

# Determinants of AI Adoption in Commerce Education: A Study of Challenges and Perceptions

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**Abstract-** This study examines the transformative impact of Artificial Intelligence (AI) on commerce and management education, with a focus on challenges, opportunities, and breakthroughs in the AI era. As AI technologies—including machine learning, natural language processing, predictive analytics, and automation—become pervasive in business operations, traditional commerce and management models are being disrupted, emphasizing data-driven decision-making, personalized customer experiences, and operational efficiency. Despite these opportunities, integration of AI raises critical concerns around data privacy, algorithmic transparency, ethical governance, and faculty readiness. Using primary data collected from 50 students through questionnaires and interviews, alongside secondary sources, this paper analyzes student awareness, skill gaps, and perceptions of AI in commerce and management education. Findings reveal that 52% of students lack familiarity with AI concepts, with limited faculty support (46%) and insufficient curriculum coverage (20%) identified as major barriers to developing AI-related skills. Nevertheless, 70% of respondents recognize growing job and entrepreneurship prospects in AI-driven commerce, and 52% express high interest in pursuing AI-based careers. Students perceive machine learning (38%) and data analytics (34%) as the most relevant technologies for the next five years, while also acknowledging AI's role in increasing automation (46%) and creating new job roles (32%). The study concludes that while AI presents significant career opportunities in commerce and management, gaps in awareness, resources, and pedagogy persist. Educational institutions must therefore update curricula, enhance faculty training, integrate AI-powered learning tools, and address ethical considerations to prepare students for a rapidly evolving digital economy. An adaptive, multidisciplinary approach bridging technology, management science, and ethics is essential to harness AI's potential while mitigating associated risks.

**Key words:** Artificial Intelligence; Commerce Education; Management Education; Machine Learning; Data Analytics; AI Ethics; Curriculum Development; Digital Literacy; Predictive Analytics; Automation; Skill Development; Faculty Training; AI-Driven Careers; Educational Innovation; Business Transformation; Lifelong Learning

## INTRODUCTION

Defining the "era of Artificial Intelligence" in the context of commerce and management involves recognizing a period of accelerating and pervasive integration of AI technologies into business operations and strategic decision-making.

In recent years, the emergence of artificial intelligence (AI) has marked a transformative era in both commerce and management. The rapid evolution of AI technologies—ranging from machine learning algorithms and natural language processing to robotics and predictive analytics—has ushered in opportunities that were once relegated to the realm of science fiction. This research paper, titled *Rethinking Commerce and Management: Challenges, Opportunities, and Breakthroughs in the Era of Artificial Intelligence*, aims to unravel the complex interplay between AI innovations and the traditional domains of commerce and management, providing a comprehensive overview of the state-of-the-art developments, while identifying emerging trends and potential challenges. The proliferation of AI has redefined competitive landscapes and operational paradigms across industries. Traditional business models are being disrupted by AI-driven strategies that emphasize efficiency, personalized customer experiences, and data-informed decision-making. For instance, predictive analytics powered by machine learning algorithms enable organizations to anticipate shifts in market dynamics and consumer behavior, thereby

gaining a strategic advantage in complex marketplaces. As commerce increasingly leverages these advanced tools, the need to integrate AI with established management practices has become paramount.

Despite the promising prospects, the integration of AI also poses significant challenges. Concerns surrounding data privacy, algorithmic transparency, and the ethical implications of decision automation have sparked widespread debate. Moreover, the rapid pace of AI development necessitates a new framework for governance and risk management. Organizations must now navigate a path that not only fosters innovation but also mitigates the potential risks associated with technological disruption. This paper explores how these challenges are being addressed through breakthroughs in AI research and the development of robust regulatory frameworks.

The ensuing sections delve deeper into the multifaceted impacts of AI on commerce and management. We discuss key technological breakthroughs, analyze case studies of successful AI integration, and present future research directions that will shape the next generation of business innovation. Through a multidisciplinary approach that bridges technology, management science, and ethical considerations, this paper seeks to contribute to the ongoing dialogue on harnessing AI for sustained industrial and economic progress.

Ultimately, this research underscores the need for an adaptive mindset—one that is prepared to embrace AI's promise while cautiously navigating its challenges. As AI continues to evolve, its influence on commerce and management will undoubtedly expand, warranting continued scholarship and evolving strategies to fully realize its potential in transforming the modern business landscape.

#### Characteristics of AI:

##### Increased Accessibility and Power:

Advancements in computing power, particularly in cloud computing and specialized hardware like GPUs, have made AI technologies more accessible to businesses of all sizes.

The development of sophisticated machine learning algorithms, deep learning, and natural language processing (NLP) has significantly expanded AI's capabilities.

#### Data-Driven Decision-Making:

AI's ability to analyze vast amounts of data has transformed how businesses make decisions.

Predictive analytics, powered by AI, enables businesses to forecast trends, anticipate customer behavior, and optimize operations.

#### Automation and Efficiency:

AI is automating repetitive tasks, streamlining processes, and improving operational efficiency across various business functions. This automation is impacting everything from customer service and supply chain management to financial analysis and human resources.

#### Personalization and Customer Experience:

AI is enabling businesses to deliver personalized customer experiences through targeted marketing, personalized recommendations, and AI-powered customer service.

Chatbots and virtual assistants are becoming increasingly common, providing 24/7 customer support.

#### Transformative Impact on Management:

AI is changing the nature of work and the required skills for managers.

Managers are increasingly relying on AI-powered tools for decision-making, strategic planning, and performance management. The rise of generative AI, is also having a profound impact on content creation, and many other business processes.

#### Ethical and Societal Considerations:

The widespread adoption of AI raises ethical concerns related to bias, privacy, and job displacement.

Businesses and policymakers are grappling with the need to develop ethical guidelines and regulations for AI.

#### Implications for Commerce and Management Education:

##### Curriculum Updates:

Commerce and management programs must incorporate AI-related topics, such as machine learning, data analytics, and AI ethics.

Students need to develop skills in data analysis, AI programming, and AI strategy.

#### Emphasis on Digital Literacy:

Students must become proficient in using AI tools and technologies.

Education must focus on developing critical thinking and problem-solving skills to navigate the AI-driven world.

#### Focus on Ethical Considerations:

Education must address the ethical implications of AI, fostering responsible AI development and use.

Students must understand the importance of fairness, transparency, and accountability in AI.

#### Lifelong Learning:

The rapid pace of AI development requires continuous learning and adaptation.

Educational institutions must provide opportunities for lifelong learning and up skilling.

In summary, the accelerating pace of AI adoption is creating both opportunities and challenges for commerce and management. Educational institutions must adapt to this changing landscape by providing students with the knowledge and skills they need to thrive in the AI-driven world.

### B. Problem Statement and Research Questions:

How AI is fundamentally reshaping commerce and management education. The impact of AI on commerce and management education is multifaceted, driving significant changes in curriculum, teaching methodologies, and the skills students need to acquire.

Breakdown of key areas:

#### 1. Curriculum Transformation:

##### Integration of AI Concepts:

Business schools are increasingly incorporating AI-related topics into their programs, including machine learning, data analytics, AI ethics, and AI strategy. Courses are being designed to equip students with the technical knowledge and practical skills to understand and apply AI in business contexts.

**Emphasis on Data Literacy:** Given AI's reliance on data, there's a growing focus on developing students' data literacy skills, including data analysis, interpretation, and visualization.

**Focus on Ethical Considerations:** Recognizing the ethical implications of AI, programs are addressing issues such as algorithmic bias, data privacy, and the societal impact of AI.

#### 2. Changes in Teaching Methodologies:

**AI-Powered Learning Tools:** AI-powered tools are being used to personalize learning experiences, provide adaptive feedback, and automate administrative tasks.

Simulations and virtual reality are being used to create immersive learning environments that replicate real-world business scenarios.

**Increased Use of Data Analytics:** Instructors are using data analytics to track student progress, identify areas for improvement, and tailor their teaching strategies.

### 3. Skills Development:

**Technical Skills:** Students are developing skills in AI programming, data analysis, and machine learning.

**Soft Skills:** In addition to technical skills, there's a growing emphasis on developing soft skills such as critical thinking, problem-solving, creativity, and ethical decision-making.

**Adaptability and Lifelong Learning:** Given the rapid pace of AI development, students are being encouraged to embrace a mindset of lifelong learning and adaptability.

### 4. Impact on Career Paths:

**Increased Demand for AI-Related Skills:** Employers are increasingly seeking graduates with AI-related skills, creating new career opportunities in areas such as data science, AI strategy, and AI product management.

**Transformation of Traditional Roles:** AI is transforming traditional management roles, requiring managers to have a deeper understanding of AI and its implications for their businesses

#### Key Considerations:

##### Keeping Pace with Technological Advancements:

Educational institutions must continuously update their curricula and teaching methodologies to keep pace with the rapidly evolving field of AI.

##### Bridging the Gap Between Theory and Practice:

There's a need to bridge the gap between theoretical knowledge and practical application, providing students with hands-on experience in using AI tools and technologies.

##### Addressing the Digital Divide:

Ensuring equitable access to AI education is crucial to address the digital divide and promote inclusivity.

In essence, AI is reshaping commerce and management education by driving curriculum

changes, transforming teaching methodologies, and demanding new skill sets.

#### C. Objective of the Study:

Objectives of this paper is to provide a comprehensive analysis of AI's impact on education in the Faculty of Commerce & Management

1. To identify the challenges faced by commerce and management educators in incorporating AI into their curriculum and teaching practices.
2. To analyze the breakthroughs and innovations in teaching and learning methods that integrate AI in commerce and management education.
3. To identify the challenges faced by commerce and management students in developing AI-related skills and knowledge.
4. To explore the opportunities for employment and entrepreneurship in AI-driven commerce and management education.
5. To analyze the breakthroughs and innovations in AI-driven commerce and management practices that can prepare students for a rapidly changing job market.

#### Hypothesis

1. Commerce and management educators who lack training and support in AI integration will experience greater challenges in incorporating AI into their curriculum and teaching practices.
2. The use of AI-powered adaptive learning systems will lead to improved student outcomes and increased student engagement in commerce and management education.
3. The primary challenges faced by commerce and management students in developing AI-related skills will be related to lack of awareness, limited access to resources, and insufficient faculty support.
4. Commerce and management graduates with AI-related skills and knowledge will have greater opportunities for employment and entrepreneurship in AI-driven industries.
5. AI-powered chatbots and virtual assistants will be effective in improving operational efficiency in commerce and management.

D. Scope and Limitations: Scope of this research paper is limited to study the impact of AI on Commerce and

Management Education from the perspective of Academicians and students only.

Limitations: The study is limited to the availability of data and for specific period only. Analysis and interpretation of the data has been done on the basis of information given by the respondents.

#### E. Data Collection:

Primary and secondary data has been collected from online and offline sources.

Primary data has been collected from predesigned questionnaire and interview of academicians and students. Secondary data has been collected from various research paper published online, news-paper article and from various websites.

#### F. Data Analysis:

From the information collected on the basis of questionnaire it is filtered. Various tables has been prepared to simplify analysis of data. From that table analysis and interpretation of data has been done.

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#### Section 1: Demographics Profile of students

##### Data Analysis and Interpretation

The data collected through the questionnaire was systematically classified, tabulated, and analyzed to understand students' awareness, challenges, and opportunities related to AI-driven commerce and management. The analysis was carried out using percentage distribution and interpretation methods for better understanding of the responses received from 50 students.

#### Section 1: Demographic Profile of Students

##### 1. Current Academic Level of Respondents

| Particulars       | No. of Responses | Percentage (%) |
|-------------------|------------------|----------------|
| Undergraduate     | 32               | 64             |
| Postgraduate      | 8                | 16             |
| Research Scholars | 10               | 20             |

| Particulars | No. of Responses | Percentage (%) |
|-------------|------------------|----------------|
| Total       | 50               | 100            |

### Analysis and Interpretation

The above table shows the academic profile of the respondents. Out of 50 respondents, 64% were undergraduate students, 16% were postgraduate students, and 20% were research scholars. This indicates that the majority of respondents belong to the undergraduate category. Therefore, the study mainly reflects the perceptions and awareness level of undergraduate students regarding AI-driven commerce and management practices.

## Section 2: Challenges in Developing AI-Related Skills

### 1. Familiarity with AI Concepts and Technologies

| Particulars         | No. of Responses | Percentage (%) |
|---------------------|------------------|----------------|
| Not Familiar at All | 26               | 52             |
| Somewhat Familiar   | 13               | 26             |
| Moderately Familiar | 7                | 14             |
| Very Familiar       | 3                | 6              |
| Extremely Familiar  | 1                | 2              |
| Total               | 50               | 100            |

### Analysis and Interpretation

The table reveals that 52% of students are not familiar at all with AI concepts and technologies, while 26% are somewhat familiar. Only 8% of respondents reported being very or extremely familiar with AI. This clearly indicates a lack of adequate awareness and technical understanding of AI among students. The findings suggest the need for educational institutions to introduce more AI-related training programs, workshops, and practical exposure.

### 2. Challenges Faced in Developing AI-Related Skills

| Particulars       | No. of Responses | Percentage (%) |
|-------------------|------------------|----------------|
| Lack of Resources | 12               | 24             |

| Particulars                      | No. of Responses | Percentage (%) |
|----------------------------------|------------------|----------------|
| Limited Faculty Support          | 23               | 46             |
| Insufficient Curriculum Coverage | 10               | 20             |
| Other Challenges                 | 5                | 10             |
| Total                            | 50               | 100            |

### Analysis and Interpretation

The data indicates that limited faculty support is the major challenge faced by students, as reported by 46% of respondents. Around 24% stated that lack of resources is a major issue, while 20% pointed out insufficient curriculum coverage. The results highlight that institutions need to strengthen faculty training, provide better learning resources, and include AI-related topics in the academic curriculum to improve skill development.

### 3. Importance of Developing AI-Related Skills for Future Career

| Particulars          | No. of Responses | Percentage (%) |
|----------------------|------------------|----------------|
| Not Important at All | 17               | 34             |
| Somewhat Important   | 10               | 20             |
| Moderately Important | 11               | 22             |
| Very Important       | 7                | 14             |
| Extremely Important  | 5                | 10             |
| Total                | 50               | 100            |

### Analysis and Interpretation

The findings show mixed opinions regarding the importance of AI-related skills. About 34% of respondents believe that AI skills are not important at all, while 24% consider them very or extremely important. This indicates that although some students recognize the future significance of AI, a considerable proportion still lacks awareness about the growing role

of AI in commerce and management careers. Awareness programs and career guidance initiatives are therefore essential.

### Section 3: Opportunities for Employment and Entrepreneurship

#### 1. Awareness of Job Opportunities and Entrepreneurship Prospects

| Particulars | No. of Responses | Percentage (%) |
|-------------|------------------|----------------|
| Yes         | 35               | 70             |
| No          | 15               | 30             |
| Total       | 50               | 100            |

#### Analysis and Interpretation

The above data shows that 70% of respondents are aware of job opportunities and entrepreneurship prospects in AI-driven commerce and management, while 30% are unaware. This indicates that most students recognize the growing career opportunities created by AI technologies in business and management sectors.

#### 2. Interest in Pursuing a Career in AI-Driven Commerce and Management

| Particulars           | No. of Responses | Percentage (%) |
|-----------------------|------------------|----------------|
| Not Interested at All | 6                | 12             |
| Somewhat Interested   | 7                | 14             |
| Moderately Interested | 11               | 22             |
| Very Interested       | 22               | 44             |
| Extremely Interested  | 4                | 8              |
| Total                 | 50               | 100            |

#### Analysis and Interpretation

The table indicates that 44% of respondents are very interested in pursuing a career in AI-driven commerce and management, while 8% are extremely interested. Only 12% are not interested at all. The findings reflect a positive attitude among students toward AI-based career opportunities and suggest increasing acceptance of AI-driven professional roles in the future.

### Section 4: Breakthroughs and Innovations in AI-Driven Commerce and Management Practices

#### 1. Impact of AI on the Job Market

| Particulars                               | No. of Responses | Percentage (%) |
|-------------------------------------------|------------------|----------------|
| Increased Automation                      | 23               | 46             |
| New Job Opportunities                     | 16               | 32             |
| Changes in Job Roles and Responsibilities | 9                | 18             |
| Other                                     | 2                | 4              |
| Total                                     | 50               | 100            |

#### Analysis and Interpretation

The majority of respondents (46%) believe that AI will increase automation in the job market. Around 32% think AI will create new job opportunities, while 18% believe it will change job roles and responsibilities. The findings indicate that students perceive AI as a transformative force that will significantly reshape commerce and management professions.

#### 2. AI-Driven Tools and Technologies Relevant for the Next Five Years

| Particulars                 | No. of Responses | Percentage (%) |
|-----------------------------|------------------|----------------|
| Machine Learning            | 19               | 38             |
| Natural Language Processing | 10               | 20             |
| Data Analytics              | 17               | 34             |
| Other                       | 4                | 8              |
| Total                       | 50               | 100            |

#### Analysis and Interpretation

The data reveals that 38% of respondents consider machine learning as the most relevant AI technology for the future, followed by data analytics at 34%. Natural language processing was selected by 20% of respondents. This indicates that students believe analytical and predictive technologies will play a major role in future commerce and management practices.

#### Overall Findings of the Study

1. The majority of respondents were undergraduate students.
2. Most students have limited familiarity with AI concepts and technologies.
3. Limited faculty support is the major challenge in developing AI-related skills.
4. Many students are still unaware of the importance of AI skills for future careers.
5. A significant proportion of students are aware of AI-based job and entrepreneurship opportunities.
6. Students show strong interest in pursuing careers in AI-driven commerce and management.
7. Respondents believe AI will mainly increase automation and transform job roles.
8. Machine learning and data analytics are viewed as the most important future technologies.

#### H. Conclusion

The analysis concludes that AI-driven commerce and management is emerging as an important field with significant career opportunities. However, students still face several challenges such as lack of awareness, insufficient faculty support, and limited curriculum coverage. Educational institutions should therefore focus on integrating AI-based learning, practical training, and industry-oriented programs to prepare students for the evolving digital economy.