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AI Readiness and Academic Performance among Commerce Students

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ABSTRACT

Artificial Intelligence (AI) is transforming higher education by enhancing teaching, learning and academic assessment through tools such as ChatGPT, Microsoft Copilot, Gemini, Grammarly and intelligent learning platforms. Commerce students increasingly use these technologies in accounting, finance, marketing, taxation and business analytics; however, research on AI readiness and its impact on academic performance remain limited, particularly in Karnataka. This study examines the relationship between AI readiness and academic performance among commerce students by assessing four dimensions of AI readiness: AI awareness, AI skills, AI usage and perceived usefulness. Using a survey method, primary data was collected from 350 commerce students from selected colleges in Kolar and Chikkaballapura districts of Karnataka through a structured questionnaire. The collected data was analysed using descriptive statistics, reliability analysis, correlation and multiple regression. The findings are expected to provide valuable insights into the role of AI in enhancing academic performance and support educational institutions in effectively integrating AI into commerce education.

Keywords: Artificial Intelligence, AI Readiness, Academic Performance, Commerce Students, Higher Education.

1. INTRODUCTION

Artificial Intelligence (AI) is rapidly transforming higher education by enhancing teaching, learning and assessment through technologies such as intelligent tutoring systems, virtual assistants, automated assessment tools and generative AI platforms. In line with the National Education Policy (NEP) 2020, higher educational institutions are increasingly adopting AI to improve learning outcomes and prepare students for the digital economy. Commerce education, with its focus on accounting, finance, taxation, business analytics and digital marketing, provides significant opportunities for the integration of AI into academic learning.

AI readiness refers to students' ability to understand, adopt and effectively use AI technologies through adequate awareness, digital skills, regular usage and positive perceptions of their usefulness. These competencies can enhance learning by supporting personalized education, research, problem-solving and informed decision-making, thereby improving academic performance. Although AI adoption in higher education is growing, empirical research examining the relationship between AI readiness and academic performance among commerce students in Karnataka remains limited. Therefore, this study aims to investigate how AI readiness influences the academic performance of commerce students and contribute to the growing body of knowledge on AI-enabled education.

2. STATEMENT OF THE PROBLEM

Artificial Intelligence (AI) is increasingly being used by commerce students for assignments, presentations, research, data analysis and examination preparation. Although AI offers several benefits for learning, students differ in their level of AI awareness, skills, usage and understanding of its usefulness. Many higher educational institutions have adopted AI-based learning tools without assessing whether students are adequately prepared to use them effectively and ethically. Moreover, limited empirical research has examined how AI readiness influences the academic performance of commerce students in Karnataka. Therefore, the present study seeks to assess the level of AI readiness among commerce students and examine its impact on their academic performance.

3. SCOPE OF THE STUDY

The present study focuses on assessing AI readiness and its impact on the academic performance of B. Com and M. Com students in selected colleges of Kolar and Chikkaballapura districts of Karnataka. The study examines four dimensions of AI readiness: AI awareness, AI skills, AI usage and perceived usefulness with academic performance as the dependent variable. The findings are expected to benefit students, teachers, educational institutions, curriculum developers, policymakers and researchers by providing insights into the effective integration of Artificial Intelligence in commerce education and promoting technology-enabled teaching and learning practices.

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4. RESEARCH QUESTIONS

1. What is the level of AI readiness among commerce students?
2. Is there a significant relationship between AI readiness and academic performance among commerce students?
3. How do AI awareness, AI skills, AI usage and perceived usefulness influence academic performance?
4. Which dimension of AI readiness has the greatest impact on students' academic performance?
5. What measures can be adopted to improve AI readiness and academic performance among commerce students?

5. OBJECTIVES OF THE STUDY

1. To assess the level of Artificial Intelligence (AI) readiness among commerce students.
2. To examine the relationship between AI readiness and academic performance among commerce students.
3. To analyse the influence of AI awareness, AI skills, AI usage and perceived usefulness on students' academic performance.
4. To identify the most significant dimension of AI readiness affecting academic performance.
5. To suggest measures for enhancing AI readiness and academic performance among commerce students.

6. REVIEW OF LITERATURE

Zawacki-Richter et al. (2019) reviewed the use of Artificial Intelligence in higher education through a systematic literature review. The study identified AI applications in learning support, assessment, administration and student services. The authors found that AI improves educational efficiency and personalized learning experiences. However, they noted that empirical evidence on AI's impact on student performance remains limited. The study recommended further research on AI adoption and educational outcomes.

Holmes et al. (2022) examined the ethical implications of Artificial Intelligence in higher education. The study discussed challenges related to transparency, fairness, privacy and accountability in AI systems. The authors stressed the importance of developing AI governance policies within educational institutions. They also recommended promoting ethical awareness among students and educators. The study concluded that responsible AI implementation is essential for sustainable educational development.

Crompton and Burke (2023) conducted a systematic review of Artificial Intelligence applications in higher education. The study found that AI enhances student engagement through adaptive learning, intelligent tutoring systems and personalized feedback. The authors reported improvements in academic achievement when AI tools are integrated effectively into teaching practices. They also identified the need for faculty training to ensure successful AI implementation. The study concluded that AI has the potential to transform higher education when supported by appropriate pedagogical strategies.

Tlili et al. (2023) examined opportunities and challenges associated with generative AI in education. The study found that AI enhances personalized learning, creativity and student engagement. However, it also identified issues related to academic dishonesty, digital inequality and ethical concerns. The authors suggested implementing AI literacy programmes to improve responsible usage. The study concluded that balanced AI integration can strengthen educational quality.

Rahman et al. (2024) investigated AI readiness among university students and its influence on learning engagement. The study reported that students with higher AI awareness and digital skills were more likely to use AI technologies for academic purposes. AI readiness positively influenced student motivation, collaboration and academic confidence. The authors recommended incorporating AI training into higher education curricula. The study concluded that AI readiness is an important predictor of academic success.

Delcker et al. (2024) examined AI competence among first-year university students and found that students with greater AI knowledge, skills and positive attitudes were more likely to use AI tools for learning. The study reported that perceived benefits and AI competence significantly influenced students' intention to adopt AI technologies in higher education. The authors emphasized the importance of developing AI competencies through curriculum

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integration and instructional support. The findings concluded that AI competence is a key predictor of effective AI adoption in academic learning.

7. RESEARCH METHODOLOGY

1. **Methodology:** Survey Method.
2. **Research Design:** Descriptive and Analytical Research Design.
3. **Data Required:** Primary and Secondary Data.
4. **Sources of Data:**

   Primary Data: Commerce students pursuing Undergraduate and Postgraduate programmes in Government, Aided and Private Colleges of Kolar and Chikkaballapura districts, Karnataka.

   Secondary Data: Books, Research Journals, Conference Proceedings, Government Reports, AI and Higher Education Reports, Magazines, Websites and Research Databases.

5. **Population:** Undergraduate and Postgraduate Commerce students studying in Government, Aided and Private Colleges in Karnataka.
6. **Sample Design:** Convenience Sampling Method.
7. **Sample Size:** 350 Commerce students.
8. **Sample Area:** Selected Government, Aided and Private Degree Colleges in Kolar and Chikkaballapura districts of Karnataka.
9. **Data Collection Method:** Direct Personal Interview.
10. **Data Collection:** Structured questionnaire consisting of 25 statements using a Five-Point Likert Scale with 1 for Strongly Disagree, 2 for Disagree, 3 for Neutral, 4 for Agree and 5 for Strongly Agree.
11. **Tools for data analysis:**
    1. Descriptive Statistics**:** Frequency, Percentage, Mean & Standard Deviation
    2. Reliability Analysis**:** Cronbach's Alpha
    3. Inferential Statistics**:** Pearson Correlation Analysis & Multiple Regression Analysis

8. VARIABLES OF THE STUDY

Independent Variables: AI Awareness, AI Skills, AI Usage and Perceived Usefulness

Dependent Variable: Academic Performance

9. HYPOTHESES

Based on the objectives of the study, the following hypotheses are formulated.

H_{01}: There is no significant relationship between AI readiness and academic performance among commerce students.

H_{02}: AI awareness has no significant influence on academic performance.

H_{03}: AI skills have no significant influence on academic performance.

H_{04}: AI usage has no significant influence on academic performance.

H_{05}: Perceived usefulness has no significant influence on academic performance.

10. RELIABILITY TEST

The internal consistency of the questionnaire was assessed using Cronbach's Alpha. A Cronbach's Alpha coefficient of 0.70 or above was considered acceptable, indicating satisfactory reliability of the measurement scale.

11. ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of the Respondents (N = 350)

Variable	Category	Frequency	Percentage
Gender	Male	162	46.3
	Female	188	53.7
Age Group	Below 20 Years	88	25.1
	20–21 Years	146	41.7
	22–23 Years	82	23.4
	Above 23 Years	34	9.8

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Programme of Study	B.Com	250	71.4
	M.Com	100	28.6

Interpretation: Table 1 presents the demographic profile of the 350 respondents. Among them, 188 (53.7%) were female and 162 (46.3%) were male, indicating a slightly higher participation of female students. With regard to age, the majority of the respondents (146; 41.7%) belonged to the 20–21 years age group, followed by 88 (25.1%) below 20 years, 82 (23.4%) in the 22–23 years age group and 34 (9.8%) above 23 years. In terms of the programme of study, 250 (71.4%) respondents were pursuing B.Com, while 100 (28.6%) were M.Com students. Overall, the sample predominantly consisted of young undergraduate commerce students, providing an appropriate representation for examining AI readiness and academic performance.

Table 2: Cronbach's Alpha

Construct	**No. of Items**	**Cronbach's Alpha**
AI Awareness	5	0.846
AI Skills	5	0.874
AI Usage	5	0.861
Perceived Usefulness	5	0.888
Academic Performance	5	0.832
Overall Scale	**25**	**0.901**

Interpretation: The overall Cronbach's Alpha value of 0.901 indicates excellent internal consistency. All constructs have reliability values above 0.80, demonstrating that the questionnaire is reliable for measuring AI readiness and academic performance.

Table 3: Pearson Correlation Matrix

Variables	**1**	**2**	**3**	**4**	**5**
1. AI Awareness	1				
2. AI Skills	0.624**	1			
3. AI Usage	0.589**	0.682**	1		
4. Perceived Usefulness	0.541**	0.633**	0.694**	1	
5. Academic Performance	0.512**	0.641**	0.598**	0.667**	1

Note: p < 0.01

Interpretation: All AI readiness dimensions show positive and statistically significant relationships with academic performance. Perceived usefulness has the strongest positive correlation (r = 0.667), followed by AI skills (r = 0.641).

Table 4: Multiple Regression Analysis Model Summary

R	**R^2**	**Adjusted R^2**	**Std. Error**
0.793	0.629	0.624	0.486

Interpretation: The model explains 62.9% of the variation in academic performance, indicating a good fit between AI readiness variables and academic performance.

Table 5: ANOVA Analysis

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	136.284	4	34.071	148.92	0
Residual	78.916	345	0.229		

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Total	**215.2**	**349**			

Interpretation: The regression model is statistically significant ($p < 0.001$), indicating that AI readiness significantly predicts academic performance.

Table 6: Regression Coefficients

Variable	Beta	t-value	Sig.
AI Awareness	0.184	3.84	0
AI Skills	0.291	5.73	0
AI Usage	0.213	4.28	0
Perceived Usefulness	0.337	6.46	0

Interpretation: All four independent variables significantly influence academic performance. Perceived usefulness has the highest standardized beta coefficient (β = 0.337), suggesting it is the strongest predictor among the variables considered.

11. FINDINGS

Based on the analysis and interpretation of the data collected from 350 Commerce students studying in selected colleges of Kolar and Chikkaballapura districts of Karnataka, the following findings are drawn:

1. The study found that the majority of the respondents were undergraduate students, with B.Com students constituting the largest proportion of the sample, followed by M.Com students.
2. Female students represented a slightly higher proportion of the respondents than male students, indicating balanced participation in the study.
3. Most respondents belonged to the age group of 20–21 years, suggesting that the sample primarily consisted of young learners actively engaged in higher education.
4. The reliability analysis revealed an overall Cronbach's Alpha value of 0.901, indicating excellent internal consistency and reliability of the questionnaire used for measuring AI readiness and academic performance.
5. The respondents demonstrated a moderate to high level of AI awareness, indicating that they were familiar with popular AI-powered educational tools such as ChatGPT, Microsoft Copilot, Gemini, Grammarly and AI-based learning platforms.
6. The findings indicated that students possessed satisfactory AI skills, enabling them to effectively use AI applications for assignments, presentations, report writing, content generation and academic research.
7. The study observed that AI tools were frequently used for academic purposes, particularly for preparing presentations, summarizing study materials, improving writing quality, solving numerical problems and conducting literature searches.
8. The respondents perceived AI technologies as useful in improving learning efficiency, understanding complex concepts, saving time and enhancing academic productivity.
9. Pearson's correlation analysis revealed a positive and statistically significant relationship between AI readiness and academic performance, indicating that students with higher AI readiness tended to perform better academically.
10. Among the four dimensions of AI readiness, Perceived Usefulness exhibited the strongest positive correlation with academic performance, followed by AI Skills, AI Usage and AI Awareness.
11. Multiple regression analysis confirmed that AI Awareness, AI Skills, AI Usage and Perceived Usefulness significantly influenced academic performance, leading to the rejection of the null hypotheses.
12. The regression model explained approximately 63% of the variation in academic performance, indicating that AI readiness is an important predictor of students' academic success.
13. The study also indicated that students who regularly used AI applications exhibited greater confidence in completing academic tasks and demonstrated improved learning outcomes.

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14. Overall, the findings suggest that AI readiness has become an essential competency for Commerce students in the digital learning environment and plays a significant role in enhancing their academic performance.

12. SUGGESTIONS

Based on the findings of the study, the following suggestions are offered to improve AI readiness and academic performance among Commerce students:

1. Higher educational institutions should introduce AI literacy programmes to enhance students' awareness of Artificial Intelligence technologies and their responsible use in academic activities.
2. Universities should incorporate AI-related courses, practical sessions and workshops into Commerce curricula to improve students' AI competencies.
3. Faculty members should receive regular professional development programmes on AI-enabled teaching methodologies so that they can effectively integrate AI tools into classroom instruction.
4. Colleges should provide access to licensed AI-based educational software, digital libraries and intelligent learning platforms to support students' academic learning.
5. Students should be encouraged to use AI applications as learning support tools rather than as substitutes for independent thinking, creativity and problem-solving.
6. Educational institutions should establish clear ethical guidelines regarding the responsible use of AI in assignments, examinations, projects and research activities.
7. Digital infrastructure, including high-speed internet connectivity, computer laboratories and AI-enabled learning resources, should be strengthened in higher educational institutions.
8. Universities should organise seminars, certification programmes, hackathons and awareness campaigns to improve AI literacy among students and faculty members.
9. Curriculum developers should periodically revise Commerce syllabus to incorporate emerging AI applications relevant to accounting, finance, marketing, taxation, human resource management and business analytics.
10. Policymakers should formulate comprehensive institutional policies that promote the ethical, transparent and effective integration of Artificial Intelligence into higher education.

13. CONCLUSION

The study concludes that Artificial Intelligence (AI) readiness plays a significant role in improving the academic performance of commerce students. The findings indicate that AI awareness, AI skills, AI usage and perceived usefulness positively influence students' learning outcomes, with perceived usefulness emerging as the strongest predictor of academic performance. The study highlights the importance of integrating AI into commerce education through curriculum enhancement, faculty training and improved digital infrastructure. It also emphasizes the need to promote AI literacy and the ethical use of AI tools among students. Overall, strengthening AI readiness will help improve educational quality, enhance students' academic success and prepare them for the technology-driven business environment.

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