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A Study on the Impact of Artificial Intelligence and Data Science Skills on Students' Employability and Career Readiness

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Abstract : *Artificial Intelligence (AI) and Data Science are transforming industries and influencing the skills required in the modern employment market. Students must develop relevant technical knowledge, practical abilities, and confidence to prepare for these changing career opportunities. This study examines the relationship between students' familiarity with AI and Data Science, their technical skill levels, job confidence, and perceived career preparedness.*
Primary data were collected from 103 student respondents through a structured questionnaire. The responses were analysed using Python, Pandas, NumPy, Matplotlib, Seaborn, and statistical techniques such as descriptive statistics, cross-tabulation, Spearman correlation, and the Chi-square test. The findings indicate positive relationships between technology familiarity, job confidence, and perceived career preparedness. The study highlights the importance of practical training and continuous skill development for improving students' employability.

Keywords: a study on the impact of artificial intelligence and data science skills on students' employability and career readiness

I. INTRODUCTION

Technology has become an important part of modern professional life. Artificial Intelligence and Data Science are being used in areas such as healthcare, banking, education, business, manufacturing, and information technology. These technologies help organizations analyse information, automate activities, and support decision-making.
As a result, employment opportunities increasingly require a combination of technical knowledge, analytical thinking, problem-solving, and practical experience. Students who understand AI and Data Science may be better prepared to explore emerging career opportunities. However, awareness of a technology does not always mean that a student has the practical skills required to work with it.
This study focuses on students' familiarity with AI and Data Science, their current skill levels, confidence about employment, and perceived career readiness. It also examines the relationships among these factors to understand areas where educational institutions and students can improve their preparation.

II. LITERATURE REVIEW

The World Economic Forum's Future of Jobs Report 2025 highlights the growing importance of technological skills, including AI and big data, in the changing employment market. It indicates that workers will need to continuously update their skills as job requirements evolve.
UNESCO's guidance on generative AI in education and research discusses the opportunities and challenges of using AI in learning environments. It emphasizes responsible use, human involvement, and appropriate educational support.

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Research and reports published by international organizations also suggest that technological development affects the demand for professional skills. These developments make it important for educational institutions to connect academic learning with practical applications.

The present study contributes to this area by examining students' own familiarity, skill levels, job confidence, and career preparedness through primary survey data.

III. RESEARCH OBJECTIVES

The main objectives of this study are:

1. To examine students' familiarity with Artificial Intelligence and Data Science.
2. To understand students' current technical skill levels.
3. To study students' confidence regarding future employment opportunities.
4. To analyse the relationship between technology familiarity and career preparedness.
5. To identify the importance of practical learning and skill development.

IV. RESEARCH QUESTIONS AND HYPOTHESIS

The study addresses the following questions:

- How familiar are students with AI and Data Science?
- What technical skill levels do students report?
- How confident are students about employment opportunities?
- Is there a relationship between AI familiarity and career preparedness?

Null Hypothesis (H0): There is no statistically significant association between students' age group and their familiarity with Artificial Intelligence.

Alternative Hypothesis (H1): There is a statistically significant association between students' age group and their familiarity with Artificial Intelligence.

V. RESEARCH METHODOLOGY

This study uses a quantitative research approach based on primary survey data. A structured questionnaire was used to collect responses from students. The questionnaire included questions about AI familiarity, Data Science familiarity, technical skill levels, job confidence, and career preparedness.

A total of 103 responses were included in the analysis. All 103 responses were retained for the study. Name and email fields were excluded from statistical analysis to maintain respondent privacy.

The collected data were processed and analysed using Python in Jupyter Notebook. Pandas and NumPy were used for data handling and calculations, while Matplotlib and Seaborn were used for graphical presentation. SciPy was used for statistical testing.

The study is limited to the collected sample and the responses provided by participants. Therefore, the findings should not automatically be generalized to all students.

VI. DATA ANALYSIS AND RESULTS

6.1 Respondents' Familiarity with AI

Out of 103 respondents, 45 students (43.7%) reported being very familiar with AI, while 34 (33.0%) reported being familiar. The remaining respondents selected moderate, slight, or no familiarity. This indicates that most participants had some awareness of Artificial Intelligence.

6.2 Familiarity with Data Science

A total of 37 respondents (35.9%) were very familiar with Data Science, and 34 (33.0%) were familiar. Some participants reported moderate or limited familiarity. This suggests that awareness of Data Science exists among the respondents, although knowledge levels differ.

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6.3 Technical Skill Levels

The responses showed that 36 students (35.0%) identified themselves as beginners, 25 (24.3%) as advanced, 21 (20.4%) as basic, and 18 (17.5%) as intermediate. Three respondents (2.9%) reported having no practical knowledge yet. These results show that students have different levels of technical experience.

6.4 Job Confidence

A total of 48 respondents (46.6%) reported being confident about job opportunities, while 38 (36.9%) reported being very confident. A smaller number selected moderate, slight, or no confidence. The results indicate a generally positive level of employment confidence in the surveyed group.

6.5 Career Preparedness

Among the respondents, 45 students (43.7%) felt very well prepared for their future careers, while 29 (28.2%) felt well prepared. Twenty students (19.4%) reported moderate preparedness, and the remaining respondents reported lower preparedness.

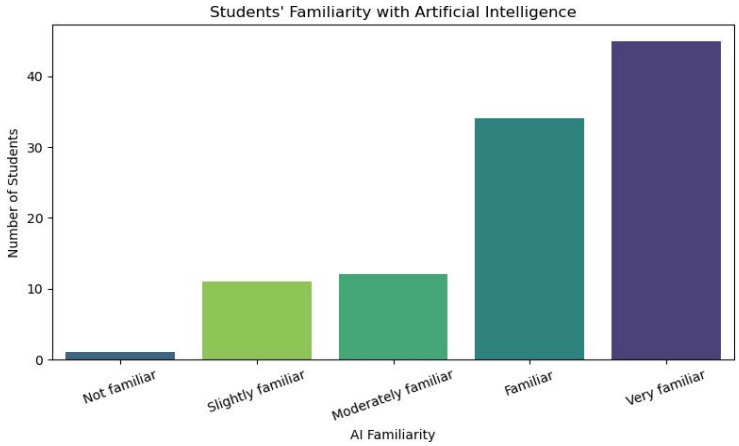


Figure 1: Distribution of Students' Familiarity with Artificial Intelligence

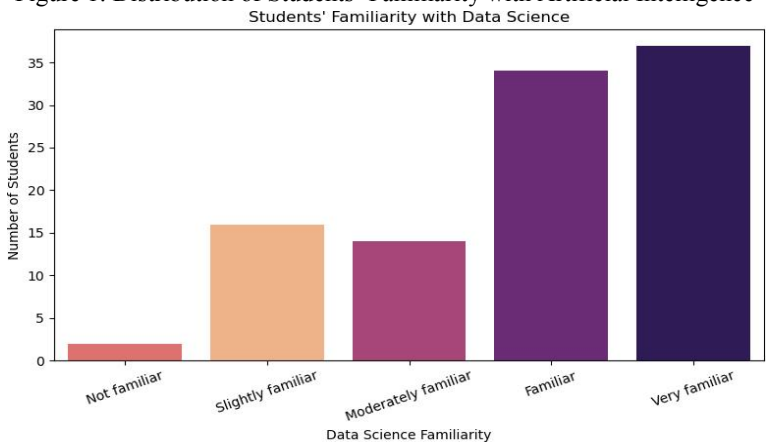


Figure 2: Distribution of Students' Familiarity with Data Science

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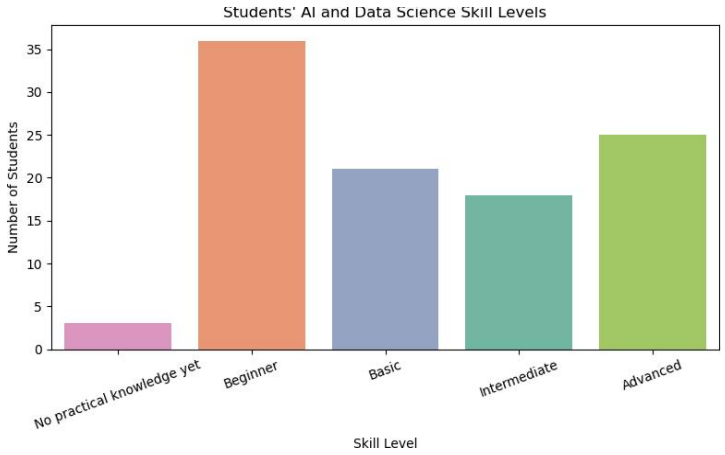


Figure 3: Distribution of Students' Technical Skill Levels

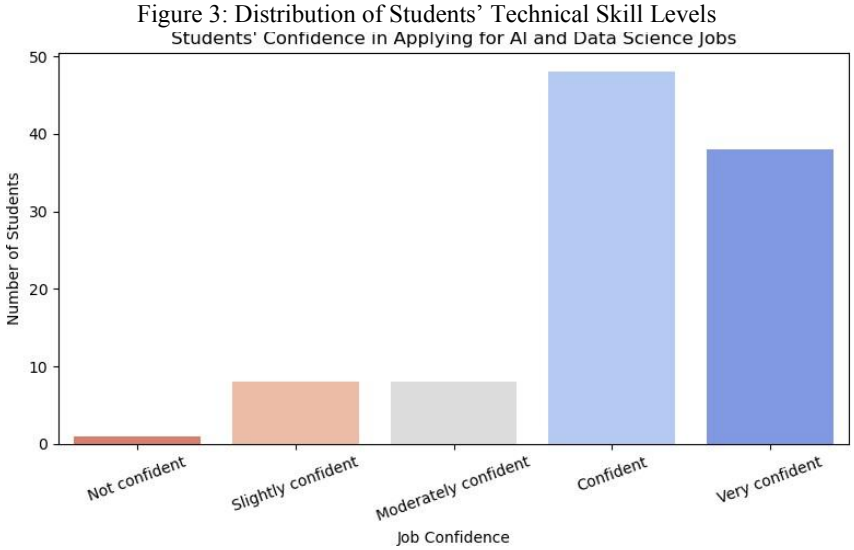


Figure 4: Distribution of Students' Job Confidence

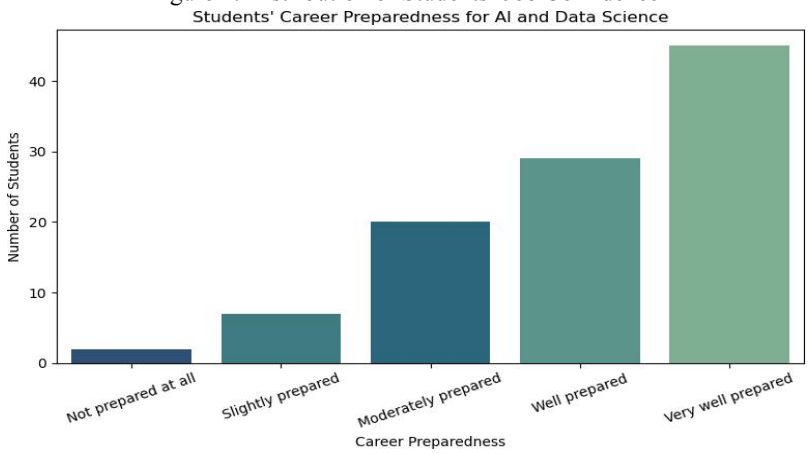


Figure 5: Distribution of Students' Career Preparedness

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VII. STATISTICAL ANALYSIS

7.1 Descriptive Statistics

Mean, median, mode, and standard deviation were used as descriptive statistical measures to understand the distribution and variation of the survey responses. Frequency and percentage distributions were also examined to summarize categorical responses.

7.2 Cross-Tabulation

Cross-tabulation was used to compare age groups with AI familiarity. This helped examine how familiarity levels were distributed across different age categories.

7.3 Spearman Correlation Analysis

Spearman correlation was applied to examine the direction and strength of relationships among the selected variables.

Variables	Correlation
AI Familiarity – Data Science Familiarity	0.79
AI Familiarity – Job Confidence	0.47
AI Familiarity – Career Preparedness	0.54
Data Science Familiarity – Career Preparedness	0.52
Job Confidence – Career Preparedness	0.58
Skill Level – Career Preparedness	0.14

The strongest positive relationship was observed between AI familiarity and Data Science familiarity (0.79). Job confidence also showed a positive relationship with career preparedness (0.58). Skill level and career preparedness showed a weak positive relationship (0.14). These correlations indicate association, not cause and effect.

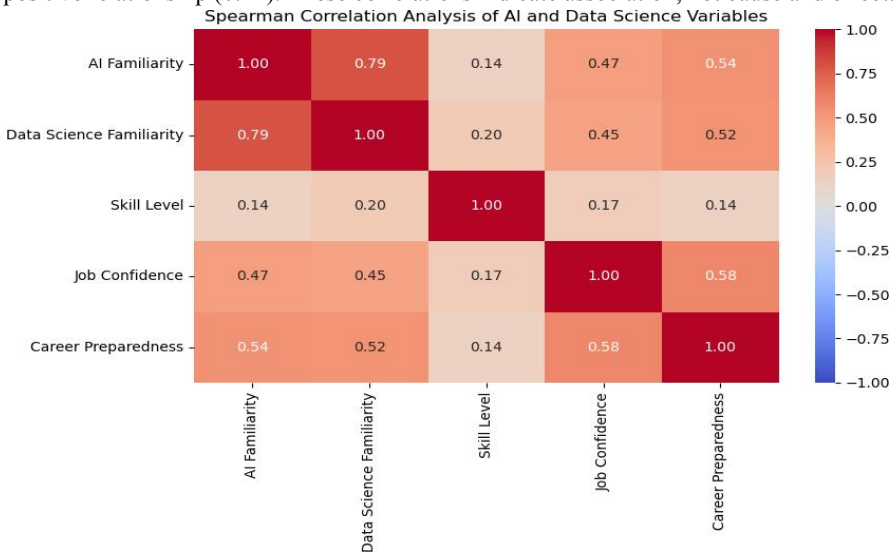


Figure 6: Spearman Correlation Heatmap

7.4 Chi-Square Test

The Chi-square test was conducted to examine the association between age group and AI familiarity.

- Chi-square value: 7.674
- Degrees of freedom: 12
- p-value: 0.810

Since the p-value is greater than the 0.05 significance level, the null hypothesis is not rejected. The analysis does not provide sufficient evidence of a statistically significant association between age group and AI familiarity in this sample. Expected cell frequencies should also be checked when interpreting this test.

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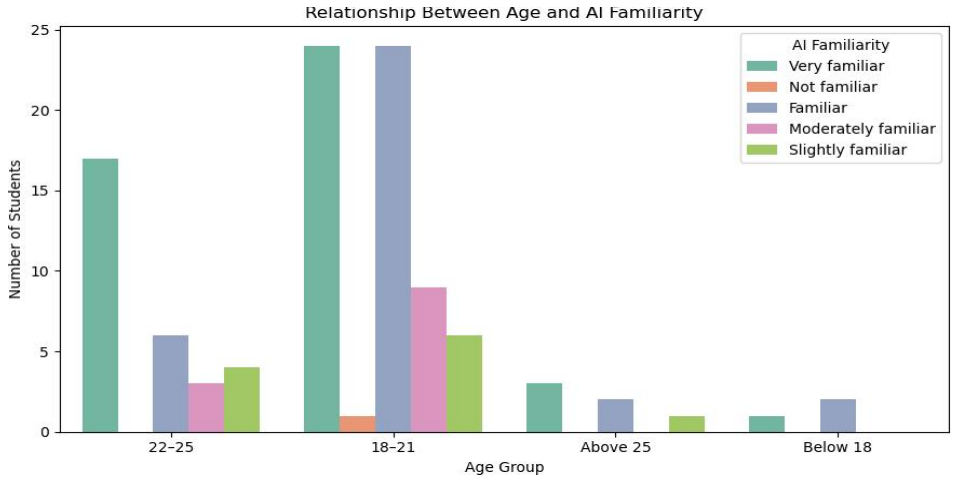


Figure 7: Age-wise Distribution of Students' Familiarity with Artificial Intelligence

VIII. DATA VISUALIZATION

Seven visualizations were prepared using Matplotlib and Seaborn:

1. AI Familiarity Distribution
2. Data Science Familiarity Distribution
3. Students' Technical Skill Levels
4. Job Confidence Distribution
5. Career Preparedness Distribution
6. Spearman Correlation Heatmap
7. Age-wise AI Familiarity

These graphs present the response patterns and relationships in an understandable form. They help identify areas of strength and areas where students may require additional training.

XI. DISCUSSION AND MAJOR FINDINGS

The survey indicates that most respondents are familiar with Artificial Intelligence and Data Science. However, their practical skill levels are not uniform. Some students report advanced skills, while others remain at beginner or basic levels.

The positive correlation between AI familiarity and Data Science familiarity suggests that students who are familiar with one of these fields tend to report familiarity with the other. The relationship between job confidence and career preparedness also indicates that students who feel more confident about employment tend to report better career preparation.

The weak correlation between self-reported skill level and career preparedness suggests that practical skill level alone may not explain how prepared students feel. Other factors, such as projects, communication, training, internships, and interview preparation, may also be relevant. These factors require further investigation.

X. SUGGESTIONS

Based on the findings, the following suggestions are offered:

1. Educational institutions should provide practical AI and Data Science training.
2. Students should work on real-world projects and case studies.
3. Internships and industry-oriented activities should be encouraged.
4. Students should improve communication, analytical, and problem-solving skills.

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5. Regular workshops and skill assessments can help students identify learning gaps.

XI. CONCLUSION

The study examined the impact of AI and Data Science familiarity and skills on students' perceived employability and career readiness. The findings show that most respondents are familiar with these technologies and generally express confidence about future employment. Positive correlations were observed between technology familiarity, job confidence, and career preparedness.

However, differences in technical skill levels indicate the need for continuous practical learning. Students should combine theoretical knowledge with projects, internships, and professional skill development.

Educational institutions can support this process through industry-oriented training and updated curricula.

The study concludes that familiarity with emerging technologies is useful, but career readiness also requires practical experience, confidence, and continuous learning.

XII. LIMITATIONS AND FUTURE SCOPE

The study is based on 103 survey responses and reflects the opinions of the participants. The findings may not represent the views of all students. Some variables are based on self-reported responses, which may differ from objectively measured skills.

Future studies may include a larger and more diverse sample, compare students from different academic backgrounds, and examine the effect of internships, certifications, projects, and practical assessments on employability.

REFERENCES

1. World Economic Forum. (2025). The Future of Jobs Report 2025. World Economic Forum.
2. Miao, F., & Holmes, W. (2023). Guidance for Generative AI in Education and Research. UNESCO.
3. Portocarrero Ramos, H. C., Cruz Caro, O., Sánchez Bardales, E., Quiñones Huatangari, L., Campos Trigoso, J. A., Maicelo Guevara, J. L., & Chávez Santos, R. (2025). Artificial intelligence skills and their impact on the employability of university graduates. Frontiers in Artificial Intelligence, 8, 1629320. https://doi.org/10.3389/frai.2025.1629320
4. Lakshmi Devi, S., & Das, S. (2024). Influence of artificial intelligence-based skill development training on employability. https://doi.org/10.1177/10567879241238366
5. Cheng, S., Cao, R., & Md Rashid, S. (2025). The influence of employability skills on quality of employment in AI-driven labour market transformations: The roles of academic achievement and motivation. Humanities and Social Sciences Communications, 12, 1599. https://doi.org/10.1057/s41599-025-05872-y
6. World Bank. (2025). Digital Progress and Trends Report 2025: Strengthening AI Foundations. World Bank.
7. Mustafa, S. A., & Altrad, A. (2026). Artificial intelligence adoption, future-ready skills and graduate employability in higher education. Scientific Reports, 16, 34398.
8. Nyale, D., et al. (2025). Digital skills landscape: A systematic review of current academic programs, industry demands, and the digital divide's impact on graduate competencies. https://doi.org/10.1177/09504222251370105