

EXPLORING THE APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN E-COMMERCE AND ITS LEGAL LANDSCAPE

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"Artificial intelligence has the potential to revolutionize e-commerce by personalizing experiences, predicting consumer behaviour, and enhancing customer service. Embracing AI in e-commerce isn't just about innovation; it's about staying competitive in a rapidly evolving landscape." - Jeff Bezos

ABSTRACT

Artificial Intelligence (AI) is revolutionizing various sectors, including e-commerce, with its transformative potential. Despite being in its early stages of development, AI is reshaping business operations, albeit primarily adopted by large corporations due to its complexity and infrastructure requirements, resulting in limited public awareness of its applications in e-commerce. By synthesizing research conducted across various disciplines such as e-commerce, marketing, information systems, and management, the study endeavours to narrow the divide among technological advancements and practical applications in e-commerce. Findings underscore the prevalent utilization of AI subsets such as chatbots, voice assistants, personalization, recommendation systems, and automation in e-commerce, with projections indicating significant growth potential as AI technology evolves. Moreover, the study emphasizes the importance of exploring the practical implications of AI in e-commerce to gain a comprehensive understanding of its functionality. Legal structures in India, such as the Information Technology Act and upcoming regulations like the Personal Data Protection Act, strive to tackle challenges linked with the implementation of AI, guaranteeing ethical and accountable utilization. Given the rapid expansion of the e-commerce sector, effective navigation of the evolving legal environment is crucial for businesses. Comprehending the legal structure and enforcing tactics for strong management of risks are imperative for ensuring continuous growth and achievement. India's initiatives to regulate AI and protect consumer interests underscore the importance of ongoing monitoring of legal developments to align laws with technological advancements, balancing innovation with individual rights to unlock AI's full potential in the e-commerce domain. This research aims to achieve several objectives for grasping knowledge about role and implications of AI in the e-commerce domain. Firstly, it seeks to coordinate with a comprehensive review of prevailing publications surrounding the applications about AI in e-commerce, exploring how AI technologies are currently utilized and their potential influence on industry. Secondly, the research focuses on analysing the legal landscape governing the deployment in AI in e-commerce, with a particular focus on Indian regulatory frameworks. By examining existing laws and

regulations, the research intends to provide insights into the legal considerations and challenges faced by e-commerce businesses employing AI technologies. Thirdly, the study seeks to assess the practical implications of AI in e-commerce, evaluating its potential effects on various aspects of commercial processes and consumer experiences. This analysis intends to explore the opportunities and challenges associated with AI adoption in the e-commerce sector. Lastly, the research aims to emphasize the significance of effective navigation of the legal environment and the implementation of robust risk management strategies for ensuring sustained growth and success in the e-commerce industry. By emphasizing the significance of legal compliance and risk mitigation measures, the study aims to provide valuable insights for e-commerce businesses seeking to leverage AI technologies effectively while ensuring ethical and responsible practices.

Keywords: *Artificial Intelligence, E-Commerce, Consumer Behaviour, Technological Advancements, Regulatory Frameworks*

INTRODUCTION

The development of Artificial Intelligence (AI) spans approximately six decades. Characterized as the craft of developing machines capable of executing tasks that typically necessitate human intelligence,¹ AI has emerged as a transformative technological advancement impacting various facets of modern life. Alongside other disruptive technologies like the Internet of Things (IOT) and big data, AI has catalysed significant changes across households, businesses, and professional domains, fundamentally altering daily operations. AI's reach extends beyond traditional boundaries, permeating diverse sectors including education, banking, healthcare, and finance, thereby benefiting numerous industries. Regarded as the future of society, AI has seamlessly integrated into all spheres of work, driven by the momentum of Industry 4.0.² E-commerce, in particular, has leveraged AI to open fresh opportunities for customer interaction and experience. Beyond its role as a platform for buying and selling goods and services, e-commerce has expanded its offerings to include entertainment options such as video streaming and music. Through AI integration, e-commerce platforms have honed their capabilities, enhancing customer tracking, lead generation, and overall shopping experiences. Virtual assistants like Apple's Siri, Amazon's Alexa, and Google Home exemplify the successful application of AI-enabled chatbots in resolving shopping-related queries, underscoring AI's transformative potential in e-commerce. Employing techniques such as machine learning, robotics, skilful techniques, sensory nexus, excavating facts and statistics, and language processing, and computer vision, e-commerce endeavours to achieve unparalleled levels of accuracy, flexibility, and productivity.³ The rapid proliferation of AI-enabled systems within organizations reflects the

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1. Kurzweil. (1992, January 30). *The Age of Intelligent Machines*. MIT Press (MA). http://books.google.ie/books?id=SI1QAAAAMAAJ&q=The+age+of+intelligent+machines&dq=The+age+of+intelligent+machines&hl=&cd=1&source=gbs_api
 2. Verma, Sharma, Deb, & Maitra. (2021, January). Artificial intelligence in marketing: Systematic review and future research direction. *International Journal of Information Management Data Insights*, 1(2), 100002. DOI: <https://doi.org/10.1016/j.ijime.2020.100002>
 3. Turban, Outland, King, Lee, Liang, & Turban. (2017, October 13). Intelligent (Smart) E-Commerce. In *Electronic Commerce 2018* (pp. 249–283). Springer. DOI: https://doi.org/10.1007/978-3-319-58715-8_7

increasing adoption of automation to revolutionize e-commerce activities. The widespread use of smart devices, particularly smartphones, has necessitated the evolution of e-commerce platforms, with AI playing a pivotal role in developing intelligent e-commerce solutions. This paper aims to provide an overview of published research data on the function of AI and its subsets in e-commerce. Focusing on three key objectives - presenting the current status of AI technology in e-commerce, describing the usability of different AI subsets, and evaluating the extent of AI's displacement of human intervention - this study seeks to elucidate the evolving landscape of AI application in e-commerce. This paper thoroughly investigates using a narrative literature review method, previous research in marketing/e-commerce, decision sciences, and computer science to identify emerging themes and draw meaningful conclusions. By bridging the disparity among technological functionality and e-commerce operations, this study aims to furnish holistic understanding of AI's impact on e-commerce.⁴ Through methodologies for conducting literature reviews, defining artificial intelligence and its subsets, and outlining their application in e-commerce, this paper aims to contribute to the ongoing discourse surrounding AI in e-commerce. It concludes with discussions, implications, and suggestions for forthcoming investigations, whereas acknowledging potential limitations and charting pathways for further exploration.⁵

I. ARTIFICIAL INTELLIGENCE

The term artificial intelligence (AI) was coined by John McCarthy in 1956 during the inaugural academic conference dedicated to the subject.⁶ AI, a branch within computer science, seeks to replicate human-oriented tasks like problem-solving, decision-making, and reasoning. Initially considered as a collection of "clever tricks" in the realm of information processing, AI has evolved into an integral component across diverse technological domains, incorporating aspects of human intelligence within its functions.⁷ AI aims to comprehend the degree to which machines can effectively perform tasks, leveraging algorithms grounded in big data analysis. Operating in the domain of human intellect, AI strives to improve human capacities instead of entirely replacing them. Winston suggested that a machine can be deemed intelligent when its performance mirrors that of a human or when it replicates human thought processes.⁸ AI encompasses the emulation of human intelligence, emotion, intuition, tacit knowledge, and personalized intelligence. It integrates intelligent technologies that mimic the workings of the human brain, leading to the development of robots, image recognition, speech recognition, and more. Advancements in technologies such as the Internet

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4. Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. In *Health information and libraries journal*, 26(2), 91–108. DOI: <https://doi.org/10.1111/j.1471-1842.2009.00848.x>
 5. Bawack, R. E., Wamba, S. F., Carillo, K. D. A., & Akter, S. (2022, March). Artificial intelligence in E-Commerce: a bibliometric study and literature review. *Electronic Markets*, 32(1), 297–338. DOI: <https://doi.org/10.1007/s12525-022-00537-z>
 6. Smith, McGuire, Huang, & Yang. (2006, December). *The History of Artificial Intelligence*. courses.cs.washington.edu. Retrieved November 12, 2022 <https://courses.cs.washington.edu/courses/csep590/06au/projects/history-ai.pdf>
 7. Andrew, A. M. (2006, August 1). An evolutionary view of innovation. *Kybernetes*, 35(7/8), 967–971. DOI: <https://doi.org/10.1108/03684920610675021>
 8. Winston. (2017, May 30). On Computing Machinery and Intelligence. In *Philosophical Explorations of the Legacy of Alan Turing* (pp. 265–278). Springer. DOI: https://doi.org/10.1007/978-3-319-53280-6_11

of Things (IoT), big data, and cloud computing have the potential to propel hyper-automation and hyper-connectivity, signalling the beginning of the fourth industrial revolution.⁹

- *Machine Learning (ML)*, a notable portion of AI, enables computers that will gain insights from information unaccompanied by direct programming. It entails analysing statistically significant patterns within datasets to forecast and support decision-making. ML algorithms adapt to environmental changes and establish their own regulations grounded in available data, aiming for precise predictions of future events.
- *Robotics*, another subset of AI, involves crafting anthropomorphic mechanical devices known as robots. AI-enabled robots are equipped with sensory apparatus and artificial brains, enabling autonomy and learning from their surroundings. Expert Systems replicate human decision-making processes based on rules, integrating human expertise within machines to support accurate decision-making.
- *Artificial Neural Networks (ANNs)* mimic the learning capabilities of the human brain, processing information through interconnected nodes. Data Mining entails deriving significant patterns from large databases, facilitating trend analysis, decision-making, and innovation.
- *Natural Language Processing (NLP)* enables human-computer interaction by understanding and generating natural language commands. Computer Vision replicates the human visual system by extracting information from images to serve various purposes.

Integrating AI with other technologies such as machine learning, pattern identification, computer graphics, virtual reality, and augmented reality enhances its capabilities and practical applicability. AI-driven innovations have the potential to revolutionize diverse sectors, spanning from healthcare to education, thereby contributing to societal advancement.

II. ELECTRONIC COMMERCE

Electronic commerce, often referred to as e-commerce, stands as a cornerstone of contemporary trade and transactions conducted electronically. Understanding electronic commerce entails grasping the idea of "commerce," referred to as substantial exchange of goods and services. Thus, electronic commerce embodies the extensive exchange of goods and services facilitated through electronic platforms.¹⁰ The editor-in-chief of the International Journal of Electronic Commerce, characterizes e-commerce as the sharing of business information, maintenance of business relationships, and execution of business transactions using telecommunication networks. E-commerce revolutionizes organizational processes by transitioning into a fully electronic realm, characterized by paperless transactions and automated tasks, largely facilitated by Electronic Data Interchange (EDI).¹¹ EDI facilitates

9. Soni, N., Sharma, E. K., Singh, N., & Kapoor, A. (2020). Artificial Intelligence in Business: From Research and Innovation to Market Deployment. *Procedia Computer Science*, 167, 2200–2210. DOI: <https://doi.org/10.1016/j.procs.2020.03.272>

10. Tassabehji, R. (2003, May 2). Introduction. In *Applying E-Commerce in Business* (pp. 3–30). SAGE. http://books.google.ie/books?id=I5kq6ZnbLRwC&printsec=frontcover&dq=In+Applying+E-commerce+in+Business&hl=&cd=1&source=gbs_api

11. Bajaj, & Nag. (2005, September 1). *E-Commerce: The Cutting Edge of Business* (2nd ed.). McGraw-Hill Education (India) Pvt. Limited, 2005.

the electronic exchange of business information, streamlining interorganizational transactions through computerized means. The fundamental technological components of e-commerce encompass EDI, Internet, Intranet, Extranet, email, web development technology, and databases. The introduction of network technology brought a significant shift in e-commerce, particularly with the advent of the Internet, which propelled e-commerce beyond basic buying and selling. The Internet has broadened the scope of e-commerce to include online marketing, payment processing, delivery services, after-sales support, legal assistance, and business collaborations. E-commerce provides round-the-clock shopping convenience, transcending geographical limitations, and presenting by its very nature to such an extent like a practical shopping solution. Nevertheless, within current landscape, where online shopping experiences have evolved, there exists a critical need for advanced mechanisms to retain existing customers and attract new visitors to e-commerce platforms.

Creative and captivating website content plays a pivotal role in engaging potential customers and enriching their shopping journey. Efficient search mechanisms and user-friendly website navigation are essential for seamless browsing and decision-making processes.¹² Personalization is another crucial aspect of e-commerce, enhancing customer loyalty by tailoring shopping experiences based on past interactions and purchase history. Recommendation systems, adaptable and adaptive alike, contribute to personalized shopping experiences by offering items tailored to suit the tastes of consumers and purchase intentions. Mobile commerce (m-commerce) has emerged as a significant facet of e-commerce, enabling customers to shop and transact conveniently via mobile devices while on the go. E-commerce transcends m-commerce to encompass other platforms, such as social media, offering social connectivity and access to enticing deals. It lays the groundwork and fosters an ecosystem conducive to e-business activities, bridging the divide between physical and digital retail channels. In today's retail landscape, characterized by the integration of physical and digital channels, understanding consumer behaviour provides a strategic advantage. The integration of technology in retail practices enables retailers to acquire understanding of consumer inclinations and purchasing behaviours, thereby enhancing the overall e-commerce experience.

III. ARTIFICIAL INTELLIGENCE IN E-COMMERCE

Artificial intelligence (AI) has triggered substantial changes in the realm of e-commerce, fundamentally altering how consumers interact with shopping platforms. Even though e-commerce existed before the advent of AI technology, marketing tasks like displaying products, selecting items, and making purchases relied heavily on manual human intervention. However, as global advancements reshape consumer behaviours, retailers find themselves compelled to adopt recent technological innovations to stay relevant.¹³ The

12. Kumar, A., & Kashyap, A. K. (2018, March 12). Leveraging utilitarian perspective of online shopping to motivate online shoppers. *International Journal of Retail & Distribution Management*, 46(3), 247–263. DOI: <https://doi.org/10.1108/ijrdm-08-2017-0161>

13. Kumar, V., Rajan, B., Venkatesan, R., & Lecinski, J. (2019). Understanding the Role of Artificial Intelligence in Personalized Engagement Marketing. *California Management Review*, 61(4), 135-155. DOI: <https://doi.org/10.1177/0008125619859317>

emergence of AI has profoundly influenced consumer lifestyles and shopping habits, introducing a new era of self-sufficient e-commerce experiences. With the widespread availability of high-speed internet and an increase in internet users, online traffic has surged, creating a demand for effective management of large datasets. AI-driven technologies play a pivotal role in managing and analysing the vast amounts of data generated from online consumer activities, facilitating more efficient decision-making processes.¹⁴ AI's impact extends beyond data management, encompassing various aspects of e-commerce operations, including customer support, website navigation, and mitigating information overload. Tools like chatbots, voice assistants, facial recognition systems, and augmented reality have become integral features of the e-commerce landscape, enhancing customer engagement and satisfaction.¹⁵ Major retailers like IKEA and Amazon have embraced AI, setting a precedent for others in the industry. Furthermore, AI has significantly influenced logistics and supply chain management, leveraging consumer data to shape purchasing behaviours through advanced learning techniques. Chatbots, powered by machine learning and processing of natural language, provide round-the-clock customer support, enhancing engagement and service efficiency. Voice assistants like Amazon's Echo and Google Home enable hands-free shopping experiences, revolutionizing search patterns and enhancing the overall shopping journey.¹⁶ Personalization is a central focus in e-commerce, where AI-driven recommendation systems analyse consumer preferences to offer tailored product suggestions. Expert systems play a vital role in decision-making, adapting landing pages and providing proactive recommendations based on past purchases. Automation, another critical aspect of AI in e-commerce, streamlines the purchasing process by presenting personalized options, reducing human effort, and increasing convenience. AI-equipped robots are being more and more incorporated into a variety of business functions, simplifying tasks, enhancing customer experiences, and automating transport and delivery operations. In conclusion, integrating AI into e-commerce has transformed shopping experiences, empowering retailers to meet evolving consumer demands, personalize interactions, and optimize operations through innovative technological solutions.¹⁷

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14. Bradlow, E. T., Gangwar, M., Kopalle, P., & Voleti, S. (2017, March). The Role of Big Data and Predictive Analytics in Retailing. *Journal of Retailing*, 93(1), 79–95. DOI: <https://doi.org/10.1016/j.jretai.2016.12.004>
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 16. Hasan, R., Shams, R., & Rahman, M. (2021, July). Consumer trust and perceived risk for voice-controlled artificial intelligence: The case of Siri. *Journal of Business Research*, 131, 591–597. DOI: <https://doi.org/10.1016/j.jbusres.2020.12.012>
 17. Kashyap, Sahu, & Kumar. (2022, December 31). ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS IN ECOMMERCE - A REVIEW ANALYSIS AND RESEARCH AGENDA. *Journal of Theoretical and Applied Information Technology*, 100 No. 24, 7347–7365. <https://www.jatit.org/volumes/Vol100No24/12Vol100No24.pdf>

IV. REGULATORY FRAMEWORK FOR E-COMMERCE BUSINESSES IN INDIA

Over the past years, the ascent of e-commerce has witnessed the emergence of numerous platforms offering a wide range of services, from food delivery to retail products, all accessible to consumers. This exponential growth has prompted the Indian government to establish regulations and policies to oversee the E-commerce industry, with a focus on aspects such as data privacy, consumer security, transaction safety, and product quality.

i. Foreign Direct Investment (FDI):

Foreign Direct Investment denotes investments made by foreign entities in Indian companies. FDI policies are overseen by the Ministry of Commerce and Industry and the Department of Industrial Policy and Promotion in India. FDI can be conducted through either the 'Approval route,' requiring prior permission from the central government, or the 'Automated route,' allowing direct investment without prior approval. The FDI policy permits up to 100% investment in the marketplace model of E-commerce via the Automatic Route. However, some E-commerce businesses may present their inventory-based model as a marketplace model.

ii. Information Technology Act, 2000:

The Information Technology Act, 2000 (IT Act) oversees internet usage, cybercrime, and digital business in India. It acknowledges electronic contracts and digital signatures and is aligned with the Model Law of E-commerce adopted by UNCITRAL. The Act governs online conduct, covering issues such as e-contracts, transaction security, and digital signatures.

iii. Payment and Settlements Systems Act, 2007:

Under the Payment and Settlements Systems Act, E-commerce businesses must adhere to RBI regulations for online transactions and payments to operate as payment systems. Intermediaries accepting digital payments need to uphold an active Nodal Account to settle payments for sellers on their E-commerce platforms.

iv. Consumer Protection Act, 2019:

The Consumer Protection Act, 2019, oversees the E-commerce industry to protect consumer rights and address grievances. The Consumer Affairs Department, Distribution of Food and Public Essentials introduced the Regulations for E-commerce Consumer Protection established in 2021, intended to shield consumers from unjust business practices and efficiently address their concerns.

In summary, adherence to these regulations is crucial for E-commerce businesses operating in India to ensure transparency, security, and consumer satisfaction in the dynamic digital marketplace.¹⁸

V. LEGAL FRAMEWORK AND REGULATORY COMPLIANCE FOR AI WITHIN INDIA

As of now, India lacks in laws that are specifically dedicated to regulate artificial intelligence (AI). However, the government has shown apprehensions about the absence of such legislation. Recently, IT Minister Ashwini Vaishnaw stated that there are currently no

18. A&A. (2021, October 22). *Legal Requirements and Compliances for E-commerce Business in India*. www.ahlawatassociates.com. Retrieved November 25, 2022, from <https://www.ahlawatassociates.com/blog/legal-requirements-and-compliances-for-e-commerce-business-in-india/>

regulations for AI in India. He also highlighted the challenges associated with introducing provisions to regulate AI due to numerous moral and ethical considerations surrounding its development. The Indian government has established the Ministry of Electronics and Information Technology (MeitY) to address various aspects of technology governance. In a current scenario, India lacks laws specifically dedicated to AI. However, several existing legislation and regulatory measures govern various aspects of AI-related activities in the country. Below are some significant legal stipulations and regulations relevant to AI in India:

i. Information Technology Act, 2000:

The Information Technology Act, 2000 (IT Act) serves to be a primary legislation governing electronic transactions and digital governance in India. While it does not specifically mention AI, certain sections within the same legislation, such as Section 43A¹⁹, address issues related to data privacy and security, which are pertinent to AI systems handling sensitive personal information.

In the notable case of Justice K.S. Puttaswamy (Retd.) v. Union of India²⁰, India's Supreme Court acknowledged the privacy to be an essential right under the Indian Constitution. This ruling emphasizes on seriousness for protecting personal data from AI-based systems.

ii. Digital Personal Data Protection Act, 2023:

The Digital Personal Data Protection Act, 2023, aims to establish an extensive structure for protecting personal information. It introduces principles and obligations for entities processing personal data, including provisions addressing profiling and automated decision-making powered by AI algorithms.

iii. Intellectual Property Laws:

Existing intellectual property laws in India, such as the Indian Copyright Act, 1957, and the Patents Act, 1970, govern the protection of AI-generated content, inventions, and innovations. These laws address matters concerning copyright ownership, patentability, safeguarding IPR within the areas relating to AI.

iv. Consumer Protection Act, 2019

The Consumer Protection Act, 2019, safeguards consumer interests and addresses grievances associated with products and amenities, with those delivered via AI-driven systems. The Act

19. 43A. **Compensation for failure to protect data.** -- Where a body corporate, possessing, dealing or handling any sensitive personal data or information in a computer resource which it owns, controls or operates, is negligent in implementing and maintaining reasonable security practices and procedures and thereby causes wrongful loss or wrongful gain to any person, such body corporate shall be liable to pay damages by way of compensation to the person so affected.

Explanation. --For the purposes of this section, --

- i. "Body corporate" means any company and includes a firm, sole proprietorship or other association of individuals engaged in commercial or professional activities;
- ii. "reasonable security practices and procedures" means security practices and procedures designed to protect such information from unauthorized access, damage, use, modification, disclosure or impairment, as may be specified in an agreement between the parties or as may be specified in any law for the time being in force and in the absence of such agreement or any law, such reasonable security practices and procedures, as may be prescribed by the Central Government in consultation with such professional bodies or associations as it may deem fit;
- iii. "Sensitive personal data or information" means such personal information as may be prescribed by the Central Government in consultation with such professional bodies or associations as it may deem fit.

20. (2017) 10 SCC 1

guarantees safeguarding consumers against unjust business practices and have avenues for redressal in the event of disputes.

v. *Cybersecurity Regulations:*

Various cybersecurity regulations and guidelines issued by the government and regulatory authorities in India address cybersecurity concerns related to AI applications. These regulations aim to ensure the security and integrity of AI systems and protect against cyber threats and vulnerabilities.

vi. *National E-Governance Plan:*

The National E-Governance Plan focuses on digitally empowering Indian society by providing online government services. AI innovations are becoming incorporated into different government departments to enhance efficiency and citizen services.

vii. *AIRAWAT:*

Niti Ayog recently launched AIRAWAT, an AI Research, Analytics, and Knowledge Assimilation platform, to tackle the evolving requirements of AI in India.

It is crucial to recognize that legal landscape surrounding AI in India is evolving, and there may be future developments in terms of dedicated AI legislation and regulatory frameworks to address emerging challenges and opportunities in this field.

VI. GAPS IN THE LEGAL FRAMEWORK OF AI IN INDIA

The Indian legal system faces several challenges concerning AI, including:

i. *Lack of Comprehensive AI-Specific Legislation:*

India currently lacks dedicated laws specifically addressing AI. While certain provisions in existing legislation, like the Information Technology Act, 2000, and the forthcoming Personal Data Protection Act, 2023, touch upon AI-related matters, they do not comprehensively tackle the unique complexities of AI technologies.

ii. *Absence of Clear and Enforceable Ethical Guidelines:*

The absence of well-defined and enforceable ethical guidelines for AI development and usage in India presents a challenge. Without comprehensive guidelines, there is a risk of inconsistent practices and potential misuse of AI systems.

iii. *Bias and Discrimination Concerns:*

AI systems may unintentionally perpetuate biases and discrimination due to their reliance on historical data reflecting societal biases. The current legal framework in India does not explicitly address bias and discrimination issues in AI algorithms, leaving room for potential discriminatory practices.

iv. *Accountability and Liability Challenges:*

The complexity and autonomy of AI systems pose difficulties in assigning liability in cases of harm or errors caused by these systems. Determining responsibility for AI-related incidents or accidents can present legal challenges under existing laws.

v. *Lack of Sufficient Regulatory Oversight:*

While the Personal Data Protection Act, 2023, proposes the establishment of a Data Protection Authority, a dedicated regulatory authority is required to comprehensively oversee AI technologies. The absence of a specific regulatory authority for AI may lead to fragmented oversight and limited enforcement of AI-related regulations.

vi. *Intellectual Property Rights (IPR) Ambiguity:*

Existing intellectual property laws in India may not adequately address the protection of AI-generated content, inventions, and innovations. Questions regarding copyright ownership and the patentability of AI-generated works can create ambiguity and uncertainty, leading to attribution issues.²¹

CONCLUSION

In summary, AI emerged as a revolutionary influence across different segments, encompassing online commerce. While AI is still in its nascent phase of development, its potential to revolutionize business operations is evident. Despite the challenges posed by its complexity and infrastructure requirements, AI-driven e-commerce transactions are primarily adopted by large corporations, with limited public awareness of AI applications. This study performed an exhaustive examination of existing literature dealing with AI in e-commerce, offering insights into the operational aspects of various AI subsets within this domain. By synthesizing studies from a variety of disciplines including e-commerce, marketing, information systems, and management, the study aimed to bridge the gap between technological advancements and practical applications in e-commerce. The findings underscored the prevalent utilization of AI subsets like chatbots, voice assistants, personalization, recommendation systems, and automation in e-commerce. As technology on artificial intelligence progresses, its acceptance and integration are projected to experience substantial growth, potentially reshaping the e-commerce landscape. Moreover, the study underscored requirement of exploring the real-world effects of AI in e-commerce to obtain a comprehensive understanding of its functionality. Legal frameworks in India, including the Information Technology Act and forthcoming regulations like the Personal Data Protection Act, endeavour to tackle the difficulties linked with AI implementation, ensuring its ethical and responsible usage. Understanding the framework of laws and regulations and implementing robust strategies for management of risk are crucial for ensuring the sustained growth and success of e-commerce enterprises. India's initiatives to regulate AI and protect consumer interests highlight the importance of ongoing monitoring of legal developments to align laws with technological advancements. Achieving a balance between innovation and individual rights will be pivotal in unlocking the full potential of AI in the e-commerce domain.

21. Saraswat. (2023, August 15). Laws governing AI in India: Everything You Should Know. *Legal Service India E-Journal*. <https://www.legalserviceindia.com/legal/article-13111-laws-governing-ai-in-india-everything-you-should-know.html>