

Artificial Intelligent in Digital Commerce: Application, Benefits and Challenges

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Abstract

Digital business is being redefined by Artificial Intelligence (AI), which has become a game-changing technology. Artificial Intelligence (AI) technologies including machine learning, natural language processing, predictive analytics and intelligent automation which have completely changed how businesses handle operations, interact with clients and offer customized services. The applications of artificial intelligence, benefits and challenges in Digital Commerce are examined in this research paper. The article also covers how AI improves e-commerce platform's operational effectiveness, consumer experience and strategic decision-making. Despite the various benefits, businesses still face challenges like data security, expensive implementation, moral dilemmas and complicated technology. The study concludes that even though AI has a lot of potential to enhance digital commerce, businesses must overcome these challenges through responsible adoption and sound governance in order to fully realize its potential.

Keywords: Digital Commerce, Artificial Intelligence, Technology, Machine Learning

Introduction

Digital commerce, sometimes known as e-commerce, has radically changed how businesses perform transactions and communicate with customers. The fast expansion of internet access, mobile devices, and digital platforms has led to a considerable increase in the global use of online shopping. As digital markets increase, firms must employ innovative technology to stay competitive and fulfill changing customer expectations.

One of the key technologies propelling innovation in digital commerce is artificial intelligence (AI). Artificial Intelligence (AI) is the term used to describe computer systems that are capable of learning, thinking, making decisions and solving problems-tasks that are typically associated with human intelligence. By using sophisticated algorithms and analyzing massive volumes of data, AI enable businesses to gain deeper insights into consumer behavior, optimize corporate procedures and offer more customized experiences.

AI technology have been expensively applied in several areas of digital business in recent years. Recommendation engines, chatbots, virtual assistants, predictive analytics and automated marketing systems are examples of applications that are transforming how businesses interact with consumers and run digital platforms. These technologies increase operational effectiveness and profitability in

addition to customer satisfaction. Despite the obvious benefits of AI adoption, enterprises confront a number of hurdles when using these technologies. Many firms face considerable challenges due to data privacy, ethical issues, technological complexity, and expensive implementation costs. Understanding both the benefits and challenges of AI in digital commerce is critical.

This research study aims to analyze the role of Artificial Intelligence in digital commerce by examining its major applications, benefits, and challenges. The study also discusses emerging trends that may shape the future development of AI-driven digital commerce.

Review of Literature

Artificial intelligence is widely regarded as a critical technical driver in the advancement of digital commerce. Researchers have looked into how artificial intelligence might improve online retail operations, customer engagement and commercial decision-making.

Russell and Norvig (2021), describes AI is a system that can analyze vast volumes of data and spot patterns that help in wise decision-making. AI systems examine consumer preferences, browsing patterns and past purchases in the context of digital commerce to offer tailored product recommendations and enhance the entire shopping experience.

Chen, Chiang and Storey (2012) emphasize the value of AI and big data analytics in improving business intelligence in digital markets. According to their research, businesses can foresee consumer demand, enhance marketing tactics and strategic planning by using AI-driven prediction models.

Davenport, Guha, Grewal and Bressgott (2020) their study indicates that AI-powered chatbots and virtual assistants are revolutionizing customer service by lowering operating costs, increasing service efficiency and offering real-time responses.

Ngai and Wat (2002), states that AI algorithms are more capable than conventional rule-based systems at spotting anomalous transaction patterns and fraudulent activity.

Mittelstadt et.al (2016) concludes that AI systems need to be carefully constructed to avoid bias, discrimination and exploitation of personal data.

Research Gap

Several areas are yet unexplored despite a wealth of research on the uses and advantages of AI in digital commerce:

SME Adoption

The majority of research concentrates on big corporations like Amazon, Netflix and Alibaba; small and medium-sized organization's (SMEs) adoption strategies and challenges receive less attention.

Ethics in Governance

Although algorithmic bias and data privacy issues are brought to light, little research has been done on workable frameworks for the ethical application on AI in e-commerce.

Long-Term Effects

The long-term effects of AI on labor transformation, operational sustainability and consumer loyalty in digital commerce are rarely studied.

Research Objectives

The primary objectives of this research study are:

1. To analyze the role of Artificial Intelligence in digital commerce.
2. To examine the major applications of AI I in e-commerce platforms.
3. To identify the benefits of adopting AI technologies in digital commerce
4. To explore the challenge associated with the implementation of AI in digital commerce.

Research Methodology

This study is descriptive in nature designed to analyze the application, benefits and challenges of artificial intelligence in digital commerce. This research primarily relies on secondary data sources.

Discussion

Applications of Artificial Intelligence in Digital Commerce

Recommendation Systems

Recommendation systems are one of the most popular AI applications in digital commerce. These systems use a customer's browsing history, purchase habits, and preferences to offer appropriate products. Personalized product recommendations improve client engagement and considerably boost sales conversion rates.

Examples

- Amazon uses AI Algorithms to promote products like “ Customers who bought this also bought...”
- Netflix recommends movies and TV shows based on viewing history and rating.
- Spotify recommends playlists and songs based on listening behavior.
- Chatbots & Virtual Assistants

Online retailers are increasingly using AI – powered chatbots and virtual assistants to automate customer assistance. These systems can answer frequently asked questions, help customers select items, track orders and provide real-time support. Chatbots enable organizations to improve service efficiency while lowering operating expenses.

Examples

- Amazon Alexa allows customers to search for products, place orders and track deliveries with voice commands.
- Google Assistant enables customers to purchase online and obtain product details.
- H & M utilizes chatbots to assist clients with apparel and fashion recommendations.

Personalised Marketing

AI enables businesses to deliver highly personalized marketing campaigns by analyzing customer data and predicting individual preferences. Personalized advertisements, targeted email campaigns and customized promotional offers help to increase customer engagement and improve marketing effectiveness.

Examples

- Amazon provides personalized product recommendations by email based on previous purchases
- Facebook and Instagram display tailored ads based on user interests and surfing habits.
- Starbucks utilizes AI in its mobile app to give personalized offers and promotions.

Fraud Detection

Fraud detection is a critical application of AI in digital commerce. AI algorithms analyze transaction patterns and detect suspicious activities in real time. This helps businesses prevent financial losses, enhance platform security and maintain customer trust.

Examples

- PayPal utilizes AI to detect suspect payment activity.

- Visa utilizes machine learning to detect fraudulent credit card transactions in real- time.
- Master-card uses AI algorithms to monitor global transaction data and avoid fraud.

Inventory and Supply Chain Management

AI technologies help businesses optimize inventory management and supply chain operations by prediction demand patterns. Accurate demand forecasting enables companies to maintain appropriate stock levels, reduce operational costs and improve logistics efficiency.

Examples

- Amazon's warehouses utilize AI – powered robots and predictive analytics for inventory management.
- Walmart use AI to estimate product demand and automatically refill stores.
- Alibaba Group optimizes delivery routes and warehouse management with AI-driven logistics technologies.

Benefits of Artificial Intelligence in Digital Commerce

Improved Customer Experience

In digital commerce artificial intelligence (AI) has a significant impact on enhancing the general customer experience. Large volumes of consumer data including browsing history, purchase trends, preferences and online activity are analyzed by AI systems. AI can utilize this data to create content, ads and product suggestions that are specific to each user.

AI systems can make product recommendations based on a customer's past purchases or preferences when they visit an online store. AI- driven chatbots and virtual assistants may also track orders, respond to questions, offer immediate customer service and help customers at every stage of the purchasing process. Customer's buying experiences are made more convenient, interesting and fulfilling by this tailored and responsive contact which boosts consumer loyalty and retention.

Increased Operational Efficiency

By automating repetitive and time-consuming processes, artificial intelligence(AI) helps businesses increase operational efficiency. AI is used by many digital commerce platforms to manage marketing campaigns, process orders, increase supply chain operations and automate customer care through chatbots.

AI can forecast product demand, autonomously manage inventory levels and alter companies when stock needs to be restocked. This lowers the possibility of running out of merchandise or overstocking. Additionally, AI can monitor client interactions, suggest the best pricing methods and automate email marketing. AI enables businesses to save time, lower operating expenses and concentrate more on strategic initiatives and innovation by decreasing manual labour and human error.

Data-Driven Decision Making

By evaluating enormous amounts of data far more quickly than humans can artificial intelligence helps businesses make more precise and knowledgeable judgments. Companies get information from a variety of sources including social media, website interactions, customer transactions and operational systems. AI systems process this data, find patterns and produce insightful results using sophisticated methods from disciplines like machine learning and data science.

Managers can use these insights to assess various strategy options, forecast future results and comprehend trends. AI estimate future demand by analyzing past sales data, assisting businesses in optimizing inventory levels and cutting waste.

Higher Sales and Conversion Rates

By producing extremely customized consumer experiences, artificial intelligence also significantly contributes to enhancing sales performance and raising conversion rates. Artificial intelligence (AI) systems examine consumer behavior, browsing history, purchase trends and preferences to suggest goods and services based on personal interests.

Big businesses like Amazon and Netflix frequently use this technology to make user-specific recommendations for goods, films or television series. Targeted advertising campaigns can be automated by AI-powered marketing solutions, guaranteeing that the appropriate message reaches the correct audience at the right time.

Challenges of Artificial Intelligence in Digital Commerce

Data Privacy Issues

To evaluate behavior and offer tailored services, AI systems in digital commerce rely significantly on massive amounts of consumer data. Machine learning-based technologies gather and analyze data, including past purchases, browsing habits and personal information.

Sensitive information could be disclosed if it is not well safeguarded, which raises grave issues about data security and privacy. To guarantee that consumer data is handled and utilized appropriately, businesses must adhere to stringent standards and put robust security measures in place.

High Implementation Costs

A substantial financial commitment is needed to implement AI technology. Companies require sophisticated computer infrastructure, specialized software and qualified personnel with data science and artificial intelligence training. Acquiring and maintaining these resources might be costly. Because of their limited finding and resources, many small and medium-sized firms may find it difficult to implement AI solutions.

Algorithmic Bias and Ethical Concerns

AI systems learn on past data and if the training data is biased, the system may generate unfair or discriminatory results. In the subject of AI ethics, this problem-known as algorithmic bias-is frequently explored. Such bias raises questions regarding accountability, justice and openness in digital commerce by influencing marketing tactics, product suggestions and decision-making procedures.

Technical Complexity

Advanced technical skills and understanding in fields like computer science and machine learning are necessary to implement AI technology. AI systems must be integrated with current digital platforms by organizations and their accuracy and efficiency must be regularly monitored and updated. Due to their lack of technological resources and expertise, smaller businesses may find it challenging to handle these complicated technology.

Lack of Skilled Professionals

The lack of competent individuals capable of creating, overseeing and maintaining AI systems is another issue. Hiring experts in domains like machine learning, data science and artificial intelligence is challenging and costly due to their high demand. Businesses may find it difficult to deploy and use AI technologies in digital commerce without qualified experts.

Findings of the Study

Customer Experience

AI applications such as chatbots, virtual assistants and personalized recommendations significantly improve customer engagement, convenience and satisfaction.

Operational Efficiency

Automation of repetitive processes, demand forecasting and inventory management reduces costs and human error, increasing overall efficiency.

Data-Driven Decisions

AI enables businesses to make faster and more accurate decisions by analyzing vast datasets, improving strategic planning and forecasting.

Higher Sales and Conversions

Personalized marketing and AI-driven product suggestions increase customer interactions, sales and conversion rates.

Challenges Remain

Data privacy, high costs, technical complexity, algorithmic bias and lack of skilled professionals continue to be significant obstacles, particularly for smaller businesses.

Conclusion

Through improved consumer experiences, more operational efficiency, data-driven decision-making and increased revenues, artificial intelligence is revolutionizing digital commerce. These advantages are however offset by a number of serious obstacles, including manpower constraints, high implementation costs, technical complexity and ethical issues. Businesses must strike a balance between technology adoption, appropriate governance, secure data handling and ethical frameworks if they want AI to reach its full potential in e-commerce. AI presents enormous potential but long-term success in digital commerce depends on careful implementation and strategic planning.

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