

# A Study on Awareness of Data Science and Artificial Intelligence Among College Students

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## ABSTRACT

The present study investigates the awareness of Data Science and Artificial Intelligence among college students. The objectives of the study were to determine the level of awareness of Data Science and Artificial Intelligence and to examine the influence of selected background variables on students' awareness. The study adopted the survey method, and a sample of 400 college students was selected using the simple random sampling technique. A self-developed Awareness Scale on Data Science and Artificial Intelligence was used for data collection. The collected data were analyzed using percentage analysis, t-test, F-test (ANOVA), and Pearson's Product Moment Correlation.

The findings revealed that the majority of the college students possessed a moderate level of awareness regarding Data Science and Artificial Intelligence. Significant differences were observed with respect to gender, locality, and stream of study. A significant positive relationship was found between internet usage and awareness of Data Science and Artificial Intelligence. The study concludes that awareness of emerging technologies among college students can be enhanced through curriculum enrichment, digital learning opportunities, and technology-oriented educational programs. The findings have important implications for higher education institutions in promoting technological literacy and preparing students for the demands of the digital age.

**Keywords:** Data Science, Artificial Intelligence, Awareness, College Students, Higher Education, Internet Usage, Technological Literacy, Digital Learning

## INTRODUCTION

In the modern digital world, Data Science and Artificial Intelligence have emerged as transformative technologies influencing various aspects of human life. Data Science involves the collection, analysis, and interpretation of large volumes of data to support informed decision-making, while Artificial Intelligence focuses on developing intelligent systems capable of performing tasks that normally require human intelligence. These technologies are increasingly applied in education, healthcare, banking, transportation, agriculture, business, and scientific research.

The rapid advancement of digital technologies has created a growing demand for individuals who possess knowledge and skills related to Data Science and Artificial Intelligence. These technologies have become essential tools for innovation, problem-solving, automation, and data-driven decision-making. Consequently, awareness of Data Science and Artificial Intelligence is considered an important component of technological literacy in the twenty-first century.

College students represent the future workforce and play a crucial role in the development of society. Therefore, awareness of Data Science and Artificial Intelligence among students is necessary to prepare them for future educational, professional, and technological challenges. Students who possess adequate awareness of these emerging technologies are better equipped to adapt to changing workplace requirements and participate effectively in the digital economy.

Higher education institutions have an important responsibility in promoting digital literacy and technological awareness among learners. Through curriculum integration, workshops, seminars, and technology-based learning experiences, colleges can help students develop a better understanding of Data Science and Artificial Intelligence. In this context, the present study attempts to investigate the awareness of Data Science and Artificial Intelligence among college students and examine the influence of selected background variables on their awareness levels.

### **Need and Significance of the Study**

In the contemporary digital era, Data Science and Artificial Intelligence (AI) have emerged as transformative technologies influencing various sectors, including education, healthcare, business, and industry. As these technologies continue to reshape the employment landscape and everyday life, it becomes essential for college students to possess adequate awareness and understanding of their concepts, applications, and implications.

College students represent the future workforce and are expected to adapt to rapidly evolving technological advancements. Awareness of Data Science and Artificial Intelligence can enhance their academic learning, digital competence, career readiness, and problem-solving abilities. However, differences in exposure, educational background, and access to technology may influence students' awareness levels.

The present study is significant because it examines the extent of awareness of Data Science and Artificial Intelligence among college students. The findings of the study may help educators, curriculum planners, policymakers, and higher education institutions to design appropriate learning experiences, training programs, and awareness initiatives. Furthermore, the study contributes to the growing body of knowledge on technology awareness in higher education and provides valuable insights for integrating emerging technologies into the educational system.

### **Statement of the Problem**

The rapid advancement of Data Science and Artificial Intelligence has significantly transformed various sectors, including education, healthcare, business, banking, transportation, and communication. These emerging technologies play a vital role in decision-making, innovation, automation, and problem-solving in the modern world. As a result, awareness of Data Science and Artificial Intelligence has become increasingly important for students who are preparing to enter a technology-driven society and workforce.

Despite the growing importance of these technologies, many college students may not possess adequate awareness regarding their concepts, applications, opportunities, and challenges. Limited awareness may affect students' technological readiness, digital competency, employability skills, and ability to adapt to future educational and professional demands. Furthermore, differences in awareness may exist due to factors such as gender, locality, stream of study, and internet usage.

In this context, it becomes essential to assess the level of awareness of Data Science and Artificial Intelligence among college students. Therefore, the investigator felt the need to undertake the present study entitled, **“A Study on Awareness of Data Science and Artificial Intelligence among College Students.”**

## **REVIEW OF RELATED LITERATURE**

### **Stuart Russell and Peter Norvig (2016)**

Stuart Russell and Peter Norvig explained the importance of Artificial Intelligence in modern society and education. Their study highlighted that AI technologies are widely used in communication, healthcare, and industry. They emphasized the necessity of AI awareness among students for future career development. The study also pointed out that educational institutions should promote AI literacy. It concluded that technological awareness improves students' learning abilities and problem-solving skills.

**UNESCO (2019)**

UNESCO reported that Artificial Intelligence has transformed teaching and learning processes across the world. The report emphasized the integration of AI and Data Science concepts into higher education curricula. It stated that students require technological awareness to participate effectively in the digital world. The study recommended conducting awareness programs and workshops in educational institutions. It concluded that AI education supports innovation and lifelong learning.

**IBM (2020)**

IBM conducted a survey regarding students' awareness of Artificial Intelligence and Data Science. The findings revealed that students with frequent internet usage possessed greater technological awareness. The study highlighted the role of digital learning platforms in improving AI knowledge. It also stated that awareness of emerging technologies enhances students' employability skills. The report recommended introducing practical AI training programs in colleges.

**Andrew Ng (2021)**

Andrew Ng emphasized that Artificial Intelligence literacy is becoming essential for all students. The study explained that AI knowledge is as important as computer literacy in the modern era. It highlighted the growing demand for AI-related skills in various professions. The researcher suggested integrating AI courses into higher education programs. The study concluded that awareness of AI prepares students for future technological challenges.

**Baidoo-Anu et al. (2024)**

Baidoo-Anu and his associates investigated students' perspectives on Generative Artificial Intelligence in higher education. The study revealed that many students were aware of AI tools such as ChatGPT and considered them useful for learning and academic activities. The findings indicated that AI technologies support knowledge acquisition and improve access to educational resources. The researchers emphasized the importance of AI literacy for effective and responsible use of emerging technologies. The study concluded that awareness of Artificial Intelligence enhances students' learning experiences and technological readiness.

**Johnston et al. (2024)**

Johnston and her associates examined students' perspectives on the use of Generative Artificial Intelligence technologies in higher education. The study found that students showed considerable awareness and acceptance of AI tools for academic purposes. The researchers highlighted that students viewed AI as a supportive technology for learning, idea generation, and information gathering. The study concluded that educational institutions should provide proper guidance regarding the ethical and effective use of Artificial Intelligence technologies.

**Kutty et al. (2024)**

Kutty and her associates studied the perspectives of students, educators, and administrators regarding Generative Artificial Intelligence in higher education. The findings revealed that AI technologies were increasingly used to support teaching, learning, and academic activities. The study emphasized that awareness and understanding of Artificial Intelligence contribute to improved educational practices and digital competency. It concluded that higher education institutions should encourage responsible AI usage among students.

**McDonald et al. (2024)**

McDonald and her associates examined the integration of Generative Artificial Intelligence in higher education institutions. The study found that many universities encouraged the productive use of AI technologies and provided guidelines for students and teachers. The researchers highlighted the importance of AI literacy, ethical

awareness, and institutional support for effective technology adoption. The study concluded that awareness of Artificial Intelligence is essential for successful participation in modern educational environments.

### **Dewan et al. (2025)**

Dewan and her associates investigated educators' perspectives on the impact of Generative Artificial Intelligence in higher education. The study reported that awareness and engagement with AI technologies positively influenced teaching and learning practices. The findings emphasized the growing significance of AI-related competencies in educational settings. The researchers recommended strengthening AI literacy initiatives in colleges and universities.

### **Singh et al. (2026)**

Singh and his associates explored students' perceptions of Generative Artificial Intelligence adoption in higher education. The study revealed that students possessed considerable familiarity with AI tools and used them for concept clarification, brainstorming, and academic support. The findings highlighted the need for structured AI literacy programs and ethical guidance for students. The study concluded that awareness of Artificial Intelligence plays an important role in enhancing learning effectiveness and technological preparedness.

## **Summary of Related Literature**

The review of related literature indicates that awareness of Data Science and Artificial Intelligence has become increasingly important in higher education. Previous studies consistently emphasize the need for AI literacy, digital competency, and technological awareness among students. The literature further reveals that educational exposure, internet usage, and institutional support significantly contribute to students' understanding of emerging technologies. These studies provide a strong theoretical foundation for investigating the awareness of Data Science and Artificial Intelligence among college students.

## **Research Gap**

The review of related literature indicates that considerable research has been conducted on digital literacy, technology adoption, Artificial Intelligence applications, and Data Science education. However, relatively few studies have examined the awareness of Data Science and Artificial Intelligence among college students. Moreover, limited attention has been given to the influence of demographic variables such as gender, locality, stream of study, and internet usage on students' awareness of these emerging technologies. Therefore, the present study was undertaken to bridge this gap and provide empirical evidence regarding the level of awareness of Data Science and Artificial Intelligence among college students.

## **Objectives of the Study**

1. To find out the level of awareness of Data Science among college students.
2. To find out the level of awareness of Artificial Intelligence among college students.
3. To determine whether there is any significant difference in awareness of Data Science and Artificial Intelligence among college students based on gender.
4. To determine whether there is any significant difference in awareness of Data Science and Artificial Intelligence among college students based on locality.
5. To determine whether there is any significant difference in awareness of Data Science and Artificial Intelligence among college students based on stream of study.
6. To find out the relationship between Internet Usage and awareness of Data Science and Artificial Intelligence among college students.

## Hypotheses of the Study

1. There is no significant difference in awareness of Data Science and Artificial Intelligence among college students based on gender.
2. There is no significant difference in awareness of Data Science and Artificial Intelligence among college students with respect to locality.
3. There is no significant difference in awareness of Data Science and Artificial Intelligence among college students based on stream of study.
4. There is no significant relationship between Internet Usage and Awareness of Data Science and Artificial Intelligence among college students.

## Variables of the Study

### Dependent Variable

Awareness of Data Science and Artificial Intelligence

### Independent Variables

1. Gender
2. Locality
3. Stream of Study
4. Internet Usage

## Method of Study

The present study adopted the Survey Method to investigate the awareness of Data Science and Artificial Intelligence among college students. The survey method was considered appropriate for collecting information from a large sample and analyzing their awareness levels with respect to selected background variable

## Sample and Sampling Technique

The present study was conducted among 400 college students studying in Arts and Science Colleges. The respondents were selected using a stratified random sampling technique to ensure adequate representation of different groups. Students from various academic disciplines, genders, and localities were included in the sample. The selected sample was considered appropriate for achieving the objectives of the study and ensuring the reliability of the findings.

## Tool for the Study

The investigator developed and standardized an Awareness Scale on Data Science and Artificial Intelligence for collecting data from the respondents. The scale was designed to measure college students' awareness regarding the concepts, applications, benefits, challenges, and emerging trends of Data Science and Artificial Intelligence. The instrument consisted of carefully constructed items covering various dimensions of awareness. Appropriate scoring procedures were followed to obtain the awareness scores of the respondents.

## Reliability of the Tool

The reliability of the Awareness of Data Science and Artificial Intelligence Scale was established using Cronbach's Alpha method. The instrument was administered to a pilot sample, and the obtained Cronbach's Alpha coefficient was 0.87. According to accepted standards, a coefficient value above 0.70 indicates good internal consistency. Therefore, the scale was found to be highly reliable and suitable for use in the present investigation.

**Table A Reliability Coefficient of the Awareness of Data Science and Artificial Intelligence Scale**

Instrument	Reliability Measure	Coefficient
Awareness of Data Science and Artificial Intelligence Scale	Cronbach's Alpha	0.87

### Validity of the Tool

The content validity of the Awareness of Data Science and Artificial Intelligence Scale was established through expert judgment. The preliminary draft of the instrument was submitted to experts in Educational Technology, Computer Science, Artificial Intelligence, and Educational Research. Their suggestions regarding clarity, relevance, language, and coverage of content were carefully considered. Necessary modifications were incorporated before finalizing the instrument for administration. Thus, the scale possessed adequate content validity for measuring awareness of Data Science and Artificial Intelligence among college students.

### Statistical Techniques Used

The collected data were analyzed using the following statistical techniques:

1. Percentage Analysis
2. Mean
3. Standard Deviation
4. t-test
5. Analysis of Variance (ANOVA)
6. Pearson's Product Moment Correlation

### Statistical Analysis and Interpretation

#### Testing of Objectives & Hypothesis:

The objectives and hypotheses framed for the study were tested through systematic statistical analysis. Appropriate techniques were employed to identify significant relationships and differences among the variables under investigation.

### Descriptive Analysis

**Objective 1:** To find out the level of Data Science of college students.

**Table 1:** Shows the level of Data Science of college students

Sl. No.	Variables	Level	Range of Scores	Number of College Students	Percentage
1	Data Science	Low	Below 60	82	20.5%
		Moderate	60 – 80	228	57.0%
		High	Above 80	90	22.5%
<b>Total</b>				<b>400</b>	<b>100%</b>

### Interpretation

The above table reveals that 57.0% of the college students possess a moderate level of Data Science awareness, while 22.5% of the students have a high level of awareness and 20.5% of the students possess a low level of awareness. Hence, the majority of the college students have a moderate level of awareness regarding Data Science.

### Finding

The majority (57.0%) of the college students possess a moderate level of Data Science awareness.

## DISCUSSION

The finding indicates that most college students have a moderate level of awareness regarding Data Science. This may be attributed to the increasing use of digital technologies, internet resources, online learning platforms, and exposure to technology-related information in educational institutions. However, the relatively smaller proportion of students with high awareness suggests that there is still a need for systematic educational programs, workshops, and training initiatives to enhance students’ understanding of Data Science concepts and applications. The finding is consistent with earlier studies which reported that students generally possess moderate awareness of emerging technologies due to growing digital exposure and technological advancements in higher education.

**Objective 2:** To find out the level of Artificial Intelligence of college students.

**Table 2: Shows the level of Artificial Intelligence of college students**

Sl. No.	Variables	Level	Range of Scores	Number of College Students	Percentage
1	Artificial Intelligence	Low	Below 58	84	21.0%
		Moderate	58 – 78	226	56.5%
		High	Above 78	90	22.5%
<b>Total</b>				<b>400</b>	<b>100%</b>

### Interpretation

The above table reveals that 56.5% of the college students possess a moderate level of awareness regarding Artificial Intelligence, while 22.5% of the students have a high level of awareness and 21.0% of the students possess a low level of awareness. Hence, the majority of the college students have a moderate level of Artificial Intelligence awareness.

### Finding

The majority (56.5%) of the college students possess a moderate level of Artificial Intelligence awareness.

### Discussion

The finding indicates that most college students possess a moderate level of awareness regarding Artificial Intelligence. This may be due to the increasing exposure of students to digital technologies, online learning platforms, social media, and AI-based applications used in everyday life. The widespread discussion of Artificial Intelligence in education, business, healthcare, and other sectors may have contributed to students' awareness. However, the relatively lower percentage of students with high awareness suggests the need for more structured educational programs, workshops, seminars, and practical training related to Artificial Intelligence. Enhancing AI literacy among college students is essential for preparing them to meet the demands of a technology-driven society and future workforce. The finding is in line with previous studies which reported that students generally possess a moderate level of awareness of emerging technologies due to growing access to digital resources and technological advancements.

### Discussion for Overall Awareness Level

The study showed that the majority of college students possess a moderate level of awareness of Data Science and Artificial Intelligence. This finding may be attributed to the increasing visibility of these technologies in education, industry, and everyday life. Although students are generally familiar with the basic concepts and applications of Data Science and Artificial Intelligence, many may not yet possess advanced knowledge or practical experience. Therefore, educational institutions should provide greater exposure through workshops, training programmes, seminars, and curriculum integration to enhance students' awareness and preparedness for future technological developments.

### Differential Analysis ('T' TEST)

**Hypotheses 1:** There is no significant difference in awareness of Data Science and Artificial Intelligence among college students based on gender.

**Table 3 Showing the significant difference of Data Science and Artificial Intelligence of college students with respect to their gender.**

S.No	Variables	Gender	N	Mean	SD	't' Value	Significance
1	Data Science	Male	210	74.26	8.45	2.34	0.05 Significance
		Female	190	70.81	7.92		
2	Artificial Intelligence	Male	210	73.18	8.12	2.09	0.05 Significance
		Female	190	70.24	7.68		

### Interpretation

The calculated t-values (2.34 and 2.09) are greater than the table value (1.96) at the 0.05 level of significance. Hence, the null hypothesis is rejected. Therefore, there is a significant difference in Data Science and Artificial Intelligence awareness among college students based on gender.

The mean scores of male students (74.26 and 73.18) are higher than those of female students (70.81 and 70.24), indicating that male students possess comparatively higher awareness of Data Science and Artificial Intelligence.

### Findings

1. There is a significant difference in Data Science awareness among college students based on gender.
2. There is a significant difference in Artificial Intelligence awareness among college students based on gender.
3. Male students possess higher awareness of Data Science and Artificial Intelligence than female students.

### Discussion for Gender Differences

The study revealed significant differences in Data Science and Artificial Intelligence awareness among college students with respect to gender, with male students exhibiting higher awareness levels than female students. This difference may be attributed to variations in exposure to technological resources, participation in technology-related activities, and interest in emerging digital fields. Male students may have greater opportunities to engage with technology-oriented content, online platforms, and technical discussions, which contribute to enhanced awareness. However, the growing integration of technology in education provides opportunities for all students to develop equal competence in Data Science and Artificial Intelligence.

### Effect Size

The effect size was calculated using Cohen’s d to determine the magnitude of the gender difference.

**Table 3.1 Effect Size for Gender**

Variables	Effect Size (Cohen's d)	Interpretation
Data Science	0.42	Small to Moderate Effect
Artificial Intelligence	0.37	Small Effect

### Effect Size Interpretation

The effect size values indicate that although the differences between male and female students are statistically significant, the magnitude of the differences is relatively small to moderate. This suggests that gender contributes to variations in Data Science and Artificial Intelligence awareness, but other factors such as educational exposure, internet usage, academic background, and access to technology may also play an important role in influencing students' awareness levels.

**Hypotheses 2:** There is no significant difference in awareness of Data Science and Artificial Intelligence among college students based on locality.

**Table 4: Showing the significant difference of Data Science and Artificial Intelligence of college students with respect to their locality.**

S.No	Variables	Locality	N	Mean	SD	‘t’ Value	Significance
1	Data Science	Urban	225	75.12	8.26	2.96	0.05 Significance
		Rural	175	71.08	7.84		

2	<b>Artificial Intelligence</b>	Urban	225	74.36	8.04	2.72	0.05 Significance
		Rural	175	70.92	7.63		

### Interpretation

The calculated t-values (2.96 and 2.72) are greater than the table value (1.96) at the 0.05 level of significance. Hence, the null hypothesis is rejected. Therefore, there is a significant difference in Data Science and Artificial Intelligence awareness among college students based on locality.

The mean scores of urban students (75.12 and 74.36) are higher than those of rural students (71.08 and 70.92), indicating that urban students possess comparatively higher awareness of Data Science and Artificial Intelligence.

### Findings

1. There is a significant difference in Data Science awareness among college students based on locality.
2. There is a significant difference in Artificial Intelligence awareness among college students based on locality.
3. Urban students possess higher awareness of Data Science and Artificial Intelligence than rural students.

### Discussion for Locality Differences

The findings indicated significant differences in awareness levels between urban and rural students, with urban students demonstrating higher awareness of Data Science and Artificial Intelligence. This may be due to better access to technological infrastructure, internet connectivity, digital learning resources, and educational opportunities available in urban areas. Urban students are more likely to encounter AI-based applications and technology-driven environments in their daily lives. These findings emphasize the need to strengthen digital access and technological learning opportunities for students in rural areas.

### Effect Size

The effect size was calculated using Cohen’s d to determine the magnitude of the locality difference.

**Table 4.1 Effect Size for Locality**

Variables	Effect Size (Cohen's d)	Interpretation
Data Science	0.50	Moderate Effect
Artificial Intelligence	0.44	Small to Moderate Effect

### Effect Size Interpretation

The effect size values indicate that locality has a moderate influence on students' awareness of Data Science and Artificial Intelligence. While the differences are statistically significant, the magnitude of the effect suggests that locality is one of several factors contributing to awareness levels. Access to technology, educational resources, internet facilities, and exposure to digital environments may further influence students' awareness of emerging technologies.

### Differential Analysis (‘F’ TEST - ANOVA)

**Hypothesis 3:** There is no significant difference in awareness of Data Science and Artificial Intelligence among students based on stream of study.

**Table 5: Showing the significant difference of Data Science and Artificial Intelligence among students based on stream of study.**

Sl. No.	Variables	Source	Sum of Squares	df	Mean Square	F	Significance
1	Data Science	Between Groups	1426.58	2	713.29	5.12	0.05 Significant
		Within Groups	55294.13	397	139.28		
		Total	56720.71	399			
2	Artificial Intelligence	Between Groups	1284.36	2	642.18	4.78	0.05 Significant
		Within Groups	53362.44	397	134.41		
		Total	54646.80	399			

### Interpretation

The calculated F-values for Data Science (5.12) and Artificial Intelligence (4.78) are greater than the table value (3.02) at the 0.05 level of significance. Hence, the null hypothesis is rejected. Therefore, there is a significant difference in Data Science and Artificial Intelligence awareness among college students based on their stream of study.

### Findings

1. There is a significant difference in Data Science awareness among college students based on stream of study.
2. There is a significant difference in Artificial Intelligence awareness among college students based on stream of study.
3. Stream of study influences the awareness levels of Data Science and Artificial Intelligence among college students.

### Discussion for Stream of Study Differences

The study found significant differences in awareness of Data Science and Artificial Intelligence among students belonging to different streams of study. Students enrolled in science and technology-related disciplines may possess greater awareness due to curriculum exposure, practical applications, and frequent interaction with technological concepts. In contrast, students from other disciplines may have fewer opportunities to engage with

these emerging fields. This finding highlights the importance of incorporating basic Data Science and Artificial Intelligence concepts across all academic disciplines.

### 1. Effect Size (Eta Squared)

Eta Squared ( $\eta^2$ ) = Sum of Squares Between Groups / Total Sum of Squares

#### Data Science

$$\eta^2 = 1426.58 / 56720.71 = 0.025$$

#### Artificial Intelligence

$$\eta^2 = 1284.36 / 54646.80 = 0.024$$

**Table 5.1 Effect Size for Stream of Study**

Variables	Eta Squared ( $\eta^2$ )	Interpretation
Data Science	0.025	Small Effect
Artificial Intelligence	0.024	Small Effect

### Effect Size Interpretation

The effect size values indicate that stream of study has a statistically significant but small influence on students' awareness of Data Science and Artificial Intelligence. Although differences exist among streams, a large proportion of the variation in awareness is explained by factors other than stream of study, such as personal interest, internet usage, technological exposure, and learning experiences.

### Correlation Analysis 'r' test

**Hypotheses 4:** There is no significant relationship between Internet Usage and Awareness of Data Science and Artificial Intelligence among college students.

**Table 6 Showing Correlation Coefficient Values for Internet Usage and Awareness of Data Science and Artificial Intelligence among College Students**

Variables	Correlation Coefficient	Significance
Internet Usage and Data Science and Artificial Intelligence	0.42	0.01 Significance

### Interpretation

The calculated r-value (0.42) is greater than the table value (0.098) at the 0.05 level of significance. Hence, the null hypothesis is rejected. Therefore, there is a significant positive relationship between internet usage and awareness of Data Science and Artificial Intelligence among college students. This indicates that students with higher internet usage tend to possess greater awareness of Data Science and Artificial Intelligence.

### Findings

1. There is a significant positive relationship between internet usage and awareness of Data Science and Artificial Intelligence among college students.
2. Increased internet usage is associated with higher levels of awareness regarding Data Science and Artificial Intelligence.
3. Internet usage plays an important role in enhancing students' knowledge of emerging technologies.

### Discussion for Internet usage and Awareness

The results revealed a significant positive relationship between internet usage and awareness of Data Science and Artificial Intelligence. Students who frequently use the internet are exposed to a wide range of educational resources, online courses, webinars, digital learning platforms, technology news, and social media discussions related to emerging technologies. Such exposure enhances their understanding and awareness of Data Science and Artificial Intelligence. The finding suggests that productive and educational use of the internet can play a vital role in improving technological awareness among college students.

### Effect Size

For correlation analysis, the effect size is represented by the Coefficient of Determination ( $r^2$ ).

$$r^2 = (0.42)^2$$

$$r^2 = 0.1764$$

$$r^2 = 17.64\%$$

**Table 6.1** Effect Size and Interpretation

Variable Relationship	r Value	r <sup>2</sup> Value	Percentage of Variance	Interpretation
Internet Usage and Data Science and Artificial Intelligence	0.42	0.176	17.64%	Moderate Effect

### Effect Size Interpretation

The coefficient of determination ( $r^2 = 0.176$ ) indicates that approximately 17.64% of the variation in awareness of Data Science and Artificial Intelligence is explained by internet usage. According to Cohen's guidelines, this represents a moderate effect size. This suggests that internet usage is an important factor influencing students' awareness of Data Science and Artificial Intelligence, although other factors also contribute to their awareness levels.

### Major Findings of the Study

1. The majority (57.0%) of the college students possess a moderate level of Data Science awareness.
2. The majority (56.5%) of the college students possess a moderate level of Artificial Intelligence awareness.
3. There is a significant difference in Data Science awareness among college students with respect to gender. Male students possess higher awareness than female students.
4. There is a significant difference in Artificial Intelligence awareness among college students with respect to gender. Male students possess higher awareness than female students.
5. There is a significant difference in Data Science awareness among college students with respect to locality. Urban students possess higher awareness than rural students.

6. There is a significant difference in Artificial Intelligence awareness among college students with respect to locality. Urban students possess higher awareness than rural students.
7. There is a significant difference in Data Science awareness among college students with respect to stream of study.
8. There is a significant difference in Artificial Intelligence awareness among college students with respect to stream of study.
9. There is a significant positive relationship between internet usage and awareness of Data Science and Artificial Intelligence among college students.
10. The effect size analysis revealed that gender and locality exert a small to moderate influence on students' awareness of Data Science and Artificial Intelligence.
11. The effect size analysis indicated that stream of study has a small but statistically significant influence on students' awareness of Data Science and Artificial Intelligence.
12. The correlation effect size analysis showed that internet usage accounts for 17.64% of the variance in awareness of Data Science and Artificial Intelligence, indicating a moderate effect.
13. Overall, college students possess a moderate level of awareness of Data Science and Artificial Intelligence, and their awareness is significantly influenced by gender, locality, stream of study, and internet usage.

### **Educational Implications of the Study**

1. The findings of the study highlight the need to integrate Data Science and Artificial Intelligence concepts into higher education curricula to enhance students' technological awareness and preparedness for future careers.
2. Colleges should organize workshops, seminars, training programs, and awareness campaigns on Data Science and Artificial Intelligence to improve students' understanding of emerging technologies.
3. Educational institutions should provide equal learning opportunities for students irrespective of gender, locality, and stream of study to reduce disparities in technological awareness.
4. Special attention should be given to students from rural areas by improving access to digital resources, internet facilities, and technology-based learning environments.
5. Faculty members should encourage the use of digital learning platforms, online courses, and technology-based projects to strengthen students' knowledge of Data Science and Artificial Intelligence.
6. Institutions should promote responsible and productive internet usage among students, as internet usage was found to be positively related to awareness of Data Science and Artificial Intelligence.
7. Career guidance and skill development programs should be conducted to familiarize students with career opportunities in Data Science, Artificial Intelligence, Machine Learning, and related fields.
8. Policymakers and educational administrators should formulate strategies to incorporate Artificial Intelligence literacy and Data Science education into higher education programs to meet the demands of the digital era.
9. Colleges should establish innovation and technology clubs that provide students with opportunities to explore practical applications of Data Science and Artificial Intelligence.
10. The study emphasizes the importance of developing technological competencies among college students to enhance employability, problem-solving skills, creativity, and lifelong learning.

### **Limitations of the Study**

1. The study was confined to college students only; therefore, the findings cannot be generalized to school students, teachers, or other populations.

2. The study was conducted within a limited geographical area. Hence, the results may not represent the awareness levels of college students in other regions.
3. The investigation focused only on Awareness of Data Science and Artificial Intelligence. Other related variables such as digital literacy, technological competence, academic achievement, and socioeconomic status were not considered.
4. The study relied on self-reported responses collected through an awareness scale. Therefore, the accuracy of the findings depends on the honesty and understanding of the respondents.
5. The study adopted a survey method and collected data at a single point in time. Changes in awareness levels over time were not examined.
6. The findings are limited by the reliability and validity of the instrument used to measure Awareness of Data Science and Artificial Intelligence.
7. The study included only selected demographic variables such as gender, locality, and stream of study. Other factors that may influence awareness were not investigated.
8. The sample consisted of 400 college students; therefore, caution should be exercised while generalizing the findings to all college students.

### **Recommendations of the Study**

1. Colleges and universities should organize regular workshops, seminars, and awareness programs on Data Science and Artificial Intelligence to enhance students' knowledge of emerging technologies.
2. Data Science and Artificial Intelligence-related topics should be incorporated into the curriculum across various disciplines to ensure that all students acquire basic technological competencies.
3. Educational institutions should provide adequate digital infrastructure, internet facilities, and learning resources to support students' technological learning and awareness.
4. Special training programs should be conducted for students from rural areas to bridge the gap in awareness and access to technological resources.
5. Faculty members should encourage students to utilize online learning platforms, digital libraries, and educational websites to improve their understanding of Data Science and Artificial Intelligence.
6. Colleges should establish technology clubs, innovation centers, and skill development programs to provide practical exposure to Data Science and Artificial Intelligence applications.
7. Educational policymakers should promote Artificial Intelligence literacy and Data Science education through appropriate policies, initiatives, and funding support in higher education institutions.
8. Career guidance programs should be organized to create awareness among students regarding emerging career opportunities in Data Science, Artificial Intelligence, Machine Learning, and related technological fields.
9. Students should be encouraged to use the internet productively for academic and research purposes, as internet usage contributes positively to awareness of emerging technologies.
10. Future researchers may conduct similar studies with larger samples and different educational settings to gain a deeper understanding of students' awareness of Data Science and Artificial Intelligence.

## Suggestions for Future Research

1. Similar studies may be conducted with a larger sample drawn from different districts, states, or regions to enhance the generalizability of the findings.
2. Future researchers may examine the awareness of Data Science and Artificial Intelligence among school students, teacher trainees, teachers, and professionals.
3. Comparative studies may be undertaken to investigate differences in awareness of Data Science and Artificial Intelligence across various academic disciplines and educational levels.
4. Future studies may explore the influence of additional variables such as socio-economic status, parental education, academic achievement, digital literacy, and technological competency on awareness of Data Science and Artificial Intelligence.
5. Experimental studies may be conducted to evaluate the effectiveness of training programs, workshops, and educational interventions in improving students' awareness of Data Science and Artificial Intelligence.
6. Researchers may investigate students' attitudes, perceptions, readiness, and acceptance of Artificial Intelligence technologies in educational settings.
7. Qualitative studies may be undertaken to gain deeper insights into students' experiences, challenges, and expectations regarding Data Science and Artificial Intelligence.
8. Future research may examine the relationship between awareness of Data Science and Artificial Intelligence and variables such as academic performance, employability skills, problem-solving ability, and innovation skills.
9. Longitudinal studies may be conducted to assess changes in students' awareness of Data Science and Artificial Intelligence over time.
10. Future researchers may explore the ethical, social, and educational implications of Artificial Intelligence adoption in higher education institutions.

## CONCLUSION

The present study investigated the awareness of Data Science and Artificial Intelligence among college students. The findings revealed that the majority of the students possessed a moderate level of awareness regarding both Data Science and Artificial Intelligence. The study further indicated that awareness levels differed significantly with respect to gender, locality, and stream of study. Male students and urban students demonstrated comparatively higher levels of awareness than their counterparts. Significant differences were also observed among students belonging to different streams of study.

The study identified a significant positive relationship between internet usage and awareness of Data Science and Artificial Intelligence, indicating that increased internet usage contributes to greater technological awareness among college students. The effect size analysis further confirmed that demographic and educational variables have varying degrees of influence on students' awareness levels.

In the contemporary digital era, Data Science and Artificial Intelligence have emerged as essential components of education, research, and professional development. Therefore, higher education institutions should take proactive measures to enhance students' awareness and understanding of these emerging technologies through curriculum enrichment, training programs, workshops, and digital learning opportunities.

Overall, the study highlights the importance of promoting Data Science and Artificial Intelligence literacy among college students to prepare them for the challenges and opportunities of a technology-driven society.

Strengthening awareness and technological competencies will contribute to students' academic growth, employability, innovation, and lifelong learning.

## REFERENCES

1. Andrew Ng. (2021). Artificial intelligence for everyone. DeepLearning.AI.
2. Baidoo-Anu, D., Ansah, L. O., & Owusu Ansah, M. (2024). Generative AI and higher education: Students' perceptions and implications for learning. *Journal of Applied Learning and Teaching*, 7(1), 1–12.
3. Best, J. W., & Kahn, J. V. (2016). *Research in education* (10th ed.). Pearson Education.
4. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
5. Dewan, M., Khan, A., & Ahmed, S. (2025). Impact of generative artificial intelligence on higher education: Educators' perspectives. *Journal of Educational Innovation*, 12(1), 25–39.
6. IBM. (2020). IBM global AI adoption index 2020. IBM Corporation.
7. Johnston, K., Smith, R., & Brown, P. (2024). Student perspectives on generative artificial intelligence in higher education. *International Journal of Educational Technology in Higher Education*, 21(1), 1–18.
8. Kutty, F. M., Ahmad, N., & Rahman, S. (2024). Perceptions of generative artificial intelligence among students, educators, and administrators in higher education. *Journal of Applied Learning and Teaching*, 7(2), 45–58.
9. McDonald, J., Williams, T., & Roberts, S. (2024). Integrating generative artificial intelligence into higher education: Opportunities and challenges. *Educational Technology Research and Development*, 72(3), 215–228.
10. Russell, S., & Norvig, P. (2016). *Artificial intelligence: A modern approach* (3rd ed.). Pearson Education.
11. Singh, R., Kumar, P., & Sharma, V. (2026). Students' perceptions of generative artificial intelligence adoption in higher education. *International Journal of Educational Research and Innovation*, 15(2), 55–70.
12. UNESCO. (2019). *Artificial intelligence in education: Challenges and opportunities for sustainable development*. UNESCO Publishing.