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Artificial Intelligence and Its Scope in Commerce Education

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ABSTRACT: Business schools bear a considerable obligation to prepare students for success in the constantly changing and fast-paced business world. It is crucial for these institutions to persistently adjust to the most recent trends and changes in the business sphere, ensuring that their curricula stay relevant and aligned with these fluctuations. By addressing these elements, business schools can ensure that their graduates are equipped with the essential knowledge, competencies, and mentality to thrive in the dynamic realm of business. By keeping up with new trends and advances and emphasizing practical, hands-on learning, business schools can play a crucial role in shaping the future of business and propelling the accomplishments of their alumni. Additionally, by incorporating diverse viewpoints and cross-disciplinary methods, these institutions can cultivate a more comprehensive and all-encompassing comprehension of the intricacies and subtleties of the contemporary business environment.

KEYWORDS-artificial intelligence, scope, commerce, business, environment

I.INTRODUCTION

The swift progress of artificial intelligence (AI) has triggered a transformative influence on the business landscape, necessitating business education to adapt and confront the arising challenges and prospects. This article delves into the significance of AI in the future of business education, examining the consequences for curricula, pedagogical techniques, and the cultivation of new competencies. We also explore the potential barriers that may impede the incorporation of AI into business education and suggest strategies to surmount these hurdles.[1,2,3]

Over-reliance on traditional business models: With the rise of the sharing economy, peer-to-peer platforms, and new business models, it's important for students to understand how these new models are changing the way businesses operate. AI can help by providing tools to analyze, simulate, and predict the success of various business models. These tools can be integrated into the curriculum, allowing students to explore and compare the implications of traditional and emerging business models. Additionally, AI-powered case studies can showcase the impact of the sharing economy, peer-to-peer platforms, and other disruptive models on different industries.

One-size-fits-all leadership style: Today's successful leaders must be adaptable and capable of leading a diverse range of individuals and teams. A single, rigid leadership style may not be effective in all situations. AI can help by offering personalized learning experiences and adaptive leadership training. For instance, AI-driven simulations and role-playing scenarios can be used to expose students to diverse situations, requiring them to adapt their leadership styles accordingly. These simulations can also provide real-time feedback, helping students identify their strengths and areas for improvement.

Over-reliance on hierarchical structures: In today's flat and agile organizations, it's important for students to understand how to effectively lead and manage in non-hierarchical structures. AI can facilitate the teaching of non-hierarchical structures by providing virtual environments where students can experiment with different organizational designs. In these environments, students can observe the impacts of various structures on team dynamics, decision-making, and overall performance. AI can also analyze the data generated from these experiments to provide insights on the effectiveness of different organizational structures.

Emphasis on Competition: The cut-throat competition often emphasized in business schools can lead to unethical behavior and a narrow focus on short-term goals at the expense of long-term success and sustainability. AI-powered tools can help shift the focus from competition to collaboration. By using AI to simulate collaborative exercises and group projects, students can learn the importance of teamwork, ethical behavior, and long-term thinking. AI can also analyze team interactions and provide personalized feedback on how students can improve their collaboration skills, promoting a more sustainable and ethical approach to business.

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Static view of competitive advantage: In today's fast-paced business environment, competitive advantage is constantly changing. Business schools may need to place more emphasis on teaching students how to identify and capitalize on new opportunities, as well as how to stay ahead of the competition. AI can help students develop a dynamic view of competitive advantage by analyzing real-time market data and trends, as well as identifying emerging opportunities. AI-powered tools can also help students simulate different strategies and evaluate their potential impact on business performance. This can help students understand the need for continuous innovation and adaptability to stay ahead in the competitive landscape.

Lack of emphasis on sustainability: As businesses and consumers become more environmentally conscious, it's important for students to understand the importance of sustainability and how it affects business practices and decision-making. AI-powered learning platforms can provide personalized content related to sustainability in business, ensuring students understand its significance. Additionally, AI can help simulate real-world scenarios where students can analyze the impact of sustainable practices and make informed decisions in a risk-free environment.

Over-reliance on traditional business metrics: With the rise of ESG (environmental, social, and governance) metrics, it's important for students to understand how these new metrics are changing the way businesses measure success. While financial metrics are certainly important, they may not always provide a complete picture of a company's performance or its impact on stakeholders, such as employees, customers, or the environment. AI can support the integration of ESG metrics into existing business education curricula. By leveraging natural language processing (NLP) and machine learning algorithms, AI can help analyze vast amounts of data, identify trends, and enable students to understand how ESG metrics can complement traditional business metrics. Moreover, AI can provide case studies and real-life examples of companies successfully implementing ESG metrics.

Lack of emphasis on design thinking: With the rise of design-led businesses, it's important for students to understand how to apply design thinking to solve complex business problems and create innovative solutions. AI-powered tools can facilitate the teaching of design thinking principles and practices by providing interactive learning modules and offering feedback on students' projects. Virtual assistants and AI-based collaboration tools can also encourage cross-disciplinary learning, bringing together design, business, and technology perspectives to develop innovative solutions.

Outdated view of the discipline of marketing: Traditional marketing strategies, such as mass media advertising and direct mail, are no longer as effective as they once were. Modern marketing must take into account the rise of digital and social media, as well as changing consumer behaviors. AI can help students learn and implement modern marketing strategies by providing access to real-time data, trends, and digital marketing tools. Through AI-generated content and simulations, students can explore social media marketing, influencer marketing, search engine optimization, and other digital marketing techniques, fostering a hands-on approach to understanding modern marketing practices.[4,5,6]

Outdated view of customer experience: With the rise of digital customer engagement, it's important for students to understand how to create and deliver a seamless and personalized customer experience. AI can help business students learn about the importance of customer experience in the digital era by providing real-world examples, case studies, and interactive simulations. AI-powered chatbots and virtual assistants can be used to demonstrate how technology can enhance customer interactions, while analytics tools can help students understand how to utilize data to create personalized experiences for customers.

Outdated view of market research: With the rise of big data and advanced analytics, it's important for students to understand how to effectively gather, analyze, and use market data to inform business decisions. AI can help address this challenge by providing real-time market data analysis and insights. AI-driven tools can enable students to collect, analyze, and interpret large data sets more efficiently. Educators can incorporate AI-based analytics platforms in their curricula to teach students how to leverage AI for market research.

Outdated view of work-life balance: With the rise of remote work and flexible schedules, it's important for students to understand how these changes are affecting work-life balance and how they can manage their personal and professional lives effectively. AI can help students manage their work-life balance by providing personalized scheduling and productivity tools. These tools can help students optimize their time and monitor their mental and physical well-being.

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Educators can also use AI to analyze data on student performance, identifying patterns and correlations with work-life balance factors.

Outdated view of technology: Technology is transforming the business world, and students need to understand how new technologies such as artificial intelligence, blockchain, and the Internet of Things are changing the way businesses operate. AI can be used to create immersive learning experiences that teach students about cutting-edge technologies. For example, virtual reality simulations or AI-based case studies can be used to demonstrate how AI, blockchain, and IoT are changing business operations. By integrating these technologies into the curriculum, educators can ensure students have a comprehensive understanding of their implications.

Lack of emphasis on interdisciplinary skills: In today's business world, it's important for students to understand how different disciplines, such as technology, design, and data science, are changing the way businesses operate. Business schools may need to place more emphasis on interdisciplinary skills in their curricula. AI can be used to develop interdisciplinary courses that blend traditional business subjects with other disciplines such as technology, design, and data science. These courses could incorporate real-world case studies, simulations, and hands-on projects to demonstrate the practical applications of interdisciplinary skills in business.

Lack of emphasis on entrepreneurship: With the rise of the gig economy and the growth of small businesses, it's important for students to understand the skills and mindset required to start and grow a business. AI-driven platforms can help students develop entrepreneurial skills by providing them with resources and tools to identify market opportunities, create business plans, and manage financial aspects. AI can also connect students with mentors, investors, and successful entrepreneurs, enabling them to learn from real-world experiences and expand their networks.

Lack of focus on personal and professional development: While technical skills are important, it's equally important for students to develop their personal and professional skills, such as leadership, communication, and problem-solving. Business schools may need to place more emphasis on these areas in their curricula. AI can help personalize learning experiences and track student progress in developing leadership, communication, and problem-solving skills. Educators can use AI-powered tools to create personalized learning plans and provide real-time feedback on students' performance. Additionally, AI can be used to create realistic simulations and scenarios to help students practice and improve their personal and professional skills. [7,8,9]

Lack of emphasis on diversity and inclusion: In today's global and diverse business world, it's essential for businesses to understand and embrace diversity and inclusion. Business schools may need to place more emphasis on these topics in their curricula. AI-powered learning platforms can help educators create personalized learning experiences for students with diverse backgrounds, cultures, and learning styles. AI can also analyze and identify patterns in course content to ensure a broader range of perspectives and examples are included, promoting a more inclusive curriculum.

Lack of emphasis on innovation: In today's fast-paced business environment, innovation is a critical driver of success. Business schools may need to place more emphasis on teaching students how to think creatively, identify new opportunities, and develop new products and services. AI can be used to develop interactive, dynamic learning environments that encourage creative thinking and problem-solving. AI-powered tools can help students analyze complex data, identify trends, and generate novel ideas, thus fostering an innovative mindset.

Outdated view of project management: With the rise of agile methodologies and digital tools, it's important for students to understand how to effectively manage projects in a rapidly changing environment. AI-driven learning platforms can be designed to teach students the latest agile methodologies, digital tools, and best practices in project management. These platforms can simulate real-world scenarios, allowing students to apply their knowledge and develop their skills in a practical context.

Strict adherence to formal planning and budgeting processes: In an era of fast-paced innovation and disruption, traditional budgeting and planning methods may not be flexible enough to keep up with the changing market conditions. AI can help teach students how to adapt and respond to rapidly changing market conditions. By simulating different scenarios and analyzing real-time data, AI-powered tools can help students learn how to create more flexible planning and budgeting processes.

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Over-reliance on theory: While a strong understanding of business theory is important, it's equally important to have practical, hands-on experience. Business schools may need to balance their focus on theory with more practical learning opportunities. Some critics argue that business schools focus too much on theories and models that are not applicable in the real world. This can lead to graduates who lack practical experience and are ill-equipped to deal with real-world challenges. AI can facilitate the development of immersive, hands-on learning experiences that complement theoretical instruction. By simulating real-world scenarios, AI can help students gain practical experience and apply their theoretical knowledge to real-life situations.

Outdated view of supply chain management: With the rise of new technologies such as blockchain and the Internet of Things (IoT), it's important for students to understand how to effectively manage modern supply chains. AI can be used to teach students about the latest technologies and best practices in supply chain management, including blockchain and IoT. AI-powered simulations can help students understand the intricacies of modern supply chains and develop the skills needed to manage them effectively.

Lack of emphasis on cybersecurity: With the increasing threat of cyber-attacks, it's important for students to understand how to protect their businesses from digital security threats. AI can be used to create realistic cybersecurity simulations, allowing students to learn how to identify vulnerabilities, protect sensitive data, and respond to cyber threats. AI can also analyze current trends in cyber threats and provide up-to-date information, ensuring that students are prepared for the evolving digital landscape. [10,11,12]

Expected AI-Driven Transformations

It is likely that business schools will undergo significant transformations in the AI era to adapt to the rapidly evolving business landscape and adequately prepare students for the challenges and opportunities presented by AI. Key aspects of this transformation include:

Curricular Reforms: Business schools will need to revise their curricula to incorporate AI-related topics and emphasize the importance of data-driven decision-making. Courses on AI, machine learning, and data analytics will become integral to business programs, providing students with essential knowledge and skills to navigate the AI-driven business world.

Teaching Methods: The integration of AI-powered learning tools, such as personalized learning platforms, virtual assistants, and adaptive assessment systems, will revolutionize teaching methods. These tools will enable instructors to tailor the learning process to individual student's needs, providing targeted support and guidance to enhance learning outcomes.

Project-Based Learning: Business schools will increasingly adopt project-based learning approaches, often in collaboration with industry partners, to offer students real-world, hands-on experiences. These projects will allow students to apply their AI knowledge and skills to real business challenges, fostering problem-solving and critical-thinking abilities.

Skill Development: In addition to technical skills, business schools will focus on developing students' emotional intelligence and ethical decision-making skills, as these competencies will be crucial in an AI-driven business landscape. Interdisciplinary collaboration will also be encouraged, promoting a well-rounded perspective on the application and implications of AI across various fields.

Faculty Training and Development: Business schools will need to invest in faculty training and development programs to equip educators with the necessary AI expertise and understanding of its potential applications in their teaching. This will help address faculty resistance and ensure seamless integration of AI into business education.

Infrastructure and Resources: To facilitate AI integration, business schools must invest in the required resources, including software, hardware, and relevant datasets. Developing partnerships with industry and government organizations will be vital in ensuring access to these resources and staying up to date with the latest AI advancements.

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Collaboration and Networking: Business schools will need to build strong networks with AI experts, researchers, and industry partners to stay informed about emerging trends and developments in AI. This will not only facilitate knowledge exchange but also create opportunities for collaborative research, internships, and employment for graduates. By embracing these transformations, business schools will be better positioned to prepare students for the AI-driven future, equipping them with the knowledge, skills, and ethical foundations needed to succeed and lead in the increasingly complex business landscape.

AI has emerged as a major force in today's world, revolutionizing various sectors and transforming how businesses function. Consequently, business education must evolve in response to the rapid progress in AI to effectively prepare students for the ever-shifting landscape. Integrating AI into business courses is essential for cultivating a comprehensive understanding of the technology's applications and consequences across diverse industries. This can be accomplished by incorporating AI modules into existing courses such as marketing, finance, and operations management or by establishing dedicated AI-focused courses. This type of curriculum will allow students to examine the ethical, legal, and societal aspects of AI, as well as its practical uses.

Data-driven decision-making is increasingly becoming a vital skill for business professionals. Business schools need to stress the significance of data analytics and AI-supported decision-making in their curricula, providing students with the essential knowledge and tools to analyze large data sets and extract valuable insights. Implementing AI-based learning tools, including personalized learning platforms, virtual assistants, and adaptive assessment systems, can improve the educational experience. These tools can assist instructors in customizing the learning process to suit individual students' needs, guaranteeing targeted support and guidance. Project-based learning, particularly when partnered with industry stakeholders, presents students with the chance to apply their AI expertise and skills to real-world business problems. This practical approach can enhance students' comprehension of AI's real-world applications and promote the growth of problem-solving and critical-thinking skills.

II.DISCUSSION

A. Data Analytics and Decision Making

It is worth noting that AI has the potential to analyse large sets of data at a very high speed and accuracy. Through their abilities to analyse multiple sources of data, automated intelligent tools help organisations make data-supported decisions that make them more agile than other competitors operating under similar conditions.

Of all AI-driven applications, predictive analytics is paramount. Businesses can use AI algorithms to predict coming things. For that reason, they have an attitude towards what people want and changes in the market. McKinsey's report also shows that using AI for predictive analytics is more than two-and-a-half times more likely to make a company outperform its competitors in regard to customers.
Moreover, AI generates vital information about customers out of the data collected. Through this intimate knowledge of customer behaviour, companies are able to tailor-make products and services better suited to customers' needs. In fact, a Statista study highlights this finding by showing that about 72 percent of organisations view AI as crucial in helping them understand end-consumers' needs in order to make their business survive and thrive.

B. Automation and Efficiency

AI have also changed how businesses operate through the automation of routine tasks and optimization of flowsheets. The above makes them efficient and sets employees free for other creative, strategic duties. With RPA, artificial intelligence-driven bots can automate activities such as inputting of data in Excel spreadsheets, handling sales invoices or answering customer queries thereby eliminating mistakes and saving cost. As per Deloitte, RPA is able to cut the time devoted for manual tasks down to approximately 90%.[13,14,15]
Chatbots and Virtual Assistants:These AI-powered apps present timely customer service and help minimise customer satisfaction time and response time. According to Gartner, in 2017 more than a quarter of all customer support requests will involve using VCAs to facilitate customer service.

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C. Personalization and Customer Engagement

Unique experiences that form the foundation of customer stickiness and the improvement of customer services come in handy through the involvement of AI.

Personalized Marketing:AI analysis of customer data delivers customised marketing messages with a higher conversion rate leading to better ROI. According to Epson, 80% of buyers buy things made for them alone.

Customer Service:With AI-based chatbots, customers' queries and challenges can be corrected within seconds even after business hours.

Table: AI Applications in Business

Application	Impact
Data Analytics	Enhanced decision-making
Automation and Efficiency	Reduced operational costs
Personalisation	Increased customer engagement
Predictive Analytics	Better understanding of market trends
Customer Insights	Tailored products and services
Chatbots and Assistants	Improved customer support and response times

III.RESULTS

As a commerce student looking to dive into artificial intelligence (AI) and machine learning (ML), you're stepping into a field ripe with opportunities.

Here's how you can get started:

1. Understand the Intersection: Recognize how commerce knowledge complements AI/ML, especially in data-driven decision-making for businesses.
2. Learn Programming: Begin with Python, the most recommended programming language for AI and ML due to its simplicity and powerful libraries.
3. Take a Course: Complete a comprehensive machine learning course to understand the theoretical and practical aspects.
4. Work on Projects: Apply your knowledge on real-time projects. This step is crucial for practical learning and skill application.

Transitioning from commerce to AI/ML is about leveraging your business knowledge and enhancing it with technical skills.

AI in e-commerce can be defined as using AI techniques, systems, tools, or algorithms to support activities related to buying and selling products or services over the internet. Research on AI in e-commerce has been going on for the past three decades. About 4000 academic research articles have been published on the topic across multiple disciplines, both at the consumer (de Bellis & Venkataramani Johar, 2019; Sohn & Kwon, 2019) and organisational levels (Campbell et al., 2019; Kietzmann et al., 2018; Vanneschi et al., 2018). However, knowledge on the topic has not been synthesised despite its rapid growth and dispersion. This lack of synthesis makes it difficult for researchers to determine how much the extant literature covers concepts of interest or addresses relevant research gaps. Synthesising research on AI in e-commerce is an essential condition for advancing knowledge by providing the background needed to describe, understand, or explain phenomena, to develop/test new theories, and to develop teaching orientations in this research area (Cram et al., 2019; Paré et al., 2015). Thus, this study aims to synthesise research on AI in e-commerce and propose directions for future research in the IS discipline. The innovative approach of combining bibliometric analysis with an extensive literature review is used to answer two specific research questions: (i) what is the current state of research on AI in e-commerce? (ii) what research should be done next on AI in e-commence in general, and within information systems (IS) research in particular?

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This study's findings show that AI in e-commerce primarily focuses on recommender systems and the main research themes are sentiment analysis, optimisation, trust, and personalisation. This study makes timely contributions to ongoing debates on the connections between business strategy and the use of AI technologies (Borges et al., 2019; Dwivedi et al., 2019, 2019). It also contributes to research on how firms can address challenges regarding the use of AI-related benefits and opportunities for new product or service developments and productivity improvements (Makridakis, 2017). Furthermore, no study currently synthesises AI in e-commerce research despite its rapid evolution in the last decade triggered by big data, advanced machine learning (ML) algorithms, and cloud computing. Using well-established e-commerce classification frameworks (Ngai & Wat, 2002; Wareham et al., 2005), this study classifies information systems (IS) literature on AI in e-commerce. These classifications make it easier for researchers and managers to identify relevant literature based on the topic area, research style, and research theme. A future research agenda is proposed based on the gaps revealed during the classification to guide researchers on making meaningful contributions to AI knowledge in e-commerce.

Research method

Bibliometric analysis

Bibliometric analysis has been increasingly used in academic research in general and in IS research to evaluate the quality, impact, and influence of authors, journals, and institutions in a specific research area (Hassan & Loebbecke, 2017; Lowry et al., 2004, 2013). It has also been used extensively to understand AI research on specific fields or topics (Hinojo-Lucena et al., 2019; Tran et al., 2019; Zhao, Dai, et al., 2019; Zhao, Lou, et al., 2019). In this study, a bibliometric analysis was conducted to understand research on AI in e-commerce using the approach Aria and Cuccurullo (2017) proposed. This methodology involves three main phases: data collection, data analysis, and data visualisation & reporting. The data collection phase involves querying, selecting, and exporting data from selected databases. This study's data sample was obtained by querying the Web of Science (WoS) core databases for publications from 1975 to 2019. This database was chosen over others like Google Scholar or Scopus because WoS provides better quality bibliometric information due to its lower rate of duplicate records (Aria et al., 2019) and greater coverage of high-impact journals (Aghaei Chadegani et al., 2013). The following search string was used to query the title, keywords, and abstracts of all documents in the WoS collection:

(‘‘Electronic Commerce’’ OR ‘‘Electronic business’’ OR ‘‘Internet Commerce’’ OR “e-business” OR “ebusiness” OR "e-commerce” OR “ecommerce” OR “online shopping” OR “online purchase” OR “internet shopping” OR “e-purchase” OR “online store” OR “electronic shopping”).

AND (“Artificial intelligence” OR “Artificial neural network” OR “case-based reasoning” OR “cognitive computing” OR “cognitive science” OR “computer vision” OR “data mining” OR “data science” OR “deep learning” OR “expert system” OR “fuzzy linguistic modelling” OR “fuzzy logic” OR “genetic algorithm” OR “image recognition” OR “k-means” OR “knowledge-based system” OR “logic programming” OR “machine learning” OR “machine vision” OR “natural language processing” OR “neural network” OR “pattern recognition” OR “recommendation system” OR “recommender system” OR “semantic network” OR “speech recognition” OR “support vector machine” OR “SVM” OR “text mining”).

This search string led to 4414 documents that made up the initial dataset of this study. For quality reasons, only document types tagged as articles, reviews, and proceeding papers were selected for this study because they are most likely to have undergone a rigorous peer-review process before publication (Milian et al., 2019). Thus, editorial material, letters, news items, meeting abstracts, and retracted publications were removed from the dataset, leaving 4335 documents that made up the final dataset used for bibliometric analysis. Figure 1 summarises the data collection phase.[16,17,18]

IV.CONCLUSION

Four themes characterise research on AI in e-commerce: sentiment analysis, trust & personalisation, optimisation, AI concepts, and related technologies. The sentiment analysis theme represents the stream of research focused on interpreting and classifying emotions and opinions within text data in e-commerce using AI techniques like ML and natural language processing (NLP). [19] The trust and personalisation theme represents research that focuses on establishing trust and making personalised recommendations for consumers in e-commerce using AI techniques like

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collaborative filtering, case-based reasoning, and clustering algorithms. The optimisation theme represents research that focuses on using AI algorithms like genetic algorithms to solve optimisation problems in e-commerce. Finally, the AI concepts and related technologies theme represent research that focuses on using different techniques and concepts used in the research area.[20]

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