



## Leveraging Artificial Intelligence in E-commerce: Enhancing Customer Experience and Improving Business Performance.

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### Abstract

E-commerce is not an exception to how the rise of artificial intelligence (AI) has transformed other businesses. Nowadays, technology plays an essential part in almost every industry, but when it comes to business, it has experienced phenomenal growth, or we might say that company cannot function without the presence of cutting-edge technology. Especially when we do business with the aid of Ecommerce, or even if we don't use only ecommerce, but when we mix the concept of Artificial Intelligence with it, then corporate world changes dramatically. Artificial intelligence has the capacity to gather and evaluate massive amounts of data and make actionable judgments. This technology is now being used in e-commerce to discover trends based on surfing, purchase history, credit checks, account information, and other factors.

The research being investigated examines how artificial intelligence is used in e-commerce and offers practical methods that have been successful in raising client engagement This research paper presents case studies on the successful implementation of artificial intelligence (AI) in e-commerce by two industry leaders, Amazon and Netflix and AI technology prospects, analyses the current state of AI technology application in the field of e-commerce, and focuses on studying and discussing in depth the aspects of AI assistant. This research was entirely based on secondary data. To gather as much information as possible from a range of sources, a literature review was performed.

**Keywords:** - Artificial Intelligence, E-commerce, Amazon, Netflix, eBay, Face recognition etc.

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## 1.Introduction

Ecommerce (electronic commerce) is the term used to describe all online activity including the purchase and sale of goods and services. To put it another way, ecommerce is the process of doing transactions through the internet.

E-commerce that is built on artificial intelligence technology will provide a stronger basis for its growth. This is an unavoidable tendency in e-progress commerce's toward a more positive outcome.

Ecommerce is gaining popularity.

This research paper seeks to offer useful insights for companies looking to use AI technology to improve customer experience by examining the many applications of AI in e-commerce and highlighting effective AI models. Effective AI models employed by Amazon and Netflix, this paper provides valuable insights and recommendations for businesses aiming to harness AI's potential in the e-commerce domain.

**These are case study of amazon and Netflix: ---**

### **First One is amazon**

**Business Model and Strategy:** Combining e-commerce, cloud computing, and digital media, Amazon's business model is multifaceted. Important elements of their plan are: a) Prime Membership: To take advantage of its sizable customer base, Amazon created Amazon Prime, a subscription-based service that offers a variety of perks like free two-day shipping and access to Prime Video and Prime Music. b) The gathering of content.

Amazon made significant investments in creating original television shows and films and negotiating arrangements for exclusive content. They were able to create a diversified library of information as a result, drawing in a variety of people. c) Ecosystem integration: By integrating its digital media offerings with its well-known e-commerce platform, Amazon enabled cross-promotion and improved customer engagement and retention.

**Key Success Factors:** a) Prime Membership: Amazon Prime subscribers' steadfast devotion and high rates of renewal created a strong basis for Amazon's streaming service. The ease of using a single subscription to access different services improved customer loyalty. b) Original Content: Amazon made investments in highly regarded original shows like "The Marvelous Mrs. Maisel" and "Fleabag," which garnered major accolades and drew a devoted fanbase. c) Global Expansion: Amazon Prime Video grew internationally by concentrating on new countries, utilizing its well-known brand abroad, and adapting programming to regional tastes.

### **Second one is Netflix**

Netflix's business model and strategy are the cornerstones of its success. Netflix introduced a subscription-based business strategy that offers limitless streaming for a set monthly fee. This made it unnecessary for customers to buy or rent specific pieces of material, giving them an affordable and practical entertainment option.

**Data-driven content suggestions:** Netflix made personalized content recommendations based on user preferences, watching history, and demographic data using data analytics and machine learning algorithms. User happiness and engagement have increased as a result. **Investment in original content:** Netflix upended the established model of content creation by making significant investments in its own original programming, giving rise to hit and nominated

shows like "**Stranger Things**" and "**House of Cards**." With the help of this tactic, Netflix was able to stand out from the competition and get subscribers.

**Key Success Factors:** a) Content Personalization: A seamless and customized viewing experience was made possible by Netflix's cutting-edge recommendation engine and user interface. Users were kept interested and retention rates went up thanks to the ability to uncover pertinent content. b) Global Expansion: Netflix actively grew its business abroad, adjusting material for regional audiences and funding local productions. They were able to gain a sizable portion of the global streaming business as a result. c) Continuous Innovation: Netflix consistently made investments in improving both technology and user experience. Its competitive edge was boosted by features like adaptive streaming algorithms, offline downloads, and participatory storytelling ("Black Mirror: Bandersnatch").

According to eMarketer, global ecommerce is expected to exceed \$5 trillion by 2021.

Many company owners are going online to keep ahead of the curve, not just by having a website, but also by selling their products and services directly through their website and other ecommerce platforms.

You're engaged in ecommerce when you go to your favourite online store to buy a new pair of shoes. Ecommerce includes things like paying for a concert online or purchasing a plane ticket on an airline's website. However, ecommerce is not limited to the PC. In fact, mobile commerce accounts for the majority of ecommerce traffic. Mobile commerce sales are predicted to account for more than half of all ecommerce sales by 2021, because to the effect of smartphones and the convenience of online purchasing.

The e-commerce business is being transformed by artificial intelligence (AI). Customers are seeking faster, more seamless purchasing experiences as the epidemic boosts the popularity of online buying. As a result, artificial intelligence products have seen a significant increase in demand.

It's critical to keep up with the current business trends in order to optimise sales and give the customised experience that clients need. Ecommerce is clearly increasing on a global scale, therefore now is the time to examine it as a feasible company. It's not too late to join the ecommerce revolution, with 95 percent of all purchases predicted to be made online by 2040.

Researchers' increased focus on the field of e-commerce demonstrates their understanding of the importance of digital transformation (Rogers, 2016) and its impact on sustainable development, as evidenced by the ongoing search for new ways to optimise processes using artificial intelligence algorithms. E-commerce and artificial intelligence, two rising paradigms, can have an influence on societal norms of interaction between customers and retailers, as well as governmental laws that control and regulate the legal environment in which these players operate (Vanneschi, et al., 2018).

Artificial intelligence technology has evolved into a potent tool for boosting sales growth and optimising e-commerce operations, particularly in the sector of e-commerce. Artificial intelligence's application in the sphere of e-commerce is now primarily represented in the following elements.

The significance of online marketing in a company's strategy is growing dramatically in the context of increased digitalization, as seen by the growth in firms' spending in e-commerce operations. Companies whose sole business strategy is online commerce spend around a quarter of overall marketing expenses (26 percent) (Alvarez, 2013). Investments in digitization are

justified not only by their profitability and changes in client behaviour, but also by the fact that they are simpler to assess than traditional marketing efforts (Pickton, 2005).

Artificial intelligence is the process of instilling intelligence in robots or software so that they can think like humans. The father of artificial intelligence is John McCarthy. When people hear the term "artificial intelligence," images from movies like Steven Spielberg's 2001 blockbuster A.I. Artificial Intelligence, sci-fi thriller Ex Machina, or 1982 cult classic Blade Runner may spring to mind.

Artificial intelligence is built on a variety of scientific and technological fields, including biology, computer science, psychology, linguistics, mathematics, and engineering. Companies may use AI machine learning algorithms to find patterns and insights in vast amounts of data. AI may assist them in making faster decisions and improving their competitive position in the commercial sector. According to Gartner, by 2020, more than 85 percent of consumer contacts will be handled without the involvement of a human.

In the ecommerce industry, though, it's less about human-like robotics and more about the learning technologies and algorithms that provide the groundwork.

By leveraging acquired business and customer data to make better business decisions and more accurately forecast the future, AI can help today's online merchants create an optimal consumer experience on and off their ecommerce websites.

Artificial intelligence isn't only a new technology that's been deployed for the sake of its "cool factor." AI implementation has the ability to affect a wide range of business operations throughout your company.

Understanding the components of artificial intelligence will help you comprehend how AI can affect your organisation.

Over the last several years, artificial intelligence (AI) has evolved into a strong tool for increasing sales and streamlining processes. Many small ecommerce enterprises are utilising AI-enabled technologies. Artificial intelligence is assisting e-commerce enterprises in getting closer to their customers. E-commerce companies may now use enormous datasets on client behaviour and usage trends thanks to AI capabilities. Self-learning artificial intelligence systems can provide internet shoppers with individualised purchasing experiences.

Customers are already being recommended new things based on their prior buying activity, with AI e-commerce technologies predicting their preferences and what they could buy next.

However, utilising AI to forecast the influence of customer behaviour on inventory management is a newer field.

Internet marketing is a vital field of e-commerce that encompasses a variety of methods for advertising a business, including email marketing, content marketing, social media marketing, affiliate marketing, and other marketing tactics. Because of the variety of information sharing platforms on the Internet and how it is displayed, marketers must think about where their consumers communicate and how they communicate.

Many e-commerce companies have begun to use Artificial Intelligence in various ways in order to better understand their clients and give a better customer experience. This article discusses the importance of artificial intelligence in e-commerce and how it may be used to many aspects of the industry.

**The paper is organized as follows.**

The **Model. 1** describes the AI relationship in business world and how to increase customer expectation. The **Model.2** description displays the current theory and points of view from several authors. An analysis of the relevant literature, as shown in the **Model. 3** descriptions, found that prior research methodology on paper. According to the **Model.4** descriptions, this study also evaluates various secondary data for the purpose to know growth and impact of AI in business field. The **Model number 5** refers to various application of AI which is using by various companies and continuous taking advantage of it. Data from **Model 6** here decision about result of this paper **Model 7** is concluded the paper after analysis all the data.

## 2.Literature Review

The e-commerce business is being transformed by artificial intelligence (AI). Customers are seeking faster, more seamless purchasing experiences as the epidemic boosts the popularity of online buying. As a result, artificial intelligence products have seen a significant increase in demand by **Bonday Halley (2021)**.

Machine learning is a set of approaches for working intelligently with massive amounts of data by creating effective algorithms for synthesising, classifying, and sorting it. A human user would never be able to do search operations as quickly as the Google search engine does. This is where machine learning, an important component of artificial intelligence, comes into play (**Ballestar, Grau-Carles and Sainz, 2019**).

Natural language processing is a notion that has been investigated. Artificial intelligence is used in a variety of ways, one of which is natural language processing. Natural language processing is the technique of using computers to analyse and comprehend human language. Morphological analysis, syntactic analysis, semantic analysis, discourse integration, and pragmatics analysis are the phases involved in NLP.

Mobile commerce, in contrast to internet commerce, offers benefits such as instantaneity, ubiquity, location, personalization, and identity (Wang, Ngamsiriudom and Hsieh, 2015). However, due to doubts and anxiety about using cellphones to place online orders, individuals are refusing to become customers for mobile digital transactions (**Jaradat, Moustafa and Al-Mashaqba, 2018**).

Many e-commerce clients have already utilised a chatbot, which is a website bot that simulates a customer support professional. According to Jacob Zweig, co-founder and chief data scientist of AI software supplier Strong Analytics, the desire for easy, 24/7 access to customer care has pushed many organisations to employ chatbots.

## 3.Methodology of Research

The purpose of this study was to review several journals, articles, books, and websites from various companies. This research was entirely based on secondary data. To gather as much information as possible from a range of sources, a literature review was performed. We used a qualitative descriptive approach in this inquiry since we read a lot of articles and conducted a lot of research on this paper. The current study is based on a literature analysis in order to provide an integrated AI and Ecommerce strategy for various businesses and what applications they have and also analysis two case study of amazon and Netflix.

## 4.Data Analysis

### TABLE 1

#### ACCORDING TO MARKET SIZE AND GROWTH

S.NO	YEAR	GROWTH	Source of Data
1	By 2025	Global AI market project reach up to \$126 billion	Markets and Markets
2	2019 to 2025	According to CAGR 36.62%	Markets and Markets
3	By 2025	AI software market expected \$126 billion	Tractica

TABLE 2

**AI Adoption in Business**

S.NO	YEAR	ADOPTION	Source of Data
1	2021	37% of organizations have implemented AI	Gartner
2	Further	87%	IBM

TABLE 3

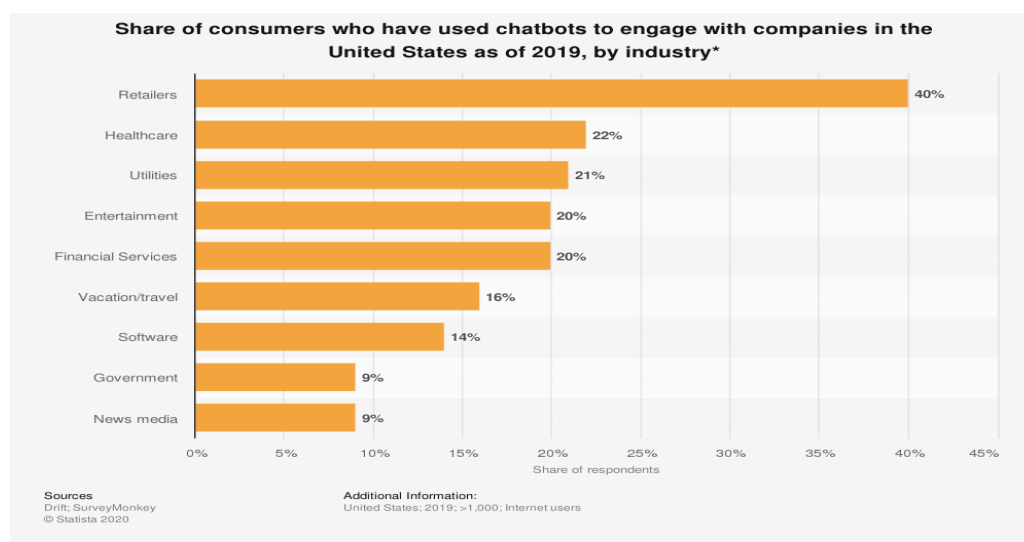
**Impact of AI in Business**

S.NO	YEAR	GROWTH	Source of Data
1	2025	Increase in productivity of Business up to 40%.	Accenture
2	2035	Labour productivity is increase by up to 40%..	PwC
3	By 2035	Reduce costs in business operations by 20%	Accenture

TABLE 4

**AI Application in Business**

S.NO	APPLICATION	Source of Data
1	64% of AI-Chatbots	Oracle
2	52% of companies are using AI for data analysis	Deloitte
3	61% of marketers say that AI for data strategy.	BrightEdge



**Chart.1**

## **5.The Ecommerce Industry is Changing Due to Artificial Intelligence**

Over the last several years, artificial intelligence (AI) has evolved into a strong tool for increasing sales and streamlining processes. Many small ecommerce enterprises are utilising AI-enabled technologies.

The advantages of artificial intelligence and similar technologies have long been acknowledged by Amazon. Machine learning is used by the colossal ecommerce giant to better product selection, customer experience, and logistics.

### 1) Marketing and advertising that is more focused.

According to the merchants polled, personalisation is a high goal, but just 15% believe they've completely adopted it across all channels. With a more tailored message and one-on-one dialogues with your consumers, you can stand out from the crowd.

Deep customization approaches have been enabled by advances in AI and machine learning, allowing material to be customised for each individual user. You can hone in on what your consumers actually want and deliver the message that will resonate the most by evaluating massive data from purchase histories and other customer interactions.

### 2) Virtual personal shoppers can help individuals make informed purchase decisions; for example, Flipkart just unveiled Ping, a messaging service. Ping worked as a shopping assistant until the company was closed down in 2016. It used artificial intelligence to help clients find the things they were seeking for more quickly. Alexa, Amazon's home assistant, is also a virtual personal shopping assistance with artificial intelligence.

### 3) A sales procedure that is both efficient and effective.

By gathering data about your consumers, automating follow-up abandoned cart queries, and more, AI may help you establish a more effective sales process. Customers may be guided along the funnel by interacting with chatbots for simple queries.

### 4) Consumer trust in online buying has grown as a result of customer feedback. According to a recent research by Dimensional Research, 90 percent of respondents claimed favourable internet evaluations affected their purchasing decisions. Fake reviews, on the other hand, can influence a buyer's decision.

## 5) Effortless automation

The purpose of automation is to complete a task with the least amount of human input as feasible. That may include using a CRM or marketing platform to schedule emails, using Zapier to automate processes, or utilising sophisticated technologies to assist with hiring.

However, when it comes to future ecommerce developments, robotics and machine learning are two of the most often discussed topics right now.

## 6) Customer retention has improved.

Customer retention may be improved by sending targeted marketing and advertising communications that are customised for them. According to McKinsey's Omni channel personalization research, Omni channel personalisation techniques may increase revenue and retention by 10-15%.

"Building superior data and insights on clients, an asset that also provides additional value across the value chain, is a fundamental part of personalisation," according to the research, our findings, personalization's return on investment will rapidly surpass that of traditional mass marketing."

## 7) Ecommerce AI Use Cases

There are many AI use cases in ecommerce, and you're undoubtedly aware of many of them - you simply might not realise that the technology they're based on is linked to AI. The following are four of the more prevalent ones:

- a) Optimization of the price. Dynamic pricing using AI is a method for altering the price of your product based on supply and demand. Today's solutions can forecast when and what to discount with the correct data, dynamically determining the minimal discount required for the sale.
- b) Smart logistics, also known as intelligent logistics, is all about leveraging real-time data from sensors, RFID tags, and other devices to better manage inventory and estimate demand. Machine learning systems improve with time, allowing them to make more accurate predictions for supply chain and logistical activities.
- c) According to a recent McKinsey analysis, real-time customer analytics will continue to be critical for monitoring and reacting to fluctuations in consumer demand that may be used for pricing optimization or targeted marketing.
- d) Collecting and processing customer data regarding their online purchasing experience is now easier than ever. Artificial intelligence is being utilised to provide customised product suggestions based on prior consumer behaviour and customer lookalikes.

**Table 5**

**The following are list of Companies that use AI and E-commerce.**

<b>Name of Company</b>	<b>Use of AI &amp; Ecommerce</b>	<b>Impact over Industry</b>
<b>Amazon</b>	Face recognition, house price estimation, visual search, autonomous driving, and more applications employ Amazon's AI technology.	Customers may now use Amazon Echo and its built-in AI assistant Alexa to conduct voice-activated payments.



<b>Alibaba</b>	From augmented reality mirrors to face recognition payment to interactive in-store mobile phone games, the firm leverages AI.	Alibaba recorded a new gross merchandise volume of \$30.8 billion on China's busiest shopping day of the year, up 27% from 2017.
<b>Scalefast</b>	It use artificial intelligence to evaluate integrated behavioural & e-commerce data in order to improve direct-to-consumer e-commerce by providing a seamless, tailored buying experience across devices.	Company has upgraded their e-commerce platform by incorporating Adyen's superior technologies.
<b>eBay</b>	Find It On company & Image Search, as well as eBay ShopBot, a personal shopping assistant on Facebook Messenger, are recent AI-powered services.	The online marketplace recently claimed that it can now identify 40% of online credit card theft with "excellent accuracy" thanks to AI.
<b>Clarifai</b>	The AI-powered picture and video recognition of helps to filter out evident undesired visual company information. Human moderators can be added to the mix for additional things that can elude AI's radar. This will provide an extra level of precision.	Company has announced the opening of Neural Net One, a Washington, D.C.-based outpost that will work primarily with the public sector, including the US military.
<b>IBM</b>	Watson, from IBM, employs artificial intelligence to help retailers develop more tailored shopping experiences based on real-time data that more precisely represents a customer's actual purchasing state.	To show the influence of AI on supply chain and creative processes, the business recently collaborated on a project called Reimagine Retail with Tommy Hilfiger and the Fashion Institute of Technology's Infor Design and Tech Lab.
<b>Follow robots</b>	For retail situations, the business develops Navvi, an AI-powered customer care robot. It has three data capture cameras, voice recognition, and vocal response capabilities, and is used for product information and location, among other things.	Lowe's, a home improvement retailer, employs "LoweBots" at certain of its stores to assist customers and keep track of inventories in real time.
<b>inVia Robotics</b>	The business develops advanced AI-powered	inVia recently announced the completion of a \$20 million

	"Picker" robots for supply chain and e-commerce distribution centre automation, claiming to have created the world's first "robotics-as-a-service" platform.	Series B investment round to increase the deployment of its robots and cloud-based robotics-as-a-service management system in warehouses.
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This is a fast-growing company that operates by combining AI with e-commerce. We try to figure out what these industries do and how much of an influence they make.

Apart from E-commerce AI also give good results in medical field Like in Alzheimer Disease Detection.

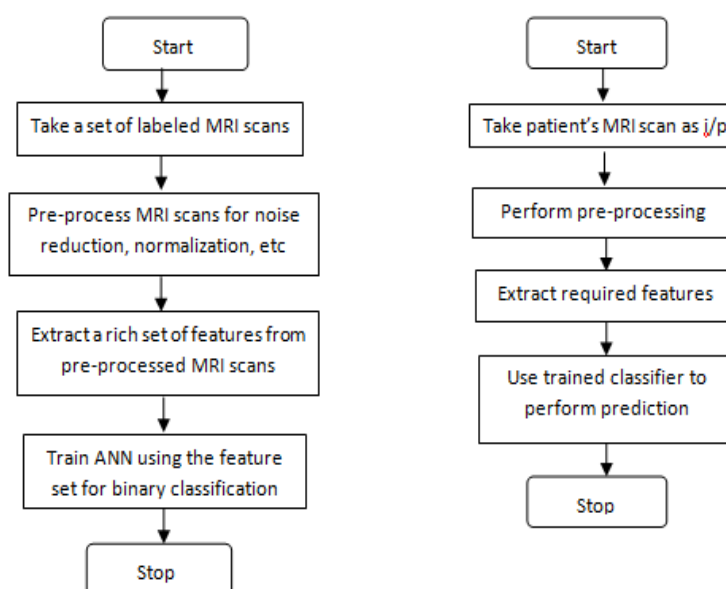


Figure.1

Above image shows how the Processing Process for Alzheimer Disease Detection

MRI is the input, and the dataset is used for processing and classification. Using the SURF point extraction approach, the picture pre-processing should be done and its important points should be extracted. To ascertain whether the subject is affected by AD or not, input is once more employed as the test data for the classification process.

## 6.Results & Discussion

Artificial intelligence will continue to have an impact on the e-commerce business as time goes on, and we have reason to assume that it will become a significant boost for e-commerce transformation.

The fastest-growing ecommerce market is the world. Artificial intelligence will have a huge impact on how e-commerce companies attract and keep customers. The e-commerce AI revolution will generate a lot of new data science, machine learning, and engineering jobs. AI-

based e-commerce will also result in the creation of IT employment to create and maintain the systems and software that will be used to operate the AI algorithms.

Artificial intelligence will have a huge impact on how e-commerce companies attract and keep customers. The e-commerce AI revolution will generate a lot of new data science, machine learning, and engineering jobs. AI-based e-commerce will also result in the creation of IT employment to create and maintain the systems and software that will be used to operate the AI algorithms. However, the convergence of AI and e-commerce may have an impact on those who lack in-demand skill sets in the coming years.

Artificial intelligence approaches have advanced to the front of the line, and as technology matures, it is being more extensively used. It is having an increasing influence on variables such as consumer retention and happiness in e-commerce transactions. Artificial intelligence will become a major driving factor in the evolution of e-commerce as time goes on. With the use of artificial intelligence technology, e-commerce will have a brighter future, allowing for more effective customer relationship management and sales promotion while bridging the gap between personalisation and privacy.

Artificial intelligence technology has accelerated, and as the technology improves and applications become more prevalent, it will continue to do so. Despite the fact that artificial intelligence currently only integrates e-commerce through these methods, the e-commerce field will be able to clarify broader development prospects, establish better customer relationship management, promote sales, and bridge personalization and privacy with artificial intelligence's blessing.

As a result of examining all of the factors, we have discovered that AI and Ecommerce have a positive association. And if we wish to develop or compete with others, we will need to upgrade our technology. Artificial Intelligence is the future of our industry, and when it is paired with Ecommerce, organisations will dominate in the business world.

## **7. Conclusion**

To summarise, we believe AI is on the increase in the e-commerce market, although it is still far from flawless. To better meet market demand, e-commerce companies are continuing to strengthen their AI systems. They also collaborate with other businesses to combine their AI expertise and develop more complex products. Artificial Intelligence in e-Commerce, we believe, will have an influence on transactions, customer retention, satisfaction, efficiency, and many other factors. The way we purchase and sell online is changing as a result of artificial intelligence. Let us know if you're working on an e-commerce project and require software development assistance. We'd want to learn more about your project! Artificial Intelligence (AI) is a key driver of creative solutions and customer experiences in e-commerce. Personalized shopping, product suggestions, and inventory management are three of the most common applications of artificial intelligence in E-commerce. Furthermore, AI may assist businesses in utilising the capabilities of AI and machine learning in the E-commerce area.

Artificial Intelligence can help you spot these possibilities and use them into your marketing initiatives. Understanding these algorithms and putting them to good use is a management problem, since only around a quarter of online business manager's use or have utilised them.

The ability to evaluate the benefits of an online shop more easily aids adoption and can lead to the creation of web software solutions that can be integrated into the e-commerce platform.

Deep learning platform, voice analysis technology, biometrics technology, image recognition technology, video analysis technology, robot automatic processing system, text analysis and

natural language processing (NLP) and other mainstream artificial intelligence technologies will develop steadily with the rapid development and continuous progress of research technology, and AI will continue to promote the development and reform of e-commerce in the future.

It is found that picture preparation and AI play a significant role in Alzheimer's disease knowledge. Alzheimer's disease is a mental condition that is challenging to diagnose from an MRI. The approach for Alzheimer's disease is suggested in this study and is based on the KNN and Nave Bayes strategy. The proposed approach can achieve an accuracy of up to 94%.

By utilizing cutting-edge business models, wise investments in original content, and efficient use of technology, both Amazon and Netflix have changed the digital entertainment sector. The subscription-based streaming model was invented by Netflix, which also excelled at content personalisation, while Amazon capitalized on its e-commerce ecosystem and Prime membership program. To keep their market leadership, both businesses illustrated the value of customer-centric strategies and ongoing innovation. With their large content libraries and global reach, Amazon and Netflix continue to influence the direction of digital entertainment and establish standards for the sector.

Although AI has shown to be quite helpful for e-commerce, there are still some issues that need to be resolved. To ensure ethical and responsible use of AI in e-commerce, privacy concerns, ethical issues, and potential biases in AI algorithms are areas that need careful analysis and regulation.

Overall, the use of AI into e-commerce has resulted in transformational developments that are advantageous to both customers and enterprises. As AI develops, it will further improve the convenience of online purchasing, spur innovation, and influence how e-commerce develops in the future.

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