lessons learned in implementing AR as part of their CRM strategies. As augmented reality technology continues to advance, it is anticipated that more businesses will begin to incorporate AR into their CRM strategies, transforming customer engagement and providing businesses with powerful tools for creating unforgettable experiences that foster customer loyalty and long-term value.

Keywords - Crm, Augmented reality, Ar, Customer relationship management, Personalization.

1. Introduction

The use of customer relationship management (CRM) strategies has long been an essential component of business strategy for building and maintaining strong relationships with customers [1]. However, with the rapid growth of digital technology, it has become increasingly important for businesses to find innovative ways to engage their customers beyond traditional channels [2]. Augmented reality (AR) has emerged as a powerful tool for creating memorable, interactive experiences that can be seamlessly integrated into CRM systems, allowing businesses to offer unique, value-added experiences to their customers [3].

AR technology overlays digital information on the physical world, allowing users to interact with digital content in real-time [4]. The benefits of integrating AR technology into CRM to enhance customer engagement include personalizing customer interactions, providing real-time product information, and allowing customers to visualize products in their own environment [5]. Through the use of AR, businesses can create immersive, interactive experiences that drive emotional connections with customers and encourage them to explore and engage with products and services in a more meaningful way, ultimately leading to increased customer satisfaction, loyalty, and sales [6]. Various industries, such as retail, automotive, and hospitality, have

already begun leveraging AR technology to enhance their CRM strategies [7]. Case studies and success stories demonstrate the positive impact of AR on customer engagement and provide insights into the innovative ways companies are using AR to create unique, immersive experiences [8]. However, implementing AR technology as part of CRM strategies also presents challenges, such as technical complexity and costs [9].

As AR technology continues to advance, it is anticipated that more businesses will begin to incorporate AR into their CRM strategies, transforming customer engagement and providing businesses with powerful tools for creating unforgettable experiences that foster customer loyalty and long-term value [10]. In conclusion, integrating AR technology into CRM presents a promising avenue for businesses to enhance their customer engagement, ultimately leading to increased customer satisfaction, loyalty, and sales [11].

2. Literature Review

Augmented reality (AR) has emerged as a promising technology that can be integrated into customer relationship management (CRM) systems to enhance customer engagement and satisfaction, driving both loyalty and sales



[1]. AR technology offers unique, value-added experiences to customers that go beyond traditional channels [2].

Traditional CRM strategies have primarily focused on collecting and analyzing customer data to provide personalized services and communication [3]. However, with the rapid growth of digital technology, it has become increasingly important for businesses to find innovative ways to engage their customers.

Integrating AR technology into CRM can provide numerous benefits to enhance customer engagement [4]. These benefits include personalizing customer interactions, providing real-time product information, and allowing customers to visualize products in their own environment [2]. Through the use of AR, businesses can create immersive, interactive experiences that drive emotional connections with customers and encourage them to explore and engage with products and services in a more meaningful way, ultimately leading to increased customer satisfaction, loyalty, and sales [5]. Various industries, such as retail, automotive, and hospitality, have already begun leveraging AR technology to enhance their CRM strategies [6]. For example, PwC [7] reported that some retailers have been using AR technology to create virtual storefronts, allowing customers to browse and purchase products in a virtual environment. In the automotive industry, AR technology has been used to create interactive user manuals that provide real-time information on vehicle functions and maintenance [4]. Hospitality businesses have used AR technology to create interactive hotel room experiences, allowing customers to explore different room options and amenities before booking [6].

Several case studies and success stories demonstrate the positive impact of AR on customer engagement [8][9][10]. For example, a study on applying AR techniques in marketing found that AR technology can improve consumer involvement and brand recall [11]. Another study found that AR technology can increase the perceived value of products, leading to increased purchase intention [12]. These examples provide insights into the innovative ways companies are using AR to create unique, immersive experiences, as well as the challenges and lessons learned in implementing AR as part of their CRM strategies [1]. As augmented reality technology continues to advance, it is anticipated that more businesses will begin to incorporate AR into their CRM strategies [2]. According to Gartner [13], worldwide spending on VR and AR is expected to double every year through 2021. The convergence of these two fields has the potential to transform customer engagement, providing businesses with powerful tools for creating unforgettable experiences that foster customer loyalty and long-term value.

Integrating AR technology into CRM presents a promising avenue for businesses to enhance their customer engagement, ultimately leading to increased customer

satisfaction, loyalty, and sales. AR technology can offer unique, value-added experiences to customers and create immersive, interactive experiences that drive emotional connections with customers. As AR technology continues to advance, more businesses are expected to incorporate AR into their CRM strategies, providing them with powerful tools for creating unforgettable experiences that foster customer loyalty and long-term value.

3. The Evolution of CRM and the Emergence of AR

Customer Relationship Management (CRM) has been a critical strategy for businesses to develop deeper customer connections. Traditional CRM strategies have focused on gathering customer data to provide personalized services and communication. However, with the proliferation of digital technology, it has become imperative for businesses to find innovative ways to engage with their customers beyond traditional channels. As a result, there has been a shift towards incorporating new technologies that allow businesses to provide unique and immersive experiences to their customers, with augmented reality (AR) being one of them.

Augmented reality technology involves overlaying digital content onto the physical world. It has emerged as a powerful tool for creating memorable, interactive experiences that can be seamlessly integrated into CRM systems. This technology enables businesses to offer unique, value-added experiences to their customers, such as personalized interactions, real-time product information, and the ability to visualize products in their own environment. The use of AR allows businesses to create immersive, interactive experiences that drive emotional connections with customers, encouraging them to explore and engage with products and services in a more meaningful way. This ultimately leads to increased customer satisfaction, loyalty, and sales. The emergence of AR in CRM is not surprising, given the growth of the AR market. According to a report by Gartner [1], worldwide spending on VR and AR is expected to double or more every year through 2021. This rapid growth is driven by the increasing availability of AR technology and its applications in various industries, including retail, automotive, and hospitality. Businesses are recognizing the potential of AR to transform customer engagement and are leveraging it to create innovative experiences that capture their customers' attention and foster brand loyalty.

AR technology can be used in various ways to enhance customer engagement. For example, in retail, customers can use AR applications to visualize products in their own environment before purchasing. In the automotive industry, AR can be used to provide customers with an interactive tour of the vehicle, allowing them to explore its features in real time. In the hospitality industry, AR can be used to provide customers with an immersive experience of the hotel or resort, allowing them to explore the facilities and services on offer.

AR provides businesses a powerful tool for creating unforgettable experiences that foster customer loyalty and long-term value. As AR technology continues to advance, it is anticipated that more businesses will begin to incorporate AR into their CRM strategies, transforming customer engagement and providing businesses with a competitive edge in the marketplace.

4. Benefits of AR for Customer Engagement

The integration of AR technology into CRM can bring a plethora of benefits to enhance customer engagement. One of the primary benefits is personalization, as AR allows businesses to tailor experiences to individual customers' preferences and needs. For instance, an AR-enabled beauty app can use facial recognition technology to analyze a customer's skin type and recommend personalized skincare products. Such personalized recommendations can significantly enhance the customer's shopping experience and increase their loyalty to the brand.

Another benefit of AR is providing real-time product information. Customers can access product information, such as reviews, prices, and specifications, simply by scanning the product with their mobile devices. By providing this information instantly, AR can help customers make informed purchase decisions, leading to higher customer satisfaction and loyalty. AR also enables customers to visualize products in their own environment, which can be a game-changer for certain industries, such as furniture and home decor. For instance, Ikea's AR-enabled app allows customers to virtually place furniture in their homes to see how it would look before making a purchase. Such an experience provides customers with a sense of confidence in their buying decisions and reduces the likelihood of returns, leading to cost savings for businesses. AR-enabled experiences can also drive emotional connections with customers, creating a deeper level of engagement. By allowing customers to interact with products in a more immersive and interactive way, AR can evoke emotions such as excitement, curiosity, and surprise. These emotional connections can leave a lasting impression on customers and foster long-term loyalty to the brand.

Overall, integrating AR technology into CRM can significantly enhance customer engagement by providing personalized experiences, real-time product information, visualizing products in the customer's environment, and creating emotional connections. By leveraging the benefits of AR, businesses can differentiate themselves from competitors and create unique, value-added experiences for their customers, leading to increased customer satisfaction, loyalty, and sales.

5. Case Studies and Success Stories

One of the most prominent examples of AR in CRM is IKEA's Place app. The app allows customers to use their

smartphones to visualize how furniture will look in their homes before purchasing. The app uses AR technology to superimpose 3D models of furniture onto real-world environments captured by the phone's camera. This allows customers to see how the furniture will look and fit in their space before making a purchase. The app has been a massive success for IKEA, leading to increased customer engagement and sales.

Another success story comes from the automotive industry. BMW implemented an AR app called BMW i Visualiser, which allows customers to visualize and customize their dream car in a virtual environment. The app uses AR technology to create a 3D car model, which customers can view and customize from any angle. Customers can also change the color, wheels, and other features to get a personalized look at their dream car. BMW has seen a significant increase in customer engagement and satisfaction since implementing the app.

The hospitality industry has also begun using AR to enhance customer experiences. For example, the Marriott International hotel chain has implemented an AR app called VRoom Service, which allows guests to order room service and use their smartphones to access virtual reality experiences while waiting. The app provides customers with a unique and engaging experience that goes beyond traditional room service, leading to increased customer satisfaction and loyalty.

One of the challenges of implementing AR in CRM strategies is the cost and complexity of the technology. However, companies like L'Oreal have found ways to overcome these challenges by creating low-cost AR apps that provide personalized experiences to customers. L'Oreal's Makeup Genius app allows customers to try on makeup using their smartphones virtually. The app uses AR technology to create a realistic representation of how the makeup will look on the customer's face. The app has been a major success for L'Oreal, leading to increased customer engagement and sales.

These case studies and success stories demonstrate the power of AR in enhancing customer engagement and satisfaction. By using AR technology, businesses can create unique, immersive experiences that drive emotional connections with customers and encourage them to explore and engage with products and services in a more meaningful way. While there are challenges to implementing AR in CRM strategies, the benefits are clear, leading to increased customer loyalty and long-term value. As AR technology continues to advance, we can expect to see more businesses leverage this technology to transform customer engagement.

6. Conclusion

In conclusion, the integration of augmented reality (AR) technology into customer relationship management (CRM)

strategies has the potential to significantly enhance customer engagement and satisfaction, driving both loyalty and sales. The literature review has highlighted how AR technology can be seamlessly integrated into CRM systems to offer unique, value-added experiences to customers, personalizing customer interactions, providing real-time product information, and allowing customers to visualize products in their own environment. The benefits of AR for customer engagement have been discussed, including creating immersive, interactive experiences that drive emotional connections with customers, leading to increased customer satisfaction, loyalty, and sales.

Case studies and success stories from various industries, such as retail, automotive, and hospitality, have demonstrated the positive impact of AR on customer engagement. These examples provide insights into the innovative ways companies are using AR to create unique, immersive experiences, as well as the challenges and lessons learned in implementing AR as part of their CRM strategies. The case studies highlighted the effectiveness of AR in improving customer engagement, driving customer satisfaction and loyalty, as well as increasing sales.

As augmented reality technology continues to advance, it is anticipated that more businesses will begin to incorporate AR into their CRM strategies. Gartner reports that worldwide spending on AR is projected to double or more every year through 2021 [1]. This convergence of these two fields has the potential to transform customer engagement, providing businesses with powerful tools for creating unforgettable experiences that foster customer loyalty and long-term value. Therefore, it is essential for businesses to consider the potential of AR technology as part of their CRM strategies, staying competitive in the digital age and foster long-term customer relationships.

In conclusion, integrating AR technology into CRM presents a promising avenue for businesses to enhance their customer engagement, ultimately leading to increased customer satisfaction, loyalty, and sales. As more businesses begin to leverage the benefits of AR, it will be interesting to see the future developments and advancements in this field, paving the way for the future of customer engagement and interaction.

References

- [1] Jennifer L. Aaker, "Dimensions of Brand Personality," *Journal of Marketing Research*, vol. 34, no. 3, pp. 347-356, 1997. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [2] A. Agarwal, and M. Yiliyasi, "CRM in e-Business: A Literature Review," *Journal of Enterprise Information Management*, vol. 23, no. 5, pp 665-685, 2010.
- [3] V. Ahuja, and Y. Medury, "CRM Systems: A Critical Review," *IUP Journal of Management Research*, vol. 9, no. 4, pp. 51-66, 2010.
- [4] Ronald T. Azuma, "A Survey of Augmented Reality," *Presence: Teleoperators & Virtual Environments*, vol. 6, no. 4, pp. 355-385, 1997. [[Publisher Link](#)]
- [5] Richard P. Bagozzi, and Youjae Yi, "On the Evaluation of Structural Equation Models," *Journal of the Academy of Marketing Science*, vol. 16, no. 1, pp. 74-94, 1988. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [6] Stuart J. Barnes, "Wireless Digital Advertising: Nature and Implications," *International Journal of Advertising*, vol. 21, no. 3, pp. 399-420, 2002. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [7] Mark Billinghurst, and Hirokazu Kato, "Collaborative Augmented Reality," *Communications of the ACM*, vol. 45, no. 7, pp. 64-70, 2002. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [8] Mary Jo Bitner, Stephen W. Brown, and Matthew L. Meuter, "Technology Infusion in Service Encounters," *Journal of the Academy of Marketing Science*, vol. 28, no. 1, pp. 138-149, 2000. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [9] J. Joško Brakus, Bernd H. Schmitt, and Lia Zarantonello, "Brand Experience: What is it? How is it Measured? Does it Affect Loyalty?," *Journal of Marketing*, vol. 73, no. 3, pp. 52-68, 2009. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [10] Antonella Carù, and Bernard Cova, "Revisiting Consumption Experience: A More Humble But Complete View of the Concept," *Marketing Theory*, vol. 3, no. 2, pp. 267-286, 2003. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [11] Patrali Chatterjee, "Multiple-Channel and Cross-Channel Shopping Behavior: Role of Consumer Shopping Orientations," *Marketing Intelligence & Planning*, vol. 28, no. 1, pp. 9-24, 2010. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [12] S. P. Chavan, and G. N. Pavaskar, "Study on the Application of Augmented Reality Techniques in Marketing," *International Journal of Computer Applications*, vol. 48, no. 21, pp. 33-38, 2012.
- [13] Y. H. Chen, and Y. C. Hsieh, "Augmented Reality in Advertising: The Effects of Technological Innovation on Experiential Marketing," *International Journal of Electronic Commerce Studies*, vol. 3, no. 2, pp. 291-306, 2012.
- [14] Hung-Chang Chiu, Yi-Ching Hsieh, and Ching-Yi Kao, "Website Quality and Customer's Behavioral Intention: An Exploratory Study of the Role of Information Asymmetry," *Total Quality Management & Business Excellence*, vol. 16, no. 2, pp. 185-197, 2005. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [15] William R. Sherman, and Alan B. Craig, *Understanding Virtual Reality: Interface, Application, and Design*, Morgan Kaufmann, 2002. [[Google Scholar](#)] [[Publisher Link](#)]

- [16] Richard L. Daft, and Robert H. Lengel, "Organizational Information Requirements, Media Richness and Structural Design," *Management Science*, vol. 32, no. 5, pp. 554-571, 1986. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [17] Fred D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly*, vol. 13, no. 3, pp. 319-340, 1989. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [18] Sergios Dimitriadis, and Eric Stevens, "Integrated Customer Relationship Management for Service Activities: An Internal/External Gap Model," *Managing Service Quality: An International Journal*, vol. 18, no. 5, pp. 496-511, 2008. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [19] J. Durl, and N. Tractinsky, "Comparing the Impact of Augmented Reality and Animation on Packaging," *Journal of Research in Interactive Marketing*, vol. 6, no. 1, pp. 6-20, 2012.
- [20] M. Fjeld, and B.M. Voegtli, "Augmented Chemistry: An Interactive Educational Workbench," *Proceedings of the IEEE and ACM International Symposium on Mixed and Augmented Reality*, pp. 259-260, 2002. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [21] Gartner, Gartner Says Worldwide Spending on V.R. and A.R. to Double or more Every Year through 2021. [Online]. Available: <https://www.gartner.com/en/newsroom/press-releases/2018-04-25-gartner-says-worldwide-spending-on-vr-and-ar-to-double-or-more-every-year-through-2021>
- [22] Chiara Gentile, Nicola Spiller, and Giuliano Noci, "How to Sustain the Customer Experience: An Overview of Experience Components that Co-Create Value with the Customer," *European Management Journal*, vol. 25, no. 5, pp. 395-410, 2007. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [23] Dhruv Grewal, Anne L. Roggeveen, and Jens Nordfält, "The Future of Retailing," *Journal of Retailing*, vol. 93, no. 1, pp. 1-6, 2017. [[CrossRef](#)] [[Publisher Link](#)]
- [24] Christian Gronroos, "From Marketing Mix to Relationship Marketing: Towards a Paradigm Shift in Marketing," *Management Decision*, vol. 32, no. 2, pp. 4-20, 1994. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [25] Morris B. Holbrook, and Elizabeth C. Hirschman, "The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun," *Journal of Consumer Research*, vol. 9, no. 2, pp. 132-140, 1982. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [26] Christian Homburg, Jan Wieseke, and Torsten Bornemann, "Implementing the Marketing Concept at the Employee-Customer Interface: The Role of Customer Need Knowledge," *Journal of Marketing*, vol. 73, no. 4, pp. 64-81, 2009. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [27] Tseng-Lung Huang, and Shuling Liao, "A Model of Acceptance of Augmented-Reality Interactive Technology: The Moderating Role of Cognitive Innovativeness," *Electronic Commerce Research*, vol. 15, no. 2, pp. 269-295, 2015. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [28] H. Kato, and M. Billinghurst, "Marker Tracking and HMD Calibration for a Video-Based Augmented Reality Conferencing System," *Proceedings of the 2nd IEEE and ACM International Workshop on Augmented Reality*, pp. 85-94, 1999. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [29] Jiyeon Kim, and Sandra Forsythe, "Adoption of Virtual Try-on Technology for Online Apparel Shopping," *Journal of Interactive Marketing*, vol. 22, no. 2, pp. 45-59, 2008. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [30] Jumin Lee, Do-Hyung Park, and Ingo Han, "The Effect of Negative Online Consumer Reviews on Product Attitude: An Information Processing View," *Electronic Commerce Research and Applications*, vol. 10, no. 3, pp. 341-352, 2011. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [31] Peter S.H. Leeflang et al., "Challenges and Solutions for Marketing in a Digital Era," *European Management Journal*, vol. 32, no. 1, pp. 1-12, 2014. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [32] Matthew Lombard, and Theresa Ditton, "At the Heart of it All: The Concept of Presence," *Journal of Computer-Mediated Communication*, vol. 3, no. 2, pp. 1-45, 1997. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [33] A. Paraskevas, and L. Altinay, "Upselling Techniques in Hotel Restaurants," *Journal of Foodservice Business Research*, vol. 15, no. 4, pp. 376-393, 2012.
- [34] PwC, Seeing is Believing: The Future of Augmented Reality in Retail, PwC, 2018. [Online]. Available: <https://www.pwc.com/us/en/industries/retail-consumer/publications/assets/pwc-ar-in-retail.pdf>