International Journal of Information Technology and Management
Vol. 20, Issue No. 1, February-2025, ISSN 2249-4510

DOI: https://doi.org/10.29070/rtspsx20

Role, Challenges and Opportunities in Adoption of Artificial Intelligence in E-Commerce

Dr. Deval G. Vyas [1] *

1. M.com., M.Phil., Ph.D, Associate Professor, Swami Vivekanand University, Sagar, Madhya Pradesh, India
devalv@yahoo.in

Abstract: The field of computer science known as artificial intelligence (AI) focusses on creating smart machines that can mimic human intellect in certain situations. Learning, reasoning, and self-correction are the three main elements of artificial intelligence programming. In order to learn about their consumers and satisfy their expectations, many online retailers use AI these days. The most widely used branch of artificial intelligence, machine learning, can sift through the mountains of data collected by e-commerce sites and draw conclusions that may help with things like reducing fraud, improving internal processes, and providing a better consumer experience. By analysing research publications from many sources, this study primarily seeks to uncover some important AI applications in E-commerce. According to the research, e-commerce businesses are increasingly investing in artificial intelligence (AI) to boost their efficiency and, therefore, their growth and success in recent years.

Keywords: Artificial Intelligence, E-Commerce, Business, Opportunities, Challenges, Regulations

X

INTRODUCTION

One of the most important factors in the development of online shopping has been artificial intelligence (AI). While artificial intelligence has been around for a while, 2023 will mark the beginning of its widespread use. [1] Many people believe that artificial intelligence (AI) presents a significant chance for businesses to overcome obstacles during this economic downturn, especially when it comes to e-commerce. Some immediate applications that online retailers may easily deploy include automating customer relationship management and improving the online purchasing experience with AI-based personalised suggestions. In this study, we will examine the potential applications of artificial intelligence (AI) in e-commerce, highlighting the advantages and disadvantages of this integration in a systematic way [2].

Both the ways in which companies function independently and the positions of their rivals are being impacted by the advent of AI in online commerce. It will also probably alter how people purchase online. Enhanced consumer insights and optimised operations are two ways in which businesses may reap the rewards of implementing artificial intelligence (AI) into their strategies [3]. However, concerns over the potential long-term effects on market dynamics and employment in the e-commerce sector are raised by this wave of AI integration. Labour management, reskilling, and efficiency are all threatened by AI's capacity to automate the tasks performed by many jobs. Although the immediate concern may be that industrial employment would be eliminated as a result of AI tools' enhanced efficiency, one might argue that the more probable result is a general uptick in activity. Companies will need to increase the amount of what they can accomplish better and/or quicker if they want to remain competitive as they grow more

efficient in their operations [4].

Additionally, advancements in AI for online shopping suggest a shift towards data-driven decision-making. Online retailers have data at their fingertips. The ability to effectively assess and use the data collected by these firms is something that may be greatly improved with the help of artificial intelligence systems [5]. This transition has made it more important than ever for businesses to have a solid infrastructure in place as well as standardised standards and procedures for data management and analysis in order to ensure the security and integrity of their data. The increasing complexity of AI systems highlights the vital need for accountability and transparency in their operations, especially with regard to the use and protection of client data. This data-related possibility does, however, present some significant difficulties of its own [6].

LITERATURE REVIEW

Javier Andreu-Perez (2018) [7] found that, Robotics-Related Artificial Intelligence. The K-NN algorithm has been used to develop a new artificial strategy for detecting plagiarism. This technique groups the string into clusters and finds words that are close to each other. One way to keep track of how many times a string appears in two different files is via a counter. The first step is to compare the file to the existing collection. The result is a collection of copied words consisting of the matching set of terms. Using this method, you may determine how often each duplicated word appears in your file. More than that, it determines what proportion of copied words match.

Jose Luis Ruiz Real (2021) [8] the "Artificial Intelligence in Business Economics Research: Trends and Future" showed. This research surveyed the current literature on AI in business, drew attention to the most important current developments, and suggested directions for further study. According to the results of this study, it is not out of the question to envision a future where research efforts centre on the development of specialised hardware for the application of AI solutions.

Bimalendu Pendy (2023) [9] "Role of AI in Business Management" was shown. Increased efficiency and productivity, enhanced accuracy and precision, and a better customer experience were some of the advantages of AI that this study looked at. The sales and marketing, supply chain management, customer support, and financial analysis processes are being swiftly revolutionised by AI, according to this study. Tools driven by AI may assist organisations in comprehending client demands, developing targeted marketing strategies, and enhancing consumer interaction.

Harikumar Pallathadka et.al (2023) [10] The researchers looked at the use of AI in banking, e-commerce, and company management. The E-Commerce, Corporate Management, and Financial Applications of Machine Learning and Artificial Intelligence were the Subjects of This Study. Machine learning and artificial intelligence have many applications in the fields of e-commerce, banking, and company management, as discussed in this article. The most popular uses include increasing sales, optimising profits, predicting sales, managing inventories, ensuring security, detecting fraud, and overseeing investment portfolios.

Rahul Pal (2022) [11] to the "Applications of Artificial intelligence in Company Management, E-Commerce and Finance" report. In this research, we looked at how ML and AI may improve e-commerce, company administration, and financial services. Forecasting, sales growth, inventory management, security,

fraud detection, and portfolio management are some of the most popular uses. The study's findings on AI and ML's applications in banking, company management, and online shopping. There are several common applications for this, including sales forecasting, security, fraud detection, inventory management, sales growth, profit maximisation, and portfolio management.

RESEARCH METHODOLOGY

The article argues that artificial intelligence (AI) will simplify our lives, but that with great power comes great responsibility; in this case, algorithms will make all of the important decisions for humans. In light of the OECD report's warnings regarding the algorithm's potential biases, negative effects on markets and societies worldwide, and the need to establish regulations to address these concerns, the designer was made more cognisant of these issues. E-Commerce businesses are using AI for a variety of purposes, including providing visit bot administrations, analysing customer comments, and providing individualised support to online shoppers. The development of innovative payment systems like sophisticated wallets has coincided with the expansion of financial services offered by the e-commerce, retail, and telecom sectors.

The research uses secondary data collected from several sources to show how AI makes it easy to efficiently and accurately acquire, analyse, and infer massive amounts of data. A user-centric search, voice-powered search, increased consumer recommendations, and combating false reviews are just a few ways that e-commerce leverages AI.

Recent research indicates that AI and e-commerce may work together for the benefit of both parties. The needs and desires of customers fluctuate over time, but advances in AI have allowed for the development of innovative approaches to tracking consumer spending habits and tailoring products to individual preferences. The report shows that big box stores are using AI to make their products more efficient and make more money. Artificial intelligence systems learn by taking in massive volumes of annotated training data, sifting through it for correlations and patterns, and then making predictions about what the future holds based on these patterns.

RESULTS AND DISCUSSION

The paper's thorough study explains all the possible applications of AI in E-commerce, including but not limited to the ones shown in Image 5. Following this in-depth examination, we can make sense of many important uses of AI in the e-commerce industry, including the following:

- **Chatbots in Action**

Chatbots allow online retailers to provide round-the-clock support to their clients. Chatbots are great since they can substitute people and help clients at any time of day or night when staff aren't accessible to do so. With the help of AI, e-Commerce chatbots can do more data-related tasks, and consumers may access more services.

The following are a few of the most important applications of chatbots:

i. When particular goods are temporarily out of stock, chatbots powered by AI may notify consumers and suggest alternatives. By responding to simple questions, they may also advise customers on what to

buy or inform them of when their orders will be delivered.

ii. Statistics show that 55% of buyers are looking for answers to basic product questions, and 64% of online shoppers want round-the-clock support that real people just can't provide. By integrating a simple frequently asked questions (FAQ) chatbot onto their website, businesses may potentially reduce customer support expenses by 30%. What's more, chatbots can even escalate difficult enquiries to human agents.

iii. Talking about customers who are easily sidetracked when shopping online and end up throwing out things they added to their cart, chatbots can remind them of these items and, in some instances, turn them into valuable leads for the business.

iv. When clients are unsure of what to purchase while shopping online, chatbots powered by artificial intelligence can carry on a natural conversation with them about their wants and interests, guiding them to the best products without requiring them to leave their comfortable environments. E-Bay shopping bots, for instance, act much like a seasoned salesperson by talking to buyers to find out what they want and then offering tailored suggestions. Customers are more likely to stick with a company whose efforts make them feel valued and appreciated.

· **In-Depth VR Training**

Using AI, businesses can create a plethora of virtual assistants that can advise consumers and ensure they get the best service possible while they purchase. Take Amazon's virtual assistant Alexa as an example; she allows users to search for items and services just by speaking to them, rather of having to type them all out on a computer. Furthermore, e-commerce businesses can also use AI to develop a new service: a virtual shopping mall. Customers can browse products, virtually try them on (perhaps with the help of an avatar they created), and then purchase them all with the simple motion of their phones. They may experience the joy of going shopping without leaving the comfort of their own houses thanks to this. Natural Language Processing (NLP) is the backbone of AI development towards its potential as a virtual assistant for e-commerce company consumers. This capability allows machines to understand human-entered text and respond appropriately.

Future versions of the AI-powered virtual assistant may be more powerful and designed with more sophisticated computational capabilities, allowing them to do many difficult tasks concurrently.

· **Image Recognition and Search**

When consumers see a product while online but are unsure of its name, our AI tool can help them decide. To do away with the requirement to know the exact terms to search for an item, e-commerce firms may use AI to provide a service where users can just point the camera at an item to get a description or similar suggestion. A fast, practical, easy, and stress-free shopping experience is available to customers since they can even submit a photo of a product and get relevant information about it or information about where to purchase it.

A Kissmetrics poll found that 93% of consumers consider visual assistance to be very significant when making a purchase. When businesses build up their online shop and website, they can utilise the same

visual AI help to guide prospective customers right to the products they want to purchase. Because there will be less obstacles for customers to overcome, they are more inclined to buy from the company's website and less likely to patronise its rivals in the same field. Businesses may reap several advantages from picture recognition powered by deep learning, including improved customer analytics, social media commerce capabilities, personalised search results, and much more. Marketing plans and campaigns that make good use of the data provided by picture recognition have the potential to boost their return on investment (ROI).

· **Market Research on Competitors**

To have a first-hand understanding of how other companies are working in the same circumstances, under the same market, with the same pool of customers, it is necessary for every e-business to monitor the competition. Nevertheless, while keeping an eye on whether rivals want to enhance our brand's potential, it's crucial to consider references from pricing fluctuations and other elements. It is essential to comprehend the client connection while assessing the competition for an online business or brand. In the end, it is these individuals whose purchases make your survival possible. This impression is shaped by the way products are shown and the relationships formed with consumers and those who may become consumers.

Actually, 94% of people who purchase online compare costs, according to a new survey by Intelligence Node. Retailers need to put money into rival price monitoring software so they can keep an eye on pricing moves throughout the eCommerce landscape and remain ahead of the competition. Competitive Monitoring provides insight into daily pricing variations via the use of Artificial Intelligence after analysing numerous internal and external elements. Considerations such as rival companies' prices, industry supply and demand, market placement, etc. By providing businesses with access to real-time pricing prediction analytics, Competitive Monitoring encourages price optimisation for merchants. Automatically tracking product price fluctuations among rivals in real-time and presenting this data to companies in an easy-to-understand dashboard should be the primary capabilities of any price monitoring software. In order to build competitive monitoring, you need to define your brand's positioning, find out how much your rivals are worth, and use the right tools to track their prices. An organisation may stay informed about major changes in the competitive environment with a well-implemented price monitoring plan. The strategy can provide information monthly, daily, or even in real-time. The advent of dynamic pricing technologies has made it feasible to see the inner workings of rival pricing strategies and tailor operations to match the specific needs of other companies.

· **Managing Inventory**

The goal of effective inventory management is to guarantee the timely and accurate availability of items by integrating logistics with supply chain management. Automating a large part of inventory management is possible with the help of artificial intelligence. To help company owners and warehouse workers with the day-to-day chores of inventory management, artificial intelligence offers important insights for organisations, such as patterns detected from analysed enormous amounts of data. An organisation may manage and enhance its inventory in addition to using modern technologies. Cost savings, happier customers, a more efficient supply chain, and more knowledgeable employees are just a few of the obvious advantages that will accrue from using inventory management strategies.

Data from 2020 shows that 45.1% of businesses have automated their warehouses, with 40.1% investing in creating AI solutions for inventory management. The term "Inventory Management" encompasses more than just the storage and delivery of goods; it also includes activities such as planning, regulating, and forecasting. Here, AI steps in to reduce the likelihood of inventory over- or understocking by means of technical solutions such as precise analysis and correlation of demand insights, the ability to detect and react to product-specific dynamic demand, and the consideration of location-specific demand.

- **Robots Empowered by AI to Enhance Warehouse Efficiency**

Automation is causing a shift in the e-commerce sector. Order picking and packaging, as well as inventory transportation across the plant, are just a few of the many human jobs that are being replaced by robots. Rather than being seen as a replacement for people, robots are now more often used to augment and support human workers, frequently leading to enhanced efficiency and output. Using robots driven by artificial intelligence is one of the most fascinating uses of warehouse robots. If you own an online store, you know how difficult warehouse operations may be. Online retailers have a lot on their plates between making sure customers get their orders quickly and efficiently and making the most of their warehouse space.

The logistics of a warehouse are not always easy to oversee. With thousands of goods coming in and going out, it may be tough to keep track of inventory and ensure orders are packaged and dispatched on time. Nonetheless, Amazon is working on some new gear that will make the task a lot simpler. To optimise warehouse operations, make the process more efficient, and reduce the need for human labour, the e-commerce giant is creating AI-powered robots. You would not believe the manner in which warehouse operations are being optimised by new robots driven by artificial intelligence. Modern warehouses make use of robotics. From the delivery trucks, robots move the goods to the shelves, and finally to the pick stations, where humans choose the right things for each client. The technology has improved warehouse efficiency and production, but it might be much better. An aisle-based system, in which human workers are responsible for physically transferring items from one spot to another, is an alternative to depending entirely on the robots system.

- **Online Retail Predictive Analytics**

The advent of predictive analytics in e-commerce has contributed to the growth of the global economy, as e-commerce has expanded worldwide. This technology is responsible for a wide range of tasks, including risk analysis, churn prevention, market analysis, demand forecasting, and more. In their pursuit of growth and operational efficiency, many firms are now concentrating on predictive analytics and its advantages.

Using predictive algorithms, online retailers may find out which things will sell well and which ones will not. In addition to assisting with inventory forecasting, this data may reveal whether goods are doing better in an online versus a brick-and-mortar setting.

Any business, from fledgling startups to multinational conglomerates, may benefit from predictive analytics in terms of increased productivity and efficiency. From enhancing supply chain efficiency to boosting income, the potential uses for predictive analytics are almost limitless.

In the wake of the outbreak, shoppers turned to online marketplaces to alleviate worries about their personal information and safety. Predictive analytics looks at customer purchase habits, payment methods, and browsing habits to find solutions to reduce or eliminate risks. When combined, predictive analytics and machine learning will allow e-commerce businesses to automate risk identification and prevention, as well as define criteria for it. Consumers will get the best results and suggestions from machine learning, and predictive analytics will make it possible to examine user data in real time.

· **Understanding Massive Data Sets and Optimising Websites**

Businesses store vast amounts of data, including information on their customers, their rivals' customers, and industry transactions overall. In a matter of seconds, robust marketing behavioural analytics tools can map the deluge of data from many sources, exposing patterns and insights that would otherwise remain hidden from human study. Using this mapping, businesses can better anticipate and prepare for customer actions at every stage of the journey. As an example, a business that specialises in outdoor clothing may learn when, where, and how a customer will be using their garment. Additional factors, such as gender and weather, allow them to provide suggestions that are both specific and tailored to the individual.

Developing a genuine emotional connection with clients may be achieved by catering to their wants and providing them with email marketing and content that will elicit a response. Artificial intelligence (AI) is also useful for site optimisation, which finds usability issues like these and lets you compare parts side by side to make the experience better. With the use of AI, e-commerce platforms can personalise their design, product catalogue, and brand identity for each consumer. Furthermore, it enables stores to swiftly pinpoint problem areas for consumers.

· **Using Watson's AI activities, the Home Shopping Network**

Watson artificial intelligence helped HSN transform data into useful consumer insights. For instance, customers who are looking to buy a certain product may be shown advertisements for similar items and given personalised messages. Not only did HSN understand its customers' actions, but it also knew what kinds of programming, devices, and items they liked. HSN's ability to reach the right consumer at the right time via the right channel is a direct result of this skill. It is crucial to understand client preferences by mapping out retail journeys, which allows for the delivery of appealing, personalised, and timely communications at each touchpoint. This is especially important in cases where customers believe their power business doesn't care about them, which occurs in 22% of cases.

· **Social Commerce**

We are seeing a critical juncture in the social commerce business. From its start, the social commerce sector has been a driving force behind companies' operational changes. Several companies have made revolutionary strides in this space. Consequently, the sector is seeing a remarkable surge in growth. With companies of all sizes seeing the advantages of using social networks to extend their client bases, the social commerce sector is experiencing a period of rapid expansion. With US industry sales expected to reach $33.2 billion by 2022, up from $10.6 billion in 2017, social commerce has now become a globally quantifiable business. With the best social commerce campaigns yielding a return on investment of seven

times the initial cost, marketers are seeing the expenditure on these ads as an investment that yields more sales. Investing in the appropriate influencers and developing digital content to be shared on the proper platforms is expected to drive over $100 billion in worldwide sales for the social commerce sector in 2022. Through strategic investments in influential users and the development of relevant digital content, social commerce platforms are harnessing the full potential of social media.

Big data consumer testing, which makes use of social media to reach a huge number of people cheaply, will be the main emphasis in the next years. To achieve this objective of giving the most accurate representation of consumer behaviour, consumer-grade testing will take precedence over industry-exclusive closed-doors testing.

· **Online Store Security**

When it comes to safety, AI has tremendous promise. Attacks can be better detected, new ones can be prevented, and existing threats can be countered with the use of machine learning. However, hackers may find new ways to bypass security measures thanks to the same technology that makes them more effective. Careful handling of machine learning is required if the objective is to safeguard systems without providing fraudsters with new tools to utilise.

While artificial intelligence (AI) might greatly improve our lives, it could also drastically reduce the efficacy of our security measures. New generations of malware may be created using the same AI that can predict prospective cyber threats, allowing them to elude detection. Consequently, artificial intelligence has sparked heated debates among the cybersecurity community. First, in order for robots to implement strong security defences, they need to be well trained. Also, you can't abuse machines. That is to say, when it comes to discovering and fixing security flaws, machine learning algorithms should not be relied upon in lieu of human experience.

· **Regulation of the Market**

The hope was that cutting-edge AI would make it easier to create revolutionary new kinds of consumer experiences. Making sure the buyer and seller had a good time throughout the transaction was the promise of moderation. We have an extensive moderation system that sorts out most messages and makes sure only appropriate ones go to the user, so we don't have to worry about attempting to program it to find the "right" response in each and every one. As a result, clients may enjoy themselves and concentrate on the good parts of the transaction, rather than being disturbed by a handful of irrelevant communications.

Thus, sophisticated moderating both improves ad quality and speeds up the publishing process. Messages that are deemed unacceptable are screened out automatically. Instead of sitting around and waiting for consumers to walk through the door, stores can now actively onboard them while they shop online. Plus, merchants may use sophisticated AI to target advertisements to those most likely to be interested in them, rather than directing them to an error page. As a result, stores will have more time to concentrate on their core competencies rather than customer experience management: offering goods

· **Analytics for Retail**

Customised shopping experiences that learn customers' likes and dislikes will rule the retail industry in the

future. You may try it on before you purchase it, and it works with both online and offline stores. It's all about the convenience of being able to try on clothes, have your cosmetics done, or even have your house decorated before you buy it. Having similar experiences in VR while maintaining the freedom to exit at any moment is equally important.

Machine learning models are used by AI in retail to categorise more than one million products from different vendors. These systems swiftly determine an item's category and subcategory using sophisticated algorithms. Afterwards, they have the option to sort the products according to several criteria, like size, colour, price, and more. Automating inventory management using Machine Learning helps some merchants keep ahead of demand and reduces supply chain management expenses.

ROLE OF ARTIFICIAL INTELLIGENCE IN E-COMMERCE

Conversational AI and digital assistant

More and more, e-commerce websites are using chatbots or digital assistants to provide 24/7 customer service. The customer experience is being enhanced by chatbots developed using AI technology, which are becoming more user-friendly. Chatbots are increasing the impact of AI in online shopping since they provide great customer service and also have these other features:

- Natural language processing (NLP), which can understand spoken interactions with clients.
- Responding to client needs with a deeper intuitive grasp.
- The ability to learn on their own, which helps them become better over time.
- Provide customers with targeted or personalised promotions

Recommendations for Intelligent Products

One of the primary applications of AI in e-commerce is the creation of personalised product suggestions for online shoppers, which has the potential to significantly enhance conversion rates and average order values. The use of big data and AI in online retail is having an impact on customer choices by drawing on data about previous purchases, product searches, and browsing habits. Online Retail AI Personalisation.

One of the most important uses of AI in online retail is customisation. With the help of machine learning (ML) and artificial intelligence (AI), e-commerce platforms are able to glean valuable information about their customers from the mountain of data created by online shoppers.

To illustrate, AI-powered systems may assess customer data from several channels, including websites, email marketing, and mobile applications, to ascertain the efficacy of online interactions. Through the use of these insights, online stores can provide a consistent experience for customers across all platforms and recommend suitable goods.

Management of Stock

Managing inventory well entails maintaining just the right number of commodities in stock to satisfy market demand, while avoiding the accumulation of idle stock. With the use of AI, inventory management software

is allowing us to keep stock levels up to date using data from: In contrast to the conventional approach, which could only take into account the present stock level:

- Trends in sales compared to previous years
- Changes in product demand that are either already in the works or likely to happen
- Supply issues that may impact inventory levels

Applying AI to the Fashion E-commerce Sector

In the fashion e-commerce business, artificial intelligence is reducing the quantity of products returned from online transactions. Companies in the fashion industry are using AI to cater to customers' individual tastes in terms of fit and style by suggesting garments that are either too snug or too loose based on their measurements. As a result, the fashion company may see an increase in repeat customers and a decrease in refunds. With their online 3D trial option, Lenskart gives its consumers a chance to try on their eyewear before they buy it.

AI OPPORTUNITIES IN E-COMMERCE

Chatbots, customer relationship management, and online shopping have been the focus of several presentations and discussions on the potential of artificial intelligence in e-commerce in recent years Personalising interactions with customers is one area where AI has been utilised previously and where certain AI solutions are being developed. There have been some great developments in this field as a result of recent advances in AI technology.

There are a lot of options available from specialised service providers, and one of the best ways to boost sales metrics is with the use of machine learning algorithms that provide tailored suggestions. With the use of AI, we can analyse online shoppers' habits in great detail, tailoring our product suggestions to each customer's unique tastes.

Supply chain optimisation is another promising area where AI might be valuable in the near future. Artificial intelligence systems have the potential to greatly enhance efficiency by predicting demand and optimising inventory. Optimal selections are hard to make because of all the factors that affect inventory management in e-commerce businesses. The most modern AI capabilities may not have documentation for this application of AI, but it might be very valuable anyway. Additionally, there is promising data from prior applications. By creating more effective transportation routes, AI-powered supply chain optimisation may help businesses lower their carbon footprint and advance sustainable e-commerce practices.

One such area where AI may be used is in predictive analysis or basic advanced analysis. Most e-commerce companies don't have the resources to adequately examine the massive volumes of data they produce. To make sense of this data (or at least to a much greater degree than previously), predict market trends, study customer behaviour, calculate expenses, or evaluate marketing outcomes, artificial intelligence solutions are a relatively easy and effective option. Online shoppers' happiness with the businesses' performance and sales may be enhanced by using specific algorithms to predict their requirements based on their past purchases, browsing patterns, and other data. New product development

and improved marketing strategies are two more potential outcomes of this capacity for large-scale data analysis.

The potential for artificial intelligence to improve operational efficiency in online retail is substantial. The use of AI has the potential to automate repetitive processes and enhance inventory management, which in turn may reduce costs significantly and make businesses more responsive to market demands. The process optimisation has a dual benefit of increasing productivity and making e-commerce enterprises more agile in a constantly changing market.

The safety and reliability of online marketplaces may be greatly enhanced by the use of artificial intelligence. Online shoppers may rest easy knowing that sophisticated fraud detection and cybersecurity algorithms greatly reduce the likelihood of data breaches and financial theft. In addition to making shopping more convenient and intuitive, advances in artificial intelligence (AI) for visual and voice search are opening up new avenues for customer interaction and engagement.

In addition, AI is crucial for enhancing strategies for online product placement and development. The predictive analytics provided by AI allow businesses to foresee market trends and customer preferences, allowing them to better meet the evolving needs of their clients. Organisations may improve customer satisfaction and remain ahead in a highly competitive business with this proactive technique.

It should be mentioned that not everyone sees the opportunities mentioned in the same light. Some people are sceptical about AI and think that it should not be used too quickly since people don't fully grasp the technology and its possible disastrous unforeseen repercussions.

CHALLENGES IN IMPLEMENTING AI IN E-COMMERCE SECTOR

Absence of Skill in AI

Market research firm IDC predicted in September 2019 that by 2023, artificial intelligence (AI) will have cost 97.9 billion USD. As the notion of AI gains traction and its importance in the modern digital world is acknowledged, its growth rate remains constant. There will be a greater need for AI tech developers to meet the increasing demand for AI. The need for AI expertise is expected to grow by 74% each year from 2016 to 2019, according to studies.

There is a growing need for AI expertise, but not enough technically competent individuals to fill those positions. Also contributing to the shortage of AI expertise is the fact that AI is still not widely offered as a major at universities, which means that students don't learn about its significance from day one. There needs to be a mandatory AI course in higher education in light of the pervasiveness of digital technologies in our daily lives; otherwise, the next generation will have all the tools they need to take digital technology to the next level, but not enough funding to support their research and development. On top of that, there is a severe lack of qualified individuals in the AI industry. It makes finding qualified candidates very challenging.

Processing of Non-Organized Data:

In order for AI to be beneficial, it is necessary to provide the algorithm accurate data. In order for AI to be

implemented correctly in the relevant contexts and help the firm, the data must first undergo suitable analysis and interpretation. One of the most important aspects of artificial intelligence is the ability to draw conclusions from large amounts of data, yet companies still have a hard time with data. An O'Reilly poll found that between fifteen and twenty percent of AI professionals worry about incomplete or incorrect data. The complexity of the method and the use case dictate the quantity of data needed. Some estimates put the data needed to estimate each model parameter at least ten times higher than the number of instances.

When it comes to artificial intelligence (AI), everyone has their own idea of what it is and how it may help the company advance technologically. Involving all stakeholders in your AI strategy and goal-setting is crucial for firms to prevent misalignment of expectations. Concerns about the security, privacy, and safety of consumers and workers in AI interactions are inherent to algorithm advancement. Negligible customer service, decreased revenue, or even legal action might emerge from unchecked machine learning bias.

The Evolution and Potential of AI in Online Retail

This forecast elucidates the significance of AI in the future of the e-commerce industry, as it states that most of the time, managers of firms will be monitoring the performance of their technology and algorithms to determine whether they are profitable. Consumers' tastes have changed from brick-and-mortar stores to online marketplaces since the new normal has been established. This is likely due to the many advantages of online shopping, such as the elimination of geographical barriers, the reduction of travel time and costs, and the general ease of the process. In light of this, more and more online retailers are investing in artificial intelligence (AI) initiatives to enhance the shopping experience for their customers. From handling hundreds of online sale orders daily to processing transactions, the opportunities for using AI are limitless. AI does more than only supplement and aid businessmen; it also speeds up operations to lower customer drop-off rates. Businesses will need AI now and in the future to stay afloat, and the more research we do, the more uses we'll find for AI in online shopping. we see The trajectory of artificial intelligence (AI) and the projected monetary value of AI's constituent parts and characteristics (i.e., based on their anticipated applications) by the year 2025 People need to delve deeper into the matter of artificial intelligence (AI) to make a better impact, since AI has already provided customers with a convenient lifestyle and businesses with a way to perform activities effectively and efficiently. The habit of being integrated with AI cannot be reversed now.

CONCLUSION

The purpose of the research is to learn how artificial intelligence may be used in the e-commerce industry. All the uses, big players, obstacles, and potential future directions of AI in e-commerce were thoroughly investigated in the research. The research shows that AI will soon introduce new trends to the e-commerce industry and has a significant influence on it. Artificial intelligence has the potential to revolutionise e-commerce by introducing new features that consumers love and displacing the old-fashioned, in-person purchasing experience. With the help of AI, e-commerce businesses can anticipate future trends in the industry and develop strategies to win over new consumers while keeping the ones they already have. Artificial intelligence has opened up new possibilities for online retailers and will keep doing so in the future. Artificial intelligence makes short work of analysing the vast quantities of data received by an

online retailer every second. There will be an even greater need for this kind of technology in online retail in the years to come.

References

1. Manne, R., & Kantheti, S. C. (2021). Application of artificial intelligence in healthcare: Chances and challenges. Current Journal of Applied Science and Technology, 40(6), 78–89. https://doi.org/10.9734/cjast/2021/v40i631320

2. Ganesh, R. S., Jausmin, K. J., Srilatha, J., Indumathy, R., Naved, M., & Ashok, M. (2021, April). Artificial intelligence-based smart facial expression recognition remote control system. 2021 5th International Conference on Computing Methodologies and Communication (ICCMC) (pp. 1056–1061). IEEE.

3. Di Vaio, A., Palladino, R., Hassan, R., & Escobar, O. (2020). Artificial intelligence and business models in the sustainable development goals perspective: A systematic literature review. Journal of Business Research, 121, 283–314.

4. Di Vaio, A., Boccia, F., Landriani, L., & Palladino, R. (2020). Artificial intelligence in the agri-food system: Rethinking sustainable business models in the COVID-19 scenario. Sustainability, 12(4851).

5. Kumar, T., & Trakru, M. (2020). The colossal impact of artificial intelligence. E-Commerce: Statistics and Facts. International Research Journal of Engineering and Technology (IRJET, 6), 570–572. https://www.irjet.net/archives/V6/i5/IRJET-V6I5116.pdf

6. Soni, N., Sharma, E. K., Singh, N., & Kapoor, A. (2019). Impact of artificial intelligence on businesses: From research, innovation, market deployment to future shifts in business models. arXiv. https://arxiv.org/abs/1905.02092

7. Andreu-Perez, J., Deligianni, F., Ravi, D., & Yang, G. Z. (2018). Artificial Intelligence and robotics. arXiv preprint arXiv:1803.10813.

8. Ruiz-Real, J. L., Uribe-Toril, J., Torres, J. A., & De Pablo, J. (2021). Artificial intelligence in business and economics research: Trends and future. Journal of Business Economics and Management, 22(1), 98-117.

9. Pendy, B. (2023). Role of AI in business management. Brilliance: Research of Artificial Intelligence, 3(1), 48-55.

10. Pallathadka, H., Ramirez-Asis, E. H., Loli-Poma, T. P., Kaliyaperumal, K., Ventayen, R. J. M., & Naved, M. (2023). Applications of artificial intelligence in business management, e-commerce and finance. Materials Today: Proceedings, 80, 2610-2613.

11. Pal, R. (2022). Applications of artificial intelligence in company management, e-commerce, and finance: A review. International Journal of Multidisciplinary Educational Research, 11(2), 123-128.