AI and Immersive Technologies in E-commerce: A Literature Review

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Abstract: - The changing needs of customers for a more interactive, personalized, and smooth shopping experience have changed the field of e-commerce. This has led to the use of immersive technologies like Augmented Reality (AR), Virtual Reality (VR), and Artificial Intelligence (AI), which have a great potential to enrich the consumer experience, increase efficiency, and ultimately contribute to higher sales through the integration of AI.
This study aims to examine the influence of AI and immersive technologies on online shopping, integrating contemporary trends, consumer behaviors, and case studies. To achieve this, the study aims to combine theoretical and practical knowledge through the synthesis of 210 sources, later narrowed down to 89 relevant ones.
The study provides a unified understanding of a previously fragmented field, creating a valuable source of knowledge for any individual seeking to advance the field of online shopping.

Key-Words: - E-commerce, Artificial Intelligence, Augmented Reality, Virtual Reality, Customer Experience, Digital Marketing, online shopping, consumer behavior.

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1 Introduction

E-commerce is when people buy and sell goods and services online. It includes online transactions, like trading money and information for goods and services.

E-commerce is the practice of conducting business using the Internet, the World Wide Web, and mobile applications and browsers on mobile devices. E-commerce also covers a lot of different activities, such as the trade between companies and the internal procedures that organizations use to support their hiring, planning, selling, purchasing, and other operations [1].

E-commerce is not just electronic financial transactions between businesses and consumers. It includes all the electronic transactions that a business does with its third-party partners. Besides that, e-commerce also includes non-monetary exchanges such as customer inquiries [2], [3].

The e- commerce world is changing mainly due to technology and changing consumer preferences. The question is, can companies overcome the major roadblocks to their great expansion and still be able to have a breakthrough in the internet industry, which is highly competitive?

It is the combination of technology and commerce that has produced an online (virtual) market space where buying and selling of goods and services are done through the electronic media, especially the Internet. Telling the truth, we all want to be happy,

and what better way to make the big leap of happiness than to get satisfaction by shopping the easiest way online, and at the same time avoid the hassles of looking for a parking space and carrying heavy shopping bags.

Not only that, the fact of the matter is that e-commerce stands for electronic commerce. It is the trade of goods and services using the Internet, or other computer networks. Actually, the main aim of e-commerce is to create a world wide web of business, where the byuers are connected to the suppliers all over the globe. The main feature of e-commerce is that it allows the local suppliers to offer their commodities for sale all over the world without any troubles and restrictions.

Due to the constant digitalization of modern life, people from all over the world are today the beneficiaries of the conveniences of online transactions.

The world currently has over 5 billion internet users. The number of people who do online transactions is doubling every year. Retail e-commerce sales are expected to reach more than 4.1 trillion U.S. dollars worldwide in 2024, and this number is likely to keep going up in the years to come [4].

The e-commerce market is changing quickly because of new technologies. Among these innovations, AI and immersive technology are the most important ones in changing how businesses and consumers engage. Consumer behavior changes, internet usage increases, mobile commerce grows, consumer preferences change, market becomes global, immersive technologies develop, artificial intelligence (AI), chatbots, virtual assistants, predictive analytics, etc., are some of the major factors that are behind this growth [5], [6].

The United Nations World Population Prospects infers that the Earth is currently inhabited by 8.18 billion people. The number of different mobile phone users is 5.75 billion. More than 67.5 % of the world population is internet users and according to the latest data, there are 5.52 billion internet users in the world. In general, social networking continues to be the most favored connected activity, with over 97 % of the working-age internet users accessing social networks or messaging platforms monthly. Shopping is ranked fourth, as a bit below 75 % of all internet users are doing some form of e-commerce monthly [7].

The worldwide e-commerce market has grown very rapidly in recent years at the same time that customers' expectations have changed and technology has advanced. Thus, AI and immersive technologies such as AR and VR are the main factors behind enhancing customer experience and improving business performance these days. While AR and VR create lifelike shopping scenarios that help online retail to overcome the limitations of physical stores, AI is behind the operations of chatbots, making personalized suggestions and predictive analytics [8], [9]. This study takes a systematic approach in examining the use, impact, and prospects of AI as well as immersive technologies in the field of e-commerce.

AI and immersive technologies are going to be the major factors behind the future growth of e-commerce. These new ideas help fix the problems that people have with online shopping right now by making the buying process more fun, personalized, and efficient. Companies that use these kinds of tools well as technology changes will probably be able to stay ahead of the competition and meet the needs of customers who are always changing.

Over the past few years, there has been a big change in how AR and VR are used in e-commerce. By examining the literature, one can find several major trends that demonstrate how these technologies are influencing the business strategies and the customer experience side of the e-commerce industry. Besides that, these technologies are also helping the e-commerce companies to increase customer loyalty, optimize operations, and accelerate the e-commerce industry-agents' growth, in addition to the enhancement of client experiences. The combined effect of AI and immersion technologies will become even more powerful as they evolve one by one, helping companies to stay customer-centric and competitive.

Virtual and augmented reality have the potential to revolutionize how humans interact with almost all sectors of the economy today, and we see that it will be equally transformational from both a consumer and an enterprise perspective [10], [11].

Having intelligence at a human level has always been the ultimate aim of AI. AI stands for a set of programming methods and technologies. Each of these methods and technologies has its own strength in a specific application area. There are numerous definitions of AI. The most ambitious one sees AI as the effort to create computer systems that simulate human thinking and behaving [12], [13].

The connection between immersive technologies and AI is a striking example of technological symbiosis. Recently, significant progress has been attained in integrating VR and AI into one technology that virtually has limitless potential [14].

AI and immersion technology are implemented in e-commerce with the objectives of significantly increasing sales performance, consumer engagement,

and operational efficiency. It is anticipated that the influence of these technologies on the e-commerce landscape will considerably escalate as the technologies mature and become more approachable, resulting in the enhancement of shopping experiences and the market growth that is consistent with each other.

The combination of e-commerce and AI with immersive technology is not just the next step but also the basis of retail's future. It is necessary to explore and innovate in this area as the technologies advance for a number of reasons.

In the quickly changing digital world, businesses must not only keep exploring but also keep developing at the intersection of artificial intelligence and immersive technologies. Companies that lead the way in new technology will be the ones that deliver real experiences to their customers, build long-lasting relationships with them, and, thus, promote customer loyalty, which is of a long-term nature.

2 Literature Review

Incorporating immersive technologies like AR, VR, and AI into e-commerce frameworks has changed the way consumers act, the efficiency of operations, and the ways in which businesses can differentiate themselves strategically. These technologies, that span different parts of the human psyche such as consumer psychology, information systems, and service marketing, have a profound and complex theoretical background that can be reflected by the increasing number of studies on them. AI, AR, VR, and immersive technologies, among others, are a theoretical playground in theory and one that is continuously changing for online retail.

The foundational issues of future research, such as engagement, personalization, prediction, and digital embodiment, are already laid down.

Not only to keep up with the competition, but also to meet the expectations of the customers as the technical possibilities and customer demands convergence, the retail sector will have to incorporate these technologies into smooth, customer-friendly experiences.

Immersive technologies like virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) have developed very fast. Consequently, the operational and strategic landscape of e-commerce has been changed.

The foundational theories of Laudon & Traver, and Schneider [1], [15], point out that technological innovation has always been at the core of e-commerce development. However, the current shift in paradigm, which is mostly due to immersive and intelligent technologies, indicates a significant change in customer engagement, experience, and operational efficiency.

Artificial intelligence is one of the major enablers of data-driven and customized businesses. Researchers in their respective studies demonstrate that AI-powered algorithms driving purchase prediction models, dynamic pricing, recommendation systems, and also chatbots for customer support, are the main sources of benefits both for customers and enterprises [16], [17], [18]. Other researchers warn that consumer trust and transparency are needed to ensure satisfaction with AI-driven personalization [19]. Amazon and McKinsey give real-world examples of how AI recommendation engines and personalized experiences lead to higher conversion rates [20], [21].

In addition to this, other researchers [22], through tracing the evolutionary paths of the AI knowledge in e-commerce, argue for an expanding application of AI in such activities as inventory management and customer service, thus providing examples of innovations at H&M and Macy's [23], [24], respectively. These technologies not only raise the bar for consumers' expectations and change the retail industry but also are capable of making operations more efficient [25], [26].

Recent research indicates that there are challenges for SMEs, including perceived complexity and internal capacity. However, it is highlighted that the prediction of consumer behavior is becoming a new source of competitive advantage. In this direction, the application of AI was analyzed, especially with reference to the development of prediction models based on the identification of customer sentiment and preferences. A particular focus is given to the modelling based on sentiment analysis, with reference to the application of AI in the integration of e-commerce with digital marketing, following behavioral analytics [27], [28], [29], [30], [31], [32], [33], [34].

Artificial intelligence has been a major driver of change in digital retail. Automation, prediction, and personalization are the key theoretical foundations of employing AI in e-commerce. Customization with the help of AI leads to customer satisfaction by enhancing transparency and giving users control. Personalization using AI could also enhance the customer experience by emphasizing aspects such as transparency and control. The effect of AI personalization on customer behaviour and market trends is also explored in more in-depth research by various researchers who have also identified new trends in e-business [18], [35], [36], [37], [38].

Recent research uses bibliometric analysis to

track the shift from technical innovation to ethical frameworks, while scientific mapping identifies the evolution of AI knowledge in e-commerce, including connections, emerging research trends, and areas for further exploration [17], [22], [26].

Predictive modeling literature aiming at customer behavior prediction includes models that consider search behavior, sentiment, and psychographics [30], [31], [39], [40].

Amazon (recommendation engines), Target (sales analytics), Macy's (dynamic pricing), Walmart (inventory robots), Zara (inventory management), H&M (chatbots), Sephora (Virtual Artist), and Starbucks (marketing) have real-world projects that demonstrate the integration of AI in operations, marketing, and supply chain [41], [42], [43], [44], [45], [46].

The move of research emphasis from operational AI systems to cognitive and ethical issues can be easily observed through corporate endeavors like Microsoft's Responsible AI Standart (2024) and McKinsey & Company's retail personalization frameworks (2024), and this direction is followed in the latest bibliometric studies [16], [17], [22], [47], [48].

Researches suggest tha VR-based product evaluation could positively influence product quality, while other research works indicate possible research directions for AR-based applications in e-tailing. Similar research findings emphasize AR's influence on customer citizenship behavior, brand engagement, and significant interaction with users for mobile applications. On the other hand, AI is identified as a significant technology in retail, and its applications are seen in companies such as Amazon, H&M, Macy's, and Zara. These applications are evidence of AI's influence in retail in terms of marketing, customer service, and supply chain operations, supported by multiple case studies [20], [23], [24], [44], [49], [50], [51], [52], [53], [54], [55], [56], [57].

Over the last two decades, research on immersive marketing techniques has underscored their importance by demonstrating their hedonic and utilitarian value. Studies have found that AR helps in creating more "situated" consumer experiences, engaging customers more deeply in a brand's story. Virtual fitting rooms and VR-based promotions were also found to be significant in shaping purchase intentions and satisfaction. Conceptual models also target essential features of AR that make consumer experiences engaging such as situatedness, interactivity, and vividness [58], [59], [60], [61], [62], [63], [64].

Latest studies have highlighted the various forms immersive technologies can influence consumer behavior. For instance, it has been demonstrated that the employement of VR shopping has the potential to enhance the creativity and curiosity of consumers, and the implications of this can be very beneficial especially in the context of luxury brands. AR can increase the salience of digital components through their integration into the customer's physical world. AR can also have important applications in terms of retail fashion and visualization [50], [59], [65], [66], [67], [68], [69], [70].

Research shows the complex effect of design aesthetics on consumer creativity and curiosity through virtual packaging design and virtual reality environments. To understand the use of AR technology, the research includes variables such as cognitive innovativeness and mediator variables such as interactivity and vividness.

Based on the fundamental research done on the topic, the study shows the effect of immersive technologies on the sense of presence, engagement, and flow experienced by the consumer, thus emphasizing the significance of immersive technologies in consumer experience [48], [56], [57], [61], [65], [70], [71], [72], [73].

Starbucks' AI-enhanced marketing (2024), Nike's AR implementations (2024), and Sephora's Virtual Artist App (2024) are just a few of the tangible examples of how immersive technology has evolved from being a novelty to a necessity. Theoretical debates take this idea further to service scenarios, suggesting a single AR/VR service engagement model [45], [74], [75], [76].

Recent studies indicate that the use of immersive technologies needs to be viewed as part of a larger digital experience ecosystem, rather than as individual technologies. A comprehensive meta-analysis of research conducted over the past two decades indicates that there are a number of stages of development, from embodied cognition environments to simulation-based shopping. Moreover, research indicates that there is considerable scope for virtual reality being used as a basis for "retail theaters" that can be made more interesting through social and mobile integrations [58], [77], [78], [79].

A comprehensive review of immersive research fits into more contemporary research on the ways in which AI, knowledge representation, and immersive environments interact to produce a human-centric experience. Mobile AR is identified as a major facilitator of customer engagement through gamification and storytelling, and VR research identifies the importance of presence, flow, and narrative in ensuring a successful consumer journey [53], [72], [73], [80], [81].

According to hybrid channel theories, the merging of AI with AR/VR indicates that the industry is moving from discrete digital touchpoints to integrated immersive commerce strategies [12], [82], [83].

While these technologies hold revolutionary potential, the issues related to their ethics and governance are becoming increasingly dominant. The Microsoft Responsible AI Standard (2024) and Gartner (2024) mark out features of frameworks that are put in place to ensure ethical AI practices in consumer interactions, including explainability, accountability, and fairness. However, the need to strategically and ethically align AI with digital marketing practices is a focus of research [34], [47], [84].

Industry examples, such as Macy's dynamic pricing (2024) and Amazon's AI engine (2024), reveal that companies must find a middle ground between advanced capabilities and issues like consumer control, data privacy, and transparency. This argument is further supported by the recent research focus on the balanced use of AI [18], [20], [24].

In general terms, the literature reviewed indicates that AI, AR, and VR do not only represent incremental changes in the evolution of the digital business environment; they represent revolutionary changes. The interrelation between the three technologies should be a major area of study, especially when addressing the challenges of governance, inclusiveness, and trust to unlock the revolutionary potential of the technologies [25], [31], [33], [35], [48], [54], [58], [85].

3 Methodology

This study took on a systematic literature review approach to depict an in-depth picture of AI and Immersive Technologies in e-commerce applications. The method used was planned to be thorough, clear, and replicable, and it also complied with the criteria laid down for literature reviews of high-quality in the area of new technologies. The Prisma 2020 flow chart is a detailed illustration of the methodology when it comes to the identification, screening, and inclusion of the studies in the literature review concerning AI and immersive technologies in the e-commerce sector.

The investigation structure consisted of three main stages:

Complete Literature Research: - Relevant papers were discovered through a thorough search. The search mechanism employs a set of inclusion and exclusion criteria to determine that the selected works are not only relevant but also of high quality.

Data Extraction and Organization: - Main points of the chosen works were obtained and then arranged in a formalized table together with the components of the research, methods, main results, and the connection of the paper to AI and immersive technologies in e-commerce.

Thematic Analysis and Synthesis: - The information sourced was deeply examined to pinpoint the repeat themes, trends, and issues raised in the publications. This examination aims to respond to the research questions and also serve as a stepping stone for revealing further topics for research.

The initial search identified 210 sources which are journal articles, books, book chapters, and conference proceedings. Deep investigation and guidance to insert high-quality studies have led to use the following main academic databases: Google Scholar, IEEE Xplore, Scopus, Web of Science, ACM Digital Library, and JSTOR.

The predetermined inclusion and exclusion criteria were applied resulting in 89 sources being earmarked for detailed analysis. The criteria for inclusion were created to choose the studies that are not only relevant but also up-to-date, thus showing the present changes and technological innovations in the rapidly progressing field of AI and immersive technologies.

To maintain methodological rigor and ensure the review's credibility, the following programming criteria have been established:

Publication Date: The review only looked at research that had been published in the last ten years, so it only included the most recent technological advances and e-commerce methods.

Topic Relevance: Only documents that clearly talked about how AI and immersive technologies are used in e-commerce were chosen. We also thought about AI-driven marketing, customizing the customer experience, and using retail apps that put you in the store.

Practical Implications: The selection of articles was based on their empirical or applied contributions. Works that focused only on theoretical frameworks without any application in e-commerce were ruled out so as to keep the review's applied focus.

Language and Accessibility: Only those studies that were written in English and were accessible through the databases chosen.

From each of the chosen articles, significant information was drawn, such as:

The author or authors and the year when the work was published

Objectives and questions of the study

The selected method that was used such as, qualitative, quantitative or mixed-methods

The artificial intelligence or immersive technology that was the subject of the examination

The most significant discoveries and how they can be used in e-commerce practice

The data drawn from the articles were later grouped according to thematic categories to make the process of analyzing and synthesizing easier. The thematic analysis allowed the team to identify new trends, repeated problems, and potential research gaps in the use of AI and immersive technology in e-commerce.

Attempts to boost the review's trustworthiness and correctness included:

A number of researchers independently evaluated each work for inclusion in the review.

Problems with selecting or coding studies were solved by talking it through and reaching an agreement.

Open reporting of the search words, databases, and inclusion/exclusion criteria makes it possible for other researchers to carry out the same review.

The present methodology, by systematically and transparently carrying out the review, offers a tough framework for the current synthesis of AI and immersive technologies in e-commerce. Besides, it facilitates the locating of the literature gaps and points out the potential future research routes, for example, the study of the long-term influence of AI-driven personalization and immersive technologies on customer engagement and business outcomes.

4 Findings

The main findings of the literature review emphasize that artificial intelligence and immersive technological devices have the potential to change the whole landscape of online shopping. These disruptive technologies revolutionize the e-commerce sphere in various ways, such as user experience, engagement, and customization on the one hand and streamlining of business plans on the other. The ability of AI to scrutinize huge amounts of data generated by the immersive activities of users allows businesses to offer more relevant and tailored marketing, which not only satisfies consumers but also makes the company earn more. Once these cutting-edge innovations become mature, the total effect of their joint usage will fundamentally change the mode of customer-brand interactions, making online shopping more accessible, natural, and captivating.

Literature review suggests that electronic immersive technology and artificial intelligence are two major factors that have led to the most significant changes in the e-commerce industry. Their harmonious working relationship leads to businesses obtaining top performances, customer engagement is heading upwards, and personalization gets better.

By means of AI and immersive technologies, brands have been able to break the boundaries of traditional marketing to develop highly tailored, interactive, and captivating experiences. Among multiple ways of immersion, virtual stores and augmented reality try-ons provide the most innovative, engaging, and practical shopping to customers, and hence turn them into repeat buyers. Because of interactive environments, 3D visualization, and virtual product trials, customers can explore products in ways that were not possible with traditional e-commerce models. What is more, AI-powered personalization takes these experiences even a step further by dynamically adjusting suggestions and content on the basis of user interaction and preferences.

In order to persuade more scholars to conduct research and implement technology, the majority of researchers emphasize various potential uses of AR in e-commerce. Providing an interactive e-tailing environment, AR, as per their statement, tremendously improves client engagement as well as the decision-making process. By providing immersive and experiential marketing opportunities, these technologies are redefining customer contact. Due to their creative and interesting nature, augmented reality applications have very significant positive effects on user engagement and involvement [51], [53], [57], [86].

Immersive technologies are the foundations for user-centric and adaptable digital ecosystems. The use of AR and VR has been linked to increased sales and customer loyalty in retail, as both technologies enhance the consumer experience. These technologies have a positive effect on consumers' perceptions of product packaging and branding as well as customer satisfaction and perceived product value [48], [78], [81], [87].

Table 1. in the Appendix contains an expanded summary of the literature review main points, emphasizing the revolutionary nature of AI and Immersive Technologies for e-commerce with in-depth details

5 Discussion

AI and immersion technologies aren't just tools for making processes more efficient; they are forces that are changing the e-commerce radically. These new things actually connect the physical and digital retail worlds, improve the ways in which customers and businesses interact, and give the businesses the

accuracy and flexibility to turn the disadvantage of the increasingly competitive market to their advantage.

Highly customized, engaging, and interactive consumer experiences have been achieved by the incorporation of AI and immersion technology into e-commerce. Researching the right books shows that the main development tools are using predictive analytics and AI-based recommendation system for enhancing personalization.

AR and VR technologies facilitate a shopper's immersive experience, such as a virtual tour of a store and virtual try-on of products. Application of AI chatbots and human-like virtual assistants enhances customer services quite considerably. AI and AR/VR interaction leads to product identification, personalization and visualization and finally to enhanced engagement and conversion rates.

One of the best illustrations is the virtual museum of Berat, a project where the audience can freely explore 3D spaces and interact with the artifacts through a VR platform [88], [89]. This cultural utilization mirrors the core elements that are very relevant to e-commerce, such as interactive product visualization, storytelling user experiences, and the freedom of users, thus showing how the same design principles can stimulate online shopping engagement and personalization to a higher level.

In smart labs, where user habits are tracked and content delivery is modified accordingly, e-commerce platforms can tap into the potential of capable, sensor-equipped environments that not only offer personalized experiences but also enhance them in real-time. Future retail interfaces, just like smart labs, will have the capacity to dynamically react to consumer desires, thereby combining immersive experiences with intelligent automation.

Besides improving the customer experience, these technological innovations have several other benefits such as nurturing customer retention, making business operations more efficient and helping e-commerce businesses to scale. Together, AI and immersive technologies can have a much bigger impact as they evolve, allowing businesses to focus on the customer and be competitive at the same time.

But the biggest financial constraints, the lack of advanced technologies and infrastructure are some of the main reasons cited as to why the revolutionary potential of AI and immersive technologies for e-commerce has not been largely realized yet. So the main challenge is how to remove the obstacles to their full potential. Practical remedial measures must be comprehensive to include strategic investments, collaboration, and technological breakthroughs so as to ensure usability, accessibility and also trust throughout the ecosystem. Once these challenges are overcome, companies will have a wonderful opportunity to experience the fullest benefit of such groundbreaking innovations. Addressing these issues can help companies not only to lessen risks but also to raise their image as ethical and customer-focused businesses.

Immersion technologies and AI are not simply optimization tools, they are the driving forces of change that are dramatically reshaping the e-commerce sector. The benefits of these transformation include creating a deeper customer engagement, physically connecting the brick and mortar to the virtual shops, and equipping the businesses with the right tools, i.e. accurate data and flexibility to thrive in an increasingly competitive market scenario. AI and immersion technologies have lately made it feasible to design consumer experiences that are highly customized, very engaging and interactive. One of the ways businesses are using Data-driven AI to create personalized customer experiences is through predictive analytics - a major theme in recent literature on the subject.

Shopping with AR or VR technologies allows customers to take a virtual tour of a store, or in case of products like garments, to try them on virtually, thereby making the whole process of shopping much more realistic and interactive. Besides, the advent of AI technology has immensely transformed the assistive technologies in the form of virtual assistants and chatbots.

The discovery of products has been enhanced, and the personalization and visualization have been improved to a great extent because of the synergistic interaction of AI and AR/VR; thus, the engagement and conversion rates have gone up.

Besides that, such technologies as these not only enhance consumer experiences but also facilitate the overall growth of e-commerce businesses, customer loyalty, and the pace of operational procedures. The combined impact of artificial intelligence and immersive technologies will be more significant as their development goes on, thus companies will be able to remain competitive and customer-oriented.

However, these are just a few potential pitfalls, and there are many other factors such as lack of funding, technological challenges and poor infrastructure that can prevent wide-scale adoption of AI and immersive technology. These issues must be addressed if the full benefits of these innovative solutions are to be realized. Addressing these issues requires being done through comprehensive plans that include technology innovations, collaboration, and investment in a calculated way to ensure there is more accessibility, usefulness, and trust in the

ecosystem. Meeting these challenges, firms will be capable to unlocked full potential of these technologies that give them breakthrough benefits. Companies that give primacy to these factors will be able to reduce the risks and improve their standing as responsible and customer-oriented businesses.

6 Future Directions

Businesses' interactions with consumers are changing as AI is combined with such immersive technologies as virtual and augmented reality. E-commerce platforms, retail establishments, and service providers are creating extremely tailored and interactive experiences by combining the immersive AR and VR experiences with the data-driven capabilities of AI.

By employing such technologies as AR and VR to complement AI, a new era of user interaction and engagement in e-commerce and beyond is being introduced. AI's abilities for personalization, customization and adaptation in real-time, combined with the use of immersive environments, can offer a very smooth and highly engaging user experience. AI-powered immersive technologies such as virtual try-on, intelligent product recommendation, instant personalization, or even emotion-based interaction, significantly increase the reasons for customers to engage with the companies at a deeper and more enjoyable level. Consequently, companies may develop closer relationships with their clients, thus increasing engagement and creating the loyalty that lasts long-term.

Several potential future developments in AI and immersive technologies (AR/VR) might be a further leap in e-commerce. These developments could change the way customers interact with products and services, improve business operations to a great extent, and enhance the customer experience.

There are future advancements in artificial intelligence (AI) and immersive technologies (AR/VR) that can alter the field of e-commerce dramatically. As these technologies evolve, we may expect ever more personalized, convenient, and entertaining purchasing experiences for customers. While AR and VR will be the tools to make the online shopping experience more attractive and lively, AI will be the one to assist businesses in predicting customer behavior, streamlining processes, and enhancing personalization. The future of e-commerce will be vibrant and competitive as a consequence of these changes, which will, in the end, redefine the consumer journey, stimulate brand loyalty, and open up new business opportunities.

When AI meets immersive technology, online shopping is going to be the main beneficiary of this merger. The highest level of personalization, efficiency, and customer engagement that would go beyond the existing boundaries of shopping experiences can be the right payload of this source. Digital retail, through the strategic use of these trends, can become a completely different animal for companies that are ready to change their ways. Consequently, this will not only boost customer loyalty but also enhance overall operations and lead to growth in the long run.

7 Future Work

We will be concentrating on creating a tailored solution for a business's digital transformation, specifically a company that provides digital services, in our upcoming work. The solution will incorporate sophisticated elements of e-commerce and AR/VR technologies with the goal of making the customer interaction more efficient and offering automated and personalized services. Besides technological efficiency, our strategy will also focus on changing the business model and promoting the culture of innovation. This will be the basis for experiments on the influence of technology on organizational performance and competitiveness in the digital market.

Limitations

This research, like others, has its limitations.

In this paper, the authors have referred to various sources to support their work, for instance, Google Scholar, IEEE Xplore Scopus Web of Science, ACM Library, and JSTOR. But the review's scope was confined to only those articles that fulfilled the set criteria and areas of AI, immersive technologies, and e-commerce. This limited the study's exploration of fields further.

One limitation of the research is the number of publications that have been used as a point of departure for this study, considering the extensive amount of research that has been done in this area lately.

Although the matter of combining AI and immersive technologies in e-commerce is a rapidly growing one, the existing literature hints at various drawbacks and gaps that indicate areas for further research. The gaps are not only theoretical and technological but also practical, which, if addressed, would enhance the effectiveness and adoption of these technologies.

While significant progress has been made in the promising integration of AI and immersive technologies within e-commerce, as per the literature,

there still exist several gaps that call for further investigation. By bridging these gaps, particularly in the areas of customer behavior over the long term, ethical issues, scalability, and regional acceptance, businesses and researchers will be able to harness the full potential of these technologies, thus ensuring that the resulting growth is both fair and sustainable.

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APPENDIX

Table 1. Detailed key findings from the literature review

Study Title	Authors	Publication Year	Research Aim/Objectives	Technologies Discussed	Methodologies	Key Findings/Results	Relevance
The role of augmented reality in redefining e-tailing: A review and research agenda	Pragya J., & Biswajita P.	2023	To review the role of augmented reality in redefining e-tailing and propose a research agenda.	Augmented Reality (AR)	Literature review and research agenda formulation	AR significantly enhances customer engagement and decision-making by offering an interactive e-tailing environment.	Highlights potential AR applications in e-commerce to shape future research and technological implementation
Augmented Reality in Retail and Its Impact on Sales	Tan, Y. Ch., Chandukala, S. R., & Reddy, S. K.	2022	To examine the impact of augmented reality on retail sales	Augmented Reality (AR)	Empirical analysis using retail data and customer surveys	AR usage in retail correlates with increased sales and customer retention due to enhanced shopping experiences	Demonstrates AR as a tool for driving sales and customer engagement in retail e-commerce
The influence of virtual reality in e-commerce	Martínez-Navarro, J., Bigne, E., Guixeres, J., Alcaniz, M., & Torrecilla, C.	2019	To investigate the influence of virtual reality in e-commerce	Virtual Reality	Experimental research with virtual shopping simulations	VR positively impacts customer satisfaction and perceived product value	Shows VR's potential for elevating customer experience and trust in online retail
Virtual and augmented reality: Advancing research in consumer marketing	Wedel, M., Bigne, E., & Zhang, J.	2020	To advance research in consumer marketing with virtual and augmented reality	Virtual Reality (VR) and Augmented Reality (AR)	Conceptual analysis and model development	These technologies redefine consumer interaction, offering experiential and immersive marketing avenues.	Proposes frameworks for implementing immersive technologies in marketing strategies
The role of AI Personalization in e-commerce growth	Mileva, G.	2024	To assess the role of AI personalization in e-commerce growth	Artificial Intelligence (AI) and personalization algorithms	Case studies and trend analysis	AI-driven personalization enhances customer satisfaction and increases conversion rates.	Demonstrates the critical role of AI in optimizing customer experiences and driving growth
Shopping in the digital	Kuan-Yu Lin &	2024	To analyze how AR	Augmented Reality	Customer engagement	AR applications	Highlights AR's role in

world: How augmented reality mobile applications trigger customer engagement	Travis K. Huang		mobile applications, trigger customer engagement in e-commerce	(AR)	analysis using AR app case studies	significantly increase user engagement and interaction	creating more engaging and interactive shopping experiences
E-commerce and consumer behavior: A review of AI-powered personalization and market trends	Raji, M.. A., Olodo, H. B., Oke, T. T., Addy, W. A., Ofodile, O. C., & Oyewole, A. T.	2024	To review AI-powered personalization and market trends in e-commerce	Artificial Intelligence (AI)	A systematic review of Personalization Technologies and consumer behavior studies	AI facilitates personalized shopping experiences, leading to higher customer loyalty.	Establishes AI's contribution to customer-centric e-commerce strategies
What is augmented reality marketing? Its definition, complexity, and future	Rauschnabel, P. A., Babin, B. J., tom Dieck, M. C., Krey, N., & Jung, T.	2022	To define augmented reality marketing, its complexity, and future potential	Augmented Reality (AR)	Literature review and conceptual model development	AR marketing provides unique opportunities for immersive brand engagement, though challenges such as technical limitations and user adoption remain	Establishes a foundation for AR marketing research and its implications for e-commerce
Virtual is so real! Consumers' evaluation of product packaging in virtual reality	Branca, G., Resciniti, R., & Loureiro, S. M. C.	2023	To study consumer evaluation of product packaging in virtual reality environments	Virtual Reality (VR)	Experimental studies in VR-based environments	VR significantly influences consumer perception of product packaging and branding.	Demonstrates VR’s utility in product presentation and branding strategies in e-commerce
How artificial intelligence will affect the future of retailing	Guha, A., Grewal, Dh., Kopalle, P. K., Haenlein, M., Schneider, M. J., Jung, H., Moustafa, R., Hegde, D. R., & Hawkins, G.	2021	To evaluate how artificial intelligence will shape the future of retailing	Artificial Intelligence (AI)	Conceptual framework development and scenario analysis	AI enhances operational efficiency, personalizes customer interactions, and optimizes inventory management	Highlights AI as a transformative force in retail and e-commerce operations
Virtual Reality in the luxury	Liu, T., Tan, C. S. L., &	2024	To assess virtual reality's	Virtual Reality (VR)	Case study analysis and customer	VR elevates the luxury shopping	Shows VR's premium appeal in

fashion industry: a systematic literature review	Rodriguez, C. Q.		impact on customer experience in the luxury industry		feedback collection	experience by offering exclusivity and emotional engagement	niche markets like luxury retail
Virtual reality as a promotion tool for small independent stores	Gwia Kim, Byoungho Jin, & Daeun Chloe Shin	2022	To evaluate VR as a promotional tool for small independent stores	Virtual Reality (VR)	Field experiments and consumer surveys	VR enhances promotional effectiveness, particularly for small businesses seeking differentiation.	Highlights VR as a cost-effective and impactful promotional tool for smaller enterprises
A Review of Immersive Technologies, Knowledge Representation, and AI for Human-Centered Digital Experiences	Partarakis, N., & Zabulis, X.	2024	To review immersive technologies, AI, and knowledge representation for human-centered digital experiences	AI, Immersive Technologies (AR/VR/MR)	Literature review and trend analysis	These technologies provide the foundation for adaptive and user-centric digital ecosystems.	Highlights the integrative role of AI and immersive technologies in creating holistic customer experiences
How virtual reality shopping experience enhances consumer creativity: The mediating role of perceptual curiosity	Woo Bin Kim, Ho Jung Choo	2023	To explore VR's impact on consumer creativity and perceptual curiosity	Virtual Reality (VR)	Experimental design analyzing the mediating role of curiosity	VR environments foster creativity by engaging users' curiosity	Demonstrates VR's capability to enhance both engagement and creative outcomes in e-commerce
Immersive technologies and consumer behavior: A systematic review of two decades of research	Ambika, A., Shin, H., & Jain, V.	2023	To review the impact of immersive technologies on consumer behavior over two decades	Immersive Technologies (AR, VR)	Systematic literature review	Immersive technologies have transformed consumer engagement, increasing trust and satisfaction.	Provides a historical and systematic understanding of technology adoption in consumer behavior
Emerging Technologies, Innovations, and Artificial Intelligence (AI) in E-Commerce	Srivastava, A., & Kumari, G.	2024	To examine emerging technologies and AI innovations in e-commerce	Artificial Intelligence (AI), Big Data	Conceptual framework and trend analysis	AI-powered systems and predictive analytics are critical to optimizing e-commerce processes.	Highlights emerging technology applications for improved e-commerce operations
VR/AR Application in E-commerce: A Literature Review	Chen, Hong, & Li, Hongxiu	2022	To explore VR/AR applications in e-commerce	Virtual Reality (VR), Augmented Reality (AR)	Literature review	VR and AR enhance customer engagement and reduce purchase hesitation	Demonstrates how immersive technologies reshape customer interaction in e-commerce
The Impact of	Abinesh	2024	To analyze the	Artificial	Empirical	Empirical	Highlights the

AI-driven personalization on Customer Satisfaction in E-Commerce: Balancing Technology, Transparency, and Control	R.C. & Rhytheema Dulloo		impact of AI-driven personalization on customer satisfaction in e-commerce	Intelligence (AI), Personalization Algorithms	studies and customer satisfaction analysis	studies and customer satisfaction analysis	importance of balancing technology and customer trust in AI applications
The role of augmented reality in the customer shopping experience	Sahli, A. & Lichy, J.	2024	To assess the role of AR in the customer shopping experience	Augmented Reality (AR)	Empirical research with shopping simulations	AR improves customer decision-making and satisfaction by providing interactive experiences.	Demonstrates AR's capability to enhance online shopping experiences
Customer Purchase Behavior Prediction in E-commerce: A Conceptual Framework and Research Agenda	Cirqueira, D., Hofer, M., Nedbal, D., Helfert, M., & Bezbradica, M.	2019	To propose a conceptual framework for predicting customer purchase behavior in e-commerce	Predictive Analytics	Framework development and empirical testing	Effective predictive frameworks enable targeted marketing and improved sales strategies.	Provides a roadmap for leveraging analytics in e-commerce decision-making
Sentiment-based predictive models for online purchases in the era of marketing 5.0: a systematic review	Gooljar, V., Issa, T., Hardin-Ramanan, S., Abu-Salih, B	2024	To review sentiment-based predictive models for online purchases in marketing 5.0.	Sentiment Analysis, Predictive Models	Systematic review of predictive modeling techniques	Systematic review of predictive modeling techniques	Establishes sentiment analysis as a vital tool in e-commerce marketing
Knowledge evolutionary process of Artificial intelligence in E-commerce: Main path analysis and science mapping analysis	He, X., & Liu, Y	2024	To map the knowledge evolution of AI in e-commerce	AI applications	Main path analysis and science mapping	Reveals influential studies and emerging themes in AI research	Provides a comprehensive knowledge framework for future research
The role of augmented reality in redefining e-tailing: A review and research agenda	Jayaswal, P., & Parida, B.	2023	To redefine e-tailing using AR	Augmented Reality (AR)	Literature review and research agenda	AR enhances decision-making and customer interaction	Guides future AR application research
Impact of AI on business growth	Rubab, S. A.,	2024	To analyze AI's impact on business growth	AI across business operations	Conference presentation and empirical analysis	AI drives growth by optimizing processes and enhancing customer experience	Advocates for AI adoption to boost business performance
Cross-border	Zhu, Q.,	2023	To examine	AI for content	Literature	AI enhances	Supports

electronic commerce's new path: from literature review to AI text generation	Ruan, Y., Liu, S., Yang, S. B., Wang, L., & Che, J.,		cross-border e-commerce and AI text generation	creation and recommendation	review and AI model evaluation	content efficiency and customer targeting	innovation in international e-commerce strategies
Factors influencing the adoption of artificial intelligence in e-commerce by small and medium-sized enterprises	Aljarboa, S.,	2024	To identify factors influencing AI adoption in e-commerce by small and medium-sized enterprises	Artificial Intelligence (AI)	Empirical analysis using surveys and regression models	Organizational readiness, perceived ease of use, and cost significantly impact AI adoption	Offers insights for SMEs to overcome adoption barriers and leverage AI for a competitive advantage
Artificial intelligence in E-Commerce: a bibliometric study and literature review	Bawack, R.E., Wamba, S.F., Carillo, K.D.A., & Akter, Sh.,	2022	To analyze AI's impact on e-commerce through a bibliometric study and literature review	AI in e-commerce	Bibliometric analysis, literature mapping	AI applications focus on personalization, inventory management, and fraud detection.	Provides a comprehensive overview of AI's role, guiding future research directions
The Impact of Artificial Intelligence in E-commerce: Transforming the Future of Retail	Chauhan, A.,	2024	To explore AI's transformative impact on e-commerce and retail	AI technologies and automation tools	Exploratory research and trend analysis	AI streamlines operations, enhances personalization, and optimizes logistics.	Highlights AI's broad implications for the future of retail innovation
Artificial Intelligence (AI) Empowerment in E-Commerce: A Bibliometric Voyage	Chugh, P., & Jain, V.	2024	To investigate AI empowerment in e-commerce using bibliometric analysis	AI, big data, and analytics	Bibliometric study	Identifies major AI applications and their impact on efficiency and decision-making	Frames AI as a key driver of e-commerce evolution
Investigating the effect of augmented reality on customer brand engagement: The mediating role of technology attributes	Diaa, N. M.,	2022	To examine AR's impact on customer brand engagement	Augmented Reality (AR)	Empirical study using surveys	AR enhances engagement through interactive experiences	Emphasizes AR as a critical tool for brand engagement in e-commerce
The Real Deal with Virtual and Augmented Reality	Bellini, H.	2024	Market analysis of VR/AR potential and investment opportunities	VR, AR	Industry analysis, market research	Significant growth potential in VR/AR markets with applications across multiple sectors	High - Current market perspective on VR/AR adoption
Augmented Reality Magic Mirror in the Service Sector	El-Shamandi, A.K., Ambika, A. & Belk, R.	2023	Examine the AR magic mirror's impact on experiential consumption	AR, magic mirror technology	Qualitative research, experiential analysis	AR magic mirrors enhance self-perception and experiential consumption in	High - Consumer experience with AR technology

						service environments.	
Selling Mode Selection and AI Service Strategy	He, P., Wang, T.Y., Mardani, A., Wang, X.J., & Chen, Z.S.	2024	Optimize AI service strategies in e-commerce platforms	AI, e-commerce platforms	Mathematical modeling, optimization algorithms	AI service integration significantly improves platform performance and seller outcomes.	High - AI integration in e-commerce strategy
Virtual Reality Through Customer Journey	Hollebeek, L.D., Clark, M.K., Andreassen, T.W., Sigurdsson, V. & Smith, D.	2020	Framework development for VR integration across customer journey	VR	Conceptual framework development	VR can be strategically integrated at multiple customer journey touchpoints	High - Strategic VR implementation guidance
Role of Augmented Reality in Redefining E-tailing	Jayaswal, P. & Parida, B.	2023	Comprehensive review of AR applications in online retail	AR	Literature review, research agenda development	AR transforms e-tailing through enhanced visualization and interaction capabilities	High - Comprehensive AR in retail overview
Shopping in Virtual Reality: Consumer Experience	Lau, K.W. & Lee, P.Y	2019	Study consumer shopping experience in stereoscopic VR environments	Stereoscopic VR	Experimental study, user experience testing	VR shopping environments provide immersive experiences but require optimization for practical use	High - Direct VR shopping experience research
Technology Visibility and Virtual Fitting Rooms	Lee, H., Xu, Y. & Li, A.	2020	Cross-cultural comparison of VFR adoption between Chinese and Korean consumers	Virtual fitting rooms (VFR)	Cross-cultural survey study	Cultural differences significantly impact VFR technology adoption and usage patterns	High - Cultural factors in VR adoption
Experiencing Immersive Virtual Reality in Museums	Lee, H., Jung, T.H., Tom Dieck, M.C., & Chung, N.	2020	Examine VR implementation in museum environments	Immersive VR	User experience study, behavioral analysis	VR enhances museum experiences through increased engagement and educational value	Medium - VR user experience insights
Shopping in Virtual Reality: Literature Review	Xi, N. & Hamari, J.	2021	Comprehensive literature review of VR shopping research	VR	Systematic literature review	VR shopping research is emerging with significant potential but requires more empirical studies	High - Comprehensive VR shopping overview
Artificial Intelligence and Virtual Worlds	Petrović, V.M.	2018	Explore AI integration with virtual world technologies	AI, virtual worlds	Technical analysis, future projections	AI-powered virtual environments will approach human-level interaction capabilities	Medium - AI and virtual world convergence
Impact of AI on Business Growth	Rubab, S.A.	2024	Analyze AI impact on business	AI	Conference research, business	AI significantly drives business growth across	Medium - General AI business

			growth and sustainability		analysis	multiple sectors and applications	impact
Four-Dimensional Shopping Mall VR Optimization	Shuai, H.H., Li, Y.H., Feng, C.C., & Peng, W.C.	2018	Optimize group shopping experiences in VR environments	VR	Algorithm development, optimization modeling	VR shopping environments can be optimized for group experiences through advanced algorithms	Medium - VR shopping optimization
VR Shop: Mobile Interactive Virtual Shopping	Speicher, M., Cucerca, S. & Krüger, A.	2017	Develop mobile VR shopping environment combining online/offline benefits	Mobile VR	Prototype development, user testing	Mobile VR shopping combines online convenience with offline experiential benefits	High - Mobile VR shopping implementation
Sense of Presence in VR Fashion Show	Suryani, Y., Ayu, M.A. & Wahyuni, M.J.	2020	Measure presence sensation in VR fashion show experiences	VR 360° video	Experimental study, presence measurement	VR fashion shows create strong sense of presence enhancing viewer engagement	Medium - VR fashion show experience
Personalizing 3D Virtual Fashion Stores	Wu, J., Joo, B.R., Sina, A.S., Song, S. & Whang, C.H.	2022	Develop modular approach to personalizing 3D virtual fashion retail	3D virtual stores	Action research methodology	Modular personalization significantly enhances 3D virtual fashion store effectiveness	High - Personalization in virtual retail
Experiential AR/VR Consumer Framework	Zarantonello, L. & Schmitt, B.H.	2022	Develop consumer and service framework for experiential AR/VR	AR/VR	Framework development, theoretical analysis	AR/VR experiences require comprehensive framework considering consumer and service perspectives	High - AR/VR experience framework
How to Engage Fashion Retail with VR	Xue, L., Parker, J.C., & Hart, C.	2019	Consumer perspective on VR engagement in fashion retail	VR	Consumer research, engagement analysis	VR engagement in fashion retail requires consumer-centered approach for success	Medium - VR fashion retail engagement
AR Technology for E-Commerce Effectiveness	Yim, M.Y.C., Chu, S.C., & Sauer, P.L.	2017	Evaluate AR technology effectiveness from interactivity and vividness perspective	AR	Experimental design, effectiveness measurement	AR technology significantly enhances e-commerce through increased interactivity and vividness	High - AR effectiveness in e-commerce
AI Recommendation Engine	Amazon	2024	Enhance customer experience through personalized product recommendations	Machine learning algorithms, recommendation systems, collaborative filtering	Real-time data analysis, customer behavior tracking, algorithmic optimization	Significant increase in customer engagement and sales conversion rates	High - Industry standard for e-commerce personalization

AI Chatbots in Customer Service	Gartner® Magic Quadrant™	2024	Evaluate AI chatbot solutions for enterprise customer service	Conversational AI, natural language processing, automation platforms	Vendor assessment, capability analysis, market positioning	Market leadership identification and technology capability benchmarking	High - Enterprise AI chatbot selection guidance
AI Chatbot Implementation	H&M	2024	Improve customer service efficiency and provide 24/7 support	Conversational AI, natural language processing, customer service automation	Customer service integration, real-time support, stock update automation	Enhanced customer satisfaction and reduced response times	High - Fashion retail customer service automation
Dynamic Pricing Strategy	Macy's	2024	Optimize pricing strategies using AI for revenue maximization	Dynamic pricing algorithms, market analysis AI, demand forecasting	Real-time price optimization, competitor analysis, demand-based pricing	Improved revenue and enhanced inventory management efficiency	High - Retail pricing optimization model
Personalized Experiences in Retail	McKinsey	2024	Research and analyze personalization impact on retail performance	AI personalization engines, customer analytics, behavioral analysis	Industry research, case study analysis, performance measurement	Demonstrated significant ROI from AI-driven personalization initiatives	High - Strategic personalization implementation guidance
AI Ethics Advisory Board	Microsoft	2024	Establish responsible AI development and deployment standards	AI governance frameworks, ethical AI principles, compliance systems	Policy development, stakeholder engagement, standards implementation	Comprehensive responsible AI standards and governance framework	Medium - AI ethics and governance best practices
AI and AR in Retail	Nike	2024	Enhance shopping experience through AI and AR integration	Artificial intelligence, augmented reality, mobile applications	Customer experience enhancement, virtual try-on systems, personalized recommendations	Improved customer engagement and enhanced shopping experience	High - AR/AI integration in athletic retail
Virtual Artist App	Sephora	2024	Provide virtual makeup try-on experiences for customers	Augmented reality, computer vision, mobile app technology	AR beauty application, virtual try-on features, customer engagement tools	Increased customer engagement and reduced product return rates	High - Beauty industry AR implementation leader
AI-Powered Marketing Strategy	Starbucks	2024	Personalize marketing campaigns and optimize customer engagement	AI marketing platforms, customer data analytics, predictive modeling	Customer segmentation, personalized offers, predictive analytics	Enhanced customer loyalty and improved marketing campaign effectiveness	High - Food service AI marketing optimization
AI Sales Analytics	Target	2024	Improve sales performance through advanced analytics	Sales analytics AI, predictive modeling, business intelligence	Data-driven decision making, sales forecasting, performance optimization	Enhanced sales insights and improved business decision-making processes	Medium - Retail sales analytics implementation
Sustainable Supply Chain with AI	Walmart	2024	Optimize supply chain sustainability using AI	Supply chain AI, sustainability analytics,	Environmental impact analysis, supply chain	Improved sustainability performance and supply	High - AI-driven sustainability in retail

			technologies	optimization algorithms	optimization, sustainability metrics	chain efficiency	operations
AI Inventory Management System	Zara	2024	Streamline inventory management for fast fashion retail	Inventory management AI, demand forecasting, supply chain optimization	Real-time inventory tracking, automated reordering, demand prediction	Reduced inventory waste and improved stock availability	High - Fast fashion inventory optimization model
Virtual fashion experiences in virtual reality fashion show spaces	Kim, S. J.	2023	To explore consumer experiences in VR-based fashion environments	Generative AI, AI-driven personalization	Empirical study (survey-based, psychological analysis)	VR enhances immersion, emotional engagement, and brand perception	Highlights VR's role in creating personalized, immersive experiences that strengthen emotional connection and influence consumer decisions.
The Role of Generative Artificial Intelligence in E-Commerce: Trends, Challenges, and Opportunities	Israfilzade, K.	2025	To examine the role of generative AI in transforming e-commerce, including opportunities and risks	Generative AI, AI-driven personalization	Conceptual analysis/literature review	Generative AI enhances personalization, automation, and content generation; challenges include ethics and data privacy	Demonstrates how generative AI enables personalized content, recommendations, and communication, increasing engagement and competitive advantage.
Augmented Reality Shopping Experiences: A Review of Retail Immersion Technologies and Outcomes	Umezurike, S. A., Akinrinoye, O. V., Kufile, O. T., Onifade, A., Otokiti, B. O., & Ejike, O. G.	2024	To review AR technologies and their impact on retail experiences	Augmented Reality (AR)	Systematic literature review	AR improves engagement, purchase intention, and decision-making	Shows that AR enables personalized product interaction and visualization, reducing uncertainty and increasing purchase confidence.
Starbucks Deep Brew AI Solution Effect On Long-Term Strategy Implementation	Yang, W.	2024	To analyze the impact of AI on Starbucks' strategy	Artificial Intelligence (AI), Machine Learning	Case study / qualitative analysis	AI improves personalization, operational efficiency, and decision-making	Shows how AI uses customer data to deliver personalized offers and experiences, strengthening loyalty and long-term advantage.
Augmented Reality in Retail: Revolutionizing Customers' Shopping Experience	Kakkar, M., & Marwaha, A.	2024	To investigate how AR transforms retail shopping experiences	Augmented Reality (AR)	Conceptual + secondary data analysis	AR enhances interactivity, reduces uncertainty, and improves customer satisfaction	Highlights AR's role in interactive personalization, enabling tailored product engagement that boosts

							satisfaction and perceived value.
Artificial intelligence in supply chain management: A systematic literature review of empirical studies and research directions	Culot, G., Podrecca, M., & Nassimbeni, G.	2024	To review empirical research on AI in supply chain management	Artificial Intelligence (AI), Machine Learning, Predictive Analytics	Systematic literature review	AI improves forecasting, inventory management, and efficiency	Shows how AI enables demand-driven supply chains that align inventory and logistics with individual customer needs.
Artificial Intelligence in E-Commerce: A Comparative Analysis of Best Practices Across Leading Platforms	Papastamoulou, P., & Antonopoulos, N.	2025	To compare AI applications across major e-commerce platforms	Artificial Intelligence (AI), Machine Learning, Recommendation Systems	Comparative analysis / case-based research	Identifies best practices in personalization, logistics, and customer engagement	Illustrates how top platforms leverage AI for personalized targeting, recommendations, and engagement throughout the customer journey.
Revolutionizing retail: The synergy of AI and AR	Gajjar, T.	2024	To explore the combined impact of AI and AR in retail	Artificial Intelligence (AI), Augmented Reality (AR)	Conceptual research/literature synthesis	AI + AR increases sales, personalization, and immersive experiences	Demonstrates how the integration of AI and AR creates fully immersive, adaptive personalization environments, where both content (AI-driven) and experience (AR-enabled) are tailored to individual users

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