Examining The Challenges Of Implementing Artificial Intelligence-Based Tools In Higher Education: Insights From Gen Z In Jharkhand And Their Implications For Global Educational Standards

Author 1: Dr. Vidya Jha, Assistant Professor, Faculty of Commerce & Business Management, Sarala Birla University, Ranchi -834002.

Author 2: Dr. Surbhi Shriwastava, Assistant Professor, Department of Management, Ranchi Women's College, Ranchi.

Author 3: Dr. Anjali Srivastava, Assistant Professor, Faculty of Commerce & Business Management, Sarala Birla University, Ranchi -834002.

Abstract

This research paper examines the challenges faced by Gen Z in Jharkhand concerning the implementation of Artificial Intelligence-Based Tools (ABTs) in higher education. Despite being recognized as an educational hub, the adoption of ABTs in the state remains limited. The study employs a random sampling method to collect quantitative and qualitative data from 273 respondents born between 1997 and 2010, using a structured questionnaire based on a 7-point Likert scale. Data analysis was conducted with SPSS, focusing on key variables: perception, academic performance, and challenges. Various statistical methods, including correlation, regression, Mann Whitney U Test, and Kruskal Wallis Test, were utilized to explore relationships among these variables. Findings indicate that while Gen Z believes ABTs could enhance academic performance, significant concerns about implementation challenges persist. The study also reveals a divergence in how Gen Z views ABTs—as both obstacles and opportunities. With only 13 relevant publications globally and no prior research specifically in Jharkhand, this study provides unique insights into the perceived challenges of ABT adoption. It aims to offer actionable recommendations for educational institutions in Jharkhand, helping them align with successful global trends in educational technology integration.

Keywords: Artificial intelligence-based tools(ABTs), academic performance, challenges, Gen Z, Jharkhand, Higher Education, Global education standards

1. Introduction

Academicians have been investigating the implications of Artificial Intelligence (AI) on academic performance, particularly in higher education institutions (Gupta, 1994) (Ali et al., 2023; Gendron et al., 2022; Kramer, 2022; Nawaz & Saldeen, 2020) Tools such as adaptive learning platforms, intelligent tutoring systems (ITS), data analytics for educational insights, and chatbots for student support are increasingly utilized in academia (Martín-Sómer et al., 2024; Wildgaard et al., 2023) (Pikhart & Klímová, 2020) (Lai & Chen, 1995). Adaptive learning platforms, intelligent tutoring systems (ITS), data analytics for educational insights, and chatbots for student support are some of the artificial intelligence tools used in academia. The implications of AI in educational settings are complex and multifaceted (Kannan et al., 2023). Generative AI tools, like ChatGPT, as well as article rewriter tools, have raised concerns regarding potential misuse by students for assignments and research (Adetayo, 2023; Dwivedi et al., n.d.; F. J. Pinzolits, 2023; Liu et al., 2023; Yatoo & Habib, 2023), (Pijls et al., 1987) Such technology abuse could negatively impact academic performance in higher education (Elkhatat, 2023). Conversely, certain AI-based tools, such as MOOCs and Coursera, have been shown to enhance academic performance by supporting both faculty and students (Pisica et al., 2023). By examining the unique perceptions and challenges faced by Gen Z in Jharkhand, this study aims to contribute valuable insights to the broader discourse on AI in education, informing strategies that align with global educational standards and best practices.

Artificial Intelligence, a term introduced in 1955 by Professor John McCarthy, is making significant waves in academia, (Dec et al., 2022) It emphasizes non-algorithmic approaches to problem-solving and symbol manipulation, relying heavily on effective symbol-mapping skills. It emphasizes non-algorithmic approaches to problem-solving and symbol manipulation. Its effectiveness relies on adept symbol-mapping skills (Holloway & Hand, 1988) (Gable & Page, 1980) The emergence of new applications, such as Artificial Intelligence-Based Tools (ABTs), has created substantial opportunities for information researchers in areas like multimedia systems, digital libraries, GIS, and e-commerce. As these applications become more powerful and diverse, the existing challenges in information retrieval become even more pressing in this technological landscape (Kramer, 2022) Furthermore, UNESCO advocates for "AI for all," promoting broader access and understanding of AI technologies (Gómez-Camacho et al., 2023; Islam et al., 2021)

Maintaining integrity in academic settings requires a careful balance in the use of Artificial Intelligence (AI) technologies (Sullivan et al., 2023)(Fidas et al., 2023)By embracing and integrating controlled AI-based approaches, educators can equip students with the necessary tools to become innovative, creative, and responsible members of society (Giray, 2023), creative, and responsible members of society. (Fathoni, 2023) Both academicians (Marshall, 1986)(Karsenti, 2019) (Carabantes et al., 2023)and students (Colomo-Magaña et al., 2020)must find a harmonious way to utilize these technologies in pursuit of academic excellence.

Jharkhand has a rich history of nurturing professionals across various fields, consistently setting high standards for academic achievement. As the future leaders of the state, Gen Z must navigate the ethical challenges associated with AI while ensuring that the benefits of Artificial Intelligence-Based Tools (ABTs) are responsibly harnessed for educational purposes. In a global context, adhering to education standards that emphasize ethical AI usage is vital. These standards advocate for transparency, accountability, and inclusivity in educational practices, ensuring that all students benefit equitably from technological advancements. By aligning local educational practices in Jharkhand with global standards, institutions can foster an environment that promotes not only academic excellence but also ethical responsibility, preparing students to thrive in an increasingly digital world. This alignment will enable the next generation to leverage AI tools effectively while upholding the values of integrity and responsible citizenship.

This research paper explores the challenges faced by Gen Z in Jharkhand regarding the implementation of Artificial Intelligence-Based Tools (ABTs) in higher education. It analyzes how these challenges compare to global educational standards that advocate for the effective integration of technology in learning environments. By investigating the perceptions and experiences of students in Jharkhand, the study identifies key barriers to ABT adoption and their impact on academic performance. The findings will aim to provide recommendations for educational institutions in Jharkhand to address these challenges and align their practices with successful global trends in educational technology

2. Need for Study

A. Research Justification

Artificial Intelligence and academics are widely studied topics. Scopus search for article title, abstract, and keywords for "artificial intelligence" AND *academic" OR "artificial intelligence" AND *education", 23223 documents were found. However, search within with keywords - "Gen Z" OR "Generation Z" OR "iGen" OR "iGeneration" OR "postmillennial", only 26 documents were found. Advanced search within the abovementioned keywords with the keywords - *university OR *college OR *higher AND education, only 13 documents (conference papers – 5, article – 4, conference -3, review - 1) were listed. The list of the papers is presented in Table 1 There was no work done in the context of India and more specifically, in Jharkhand in Scopus and Google Scholar. The dearth of primary research uniquely identifies this paper.

Table 1

Scopus Indexed Papers for the AI and Academic Performance

Sl. No.	Authors	Document	Arguments
1	(Altinsoy et al., 2023)	Article	A General Satisfaction Index was created.
2	("International Conference on Information Technology and Systems, ICITS 2022," 2022)	Conference Review	
3	(Bińczycki & Dorocki, 2022)	Article	The authors argued that machines cannot substitute humans.
4	(Basinger et al., 2022)	Conference Paper	The authors analyzed the perception of Gen Z and the variables used were performance-based learning and engagement while comparing active learning as compared to traditional passive online learning.
5	(Lee, 2022)	Article	The authors analyze the perception of Millennials and Generation Z about the metaverse.
6	(Caratozzolo et al., 2021)	Conference Proceedings	At the conference, the authors made contributions to the field of active learning in STEAM.
7	("ACIS 2021 - Australasian Conference on Information Systems, Proceedings," 2021)	Conference Proceedings	
8	(LeAnne Basinger et al., 2021)	Conference Proceedings	
9	(Mendonça et al., 2020)	Conference Proceedings	
10	(Pikhart & Klímová, 2020)	Article	The authors compares the traditional and blended learning by online methods and studies the student's perception regarding the same.
11	("14th International	Conference Proceedings	

	Conference On Virtual Learning, ICVL 2019," 2019)		
12	(Baltusite & Briede, 2018)	Conference Paper	The study analyses the cultural, historical, and technological background of Gen Z and highlights their habits and values

Source: Scopus Indexed – Compiled by Authors

B. Research Questions

Based on the above research gap, the objectives of this study are to address the following research questions:

RQ1. What are the challenges in implementing ABTs for academic excellence in the public higher education sector of Jharkhand?

RQ2. What are the challenges in implementing ABTs for academic excellence in the private higher education sector of Jharkhand?

C. Hypothesis Formulation

To address the research questions and to analyze the data statistically, primary data were collected and the hypothesis, thus, formulated are as follows:

H_1 - There is a significant relationship between Perception and Academic Performance in the public higher education sector in Jharkhand.

H_2 - There is a significant relationship between Perception and Academic Performance in the private higher education sector in Jharkhand.

H_3 - There is a significant positive impact of the Perception of ABTs on Academic Performance in the public higher education sector in Jharkhand.

H_4 - There is no significant positive impact of the Perception of ABTs on Academic Performance in the private higher education sector in Jharkhand.

3. Research Methodology

A. Universe: The Gen Z respondents from the state of Jharkhand.

B. Sampling: A random Sampling Method has been used

C. Data collection:

- Primary Data – The data was collected by Online Data Survey using questionnaires.

- Secondary Data - Using archival techniques, a thorough review of the literature was conducted. This paper employs archival methods to examine papers from various databases and websites. The secondary data has been used from the internet, magazines, and different articles published in various newspapers.

D. Data Analysis

The researcher designed a questionnaire based on a comprehensive literature survey and observational methods to assess Gen Z's perceptions of the impact of artificial intelligence-based tools (ABTs) on academic performance, as well as the challenges they encounter. Responses were collected using a 7-point Likert scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Data was gathered via Google Forms, and Google Sheets was utilized to organize the responses. Analysis was conducted using the Statistical Package for Social Sciences (SPSS), where frequencies were calculated, and charts generated. Additionally, Microsoft Word and Excel were employed to compile and present the data, while Mendeley was used for referencing.

4. **Data Analysis and Hypothesis Testing**

Data was collected from 273 respondents. All the indicators for the variables "Perception", "Academic Performance" and "Challenges" were checked for outliers using **Stem and Box Plot** and **z-scores** of the variables. No spurious outliers were found. The normality of the variables was checked using the **Shapiro-Wilk test**. The variables were not normally distributed and hence, non – non-parametric methods have been used for analysis.

A. **Demographic Profile**

The frequency table was generated to describe the distribution of gender in the sample. As shown in Table 2, the majority of respondents were female (n=175, 64.1%) while 98 respondents (35.9%) were male. The results for gender-wise distribution of the respondents are represented in Table 2.

Table 2

Frequency Table of Gender Distribution in the Sample

	Frequency	Percent
Male	98	35.9
Female	175	64.1

Source: Primary Data

The frequency table was generated to describe the distribution of the sample according to the type of educational sector they have studied or are studying. As shown in Table 3, the majority of respondents are studying or have studied in private schools/colleges/universities (n=196, 71.8%) while 77 respondents

(28.2%) are studying or have studied in public schools/colleges/universities. The results for educational sector-wise distribution of the respondents are represented in Table 3.

Table 3

Frequency table of Distribution of Type of Educational Sector of the Sample

	Frequency	Percent
Public Sector	77	28.2
Private Sector	196	71.8

Source: Primary Data

The frequency table was generated to describe the distribution of the sample according to the employment status. As shown in Table 4, the majority of respondents are students (n=234, 85.7%) while 21 respondents (7.7%) have completed their studies and are employed and 18 respondents (6.6%) have completed their studies but are unemployed. The results for educational sector-wise distribution of the respondents are represented in Table 4.

Table 4

Frequency table of Distribution of Respondents according to their Employment Status

	Frequency	Percent
Student	234	85.7
Completed Studies and Employed	21	7.7
Completed Studies and Unemployed	18	6.6

Source: Primary Data

The frequency table was generated to describe the distribution of samples according to their stream. As shown in Table 5, the majority of respondents belong to commerce (n=193, 70.7%) while 52 respondents (19.0%) belong to the science stream and 28 respondents (10.3%) belong to arts & humanities. The results for the educational stream-wise distribution of the respondents are represented in Table 5.

Table 5

Frequency table of Distribution of Respondents according to their Streams

	Frequency	Percent
Science	52	19.0
Commerce	193	70.7
Arts and Humanities	28	10.3

Source: Primary Data

The frequency table was generated to describe the distribution of districts in the sample. As shown in Table 6, the majority of respondents were from Ranchi (n=248, 90.8%) while 25 respondents (9.2%) were from other districts of Jharkhand. The results for district-wise distribution of the respondents are represented in Table 6.

Table 6

Frequency Table of District Distribution in the Sample

	Frequency	Percent
Bokaro	4	1.5
Dhanbad	6	2.2
East-Singhbhum	1	0.4
Gharwha	1	0.4
Giridih	1	0.4
Gumla	1	0.4
Hazaribagh	2	0.7
Pakur	1	0.4
Palamu	5	1.8
Ramghar	2	0.7
Ranchi	248	90.8
West-Singhbhum	1	0.4

Source: Primary Data

The frequency table was generated to describe the distribution of respondents according to their year. As shown in Table 7, the majority of respondents were from 1999-2006 (n=243, 89.01%) other 30 respondents (10.01%) were born in 1997, 1998, and 2007 - 2010. The results for the year of birth-wise distribution of the respondents are represented in Table 7.

Table 7

Frequency table of Distribution of the Sample according to the Year of Birth.

Source:	Frequency	Percent
Primary		
Data		
1997	12	4.4
1998	9	3.3
1999	21	7.7
2000	22	8.1
2001	26	9.5
2002	39	14.3
2003	38	13.9
2004	35	12.8
2005	37	13.6

2006	25	9.2
2007	6	2.2
2008	1	0.4
2009	1	0.4
2010	1	0.4

B. Cronbach's Alpha Reliability Test

1. The 7–item variable "Perception" scale was used to measure the perception of ABTs among Gen Z of Jharkhand. The scale consisted of 7 items (e.g. AI is very human-friendly) and was administered to a sample of 273 participants. The Cronbach's Alpha coefficient for the scale was 0.828, indicating a high level of internal consistency. (Table 8)

2. The 7–item variable "Academic Performance" scale was used to measure the use of artificial intelligence for academic excellence among Gen Z of Jharkhand. The scale consisted of 7 items (e.g. I use/used AI to help write school/college reports) and was administered to a sample of 273 participants. The Cronbach's Alpha coefficient for the scale was 0.958, indicating a high level of internal consistency. (Table 8)

3. The 10–item variable "Challenges" scale was used to measure the challenges in the implementation of artificial intelligence among Gen Z of Jharkhand. The scale consisted of 10 items (e.g. AI cannot replace human intelligence or creativity) and was administered to a sample of 273 participants. The Cronbach's Alpha coefficient for the scale was 0.811, indicating a high level of internal consistency. (Table 8)

Table 8

Variables and their Cronbach's Alpha Reliability Coefficients

Variables	No. of Items	Cronbach's Alpha coefficient
Perception	7	0.828
Academic Performance	7	0.958
Challenges	10	0.811

Source: Primary Data

C. Hypothesis Testing

Hypothesis 1 and Hypothesis 2

H_1 - There is a significant relationship between Perception and Academic Performance in the public higher education sector in Jharkhand.

H_2 - There is a significant relationship between Perception and Academic Performance in the private higher education sector in Jharkhand.

Table 9

Correlation between Perception and Academic Performance

	Spearman Correlation Coefficient	Sig	N
Public Sector	.787	.000	77
Private Sector	.676	.000	196

Source: Primary Data

Statistical Method: Bivariate Analysis using Spearman's Rank Correlation

Findings: A Spearman's correlation was run to determine the relationship between 273 perception and academic performance. A statistically significant and strong positive correlation ($r_s = .787$, $p = .000$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for public sector (N=77) and a statistically significant and strong positive correlation ($r_s = .676$, $p = .000$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for private sector (N=196). (Table 9)

Thus, the null hypothesis is rejected.

Conclusion: There is a significant and positive relationship between the perception of ABTs and academic performance in the public and private higher education sector in Jharkhand.

Hypothesis 3 and Hypothesis 4

H_3 - There is a significant positive impact of the Perception of ABTs on Academic Performance in the public higher education sector in Jharkhand.

H_4 - There is no significant positive impact of the Perception of ABTs on Academic Performance in the private higher education sector in Jharkhand.

Table 10

Linear Regression Analysis for Perception and Academic Performance

Hypothesis	Regression Weights	B	T	p-value	Result
H_3	Perception--->AP	.1.029	.807	.000	Supported
H_4	Perception--->AP	.834	.658	.000	Supported
R-square(Public)	.651				
R-square(Private)	.434				
F(1,75)	139.818				
F(1,194)	148.778				

Source: Primary Data

Figure 1

Scatter Plot to show the relationship between perception of ABTs and Academic Performance
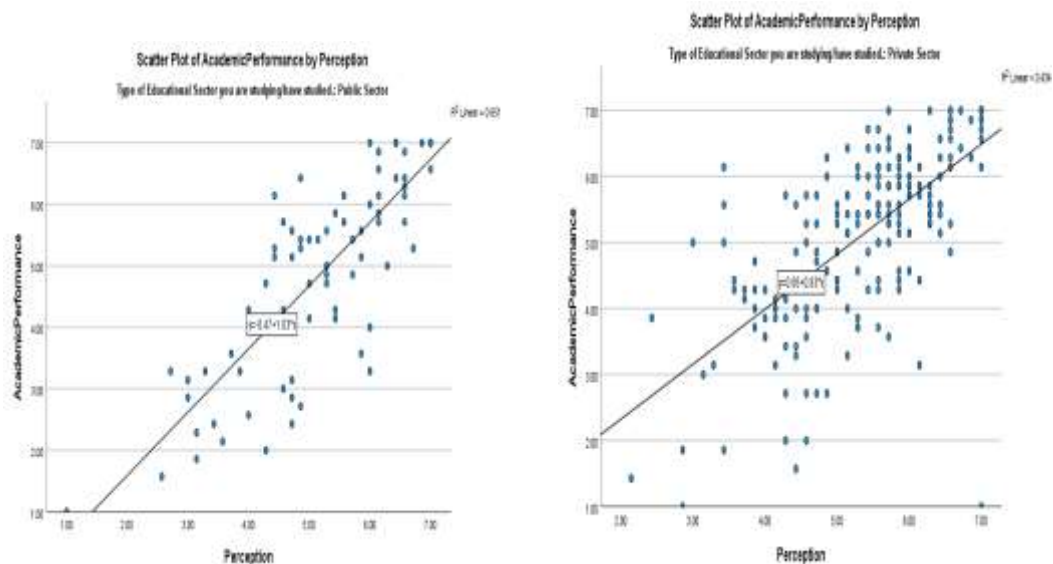
Statistical Method: Linear Regression Analysis

Findings: A simple linear regression was conducted to assess the Perception of ABTs to predict the Academic Performance of the Gen Z of Jharkhand. A scatter plot showed the relationship between Perception and Academic Performance as positive and linear. A linear regression established Perception can statistically predict academic performance, $F(1, 75) = 139.818$, $p = .000$, $R^2 = .651$ for the public educational sector. The R^2 was .651 which means 65.1% of the variance in Academic Performance can be predictable Perception in public educational sectors. According to the coefficients, Perception was a significant predictor of Academic Performance, $\beta = 1.029$, $t = .807$, $p = .000$ in public educational sectors. This is a highly strong relationship.

A linear regression established Perception can statistically predict academic performance, $F(1, 194) = 148.778$, $p = .000$, $R^2 = .434$ for the private educational sector. The R^2 was .434 which means 43.4% of the variance in Academic Performance can be predictable Perception in private educational sectors. According to the coefficients, Perception was a significant predictor of Academic Performance, $\beta = .834$, $t = .658$, $p = .000$ in private educational sectors. This is a highly strong relationship.

Thus, the null hypothesis is rejected.

Conclusion: Hence, it can be concluded statistically that Perception of ABTs can significantly predict academic performance in the public and private higher education sector of Jharkhand.

D. Data Analysis

Spearman's correlation, Mann Whitney U Test, and Kruskal Wallis Test were run to determine the relationship and the mean differences between 273 perceptions, academic performance, and challenges based on gender, employment status, and stream.

Table 11

Comparative Analysis to Analyze Impact of Perception of ABTs on Academic Performance in Public and Private Higher Educational Sectors by Spearman Correlation Method.

		Public Sector			Private Sector		
		Correlation Coefficient	Sig	N	Correlation Coefficient	Sig	N
Gender	Male	.520	.047	15	.637	.001	83
	Female	.797	.001	62	.697	.001	113
Employment Status	Student	.785	.001	51	.682	.001	183
	Completed Studies and employed	.628	.012	15	.493	.321	6
	Completed Studies and unemployed	.804	.003	11	.358	.431	7
Stream	Science	.841	.036	6	.375	.010	46
	Commerce	.774	.001	50	.745	.001	143
	Arts and Humanities	.793	.001	21	.847	.016	7

Source: Primary Data

A statistically significant and positive correlation ($r_s = .520$, $p = .047$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for male respondents in public sector (N=15) and a statistically significant and strong positive correlation ($r_s = .637$, $p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for male respondents in private sector (N=83). (Table 11)

A statistically significant and strong positive correlation ($r_s = .797$, $p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for female respondents in public sector (N=62) and a statistically significant and strong positive correlation ($r_s = .697$, $p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for female respondents in private sector (N=113). (Table 11)

To evaluate the mean difference between the public and private sectors for the impact of perception of ABTs on Academic Performance, the **Mann - Whitney U-test** was utilized with gender as the grouping variable. The test revealed no significant differences in the perception of ABTs on academic performance in public and private higher education sectors based on gender.

A statistically significant and strong positive correlation ($r_s = .785$, $p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who were students in the public sector (N=51) and a statistically significant and strong positive correlation ($r_s = .682$,

$p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who were students in private sector (N=183). (Table 11)

A statistically significant and positive correlation ($r_s = .628$, $p = .012$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who have completed studies in the public educational sector and are employed (N=15) but a statistically insignificant correlation was found between perception and academic performance for respondents who have completed studies in the private educational sector and are employed. (Table 11)

A statistically significant and positive correlation ($r_s = .804$, $p = .003$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who have completed studies in the public educational sector and are unemployed (N=11) but a statistically insignificant correlation was found between perception and academic performance for respondents who have completed studies in the private educational sector and are unemployed. (Table 11)

A **Kruskal Wallis Test** showed that there are no statistically significant mean differences between the three levels of the employment status of respondents - students completed their studies and are employed and completed their studies and are unemployed in the public sector, H(2) = 2.978, p = .226 and private sector, H(2) = 1.146, p = .564.

A statistically significant and strong positive correlation ($r_s = .841$, $p = .036$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who pursued science in public higher educational sector (N=6) and a statistically significant and positive correlation ($r_s = .375$, $p = .010$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who pursued science in public higher educational sector (N=46). (Table 11)

A statistically significant and strong positive correlation ($r_s = .774$, $p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who pursued commerce in the public higher educational sector (N=50) and a statistically significant and strong positive correlation ($r_s = .745$, $p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who pursued commerce in public higher educational sector (N=143). (Table 11)

A statistically significant and strong positive correlation ($r_s = .793$, $p = .001$) was found between perception and academic performance at the significance level of 0.01 in a 2-tailed test for respondents who pursued arts & humanities in the public higher educational sector (N=21) and a statistically significant and strong positive correlation ($r_s = .847$, $p = .016$) was found between perception and academic performance at the

significance level of 0.01 in a 2-tailed test for respondents who pursued arts & humanities in the public higher educational sector (N=7). (Table 11)

A **Kruskal Wallis Test** showed that there is no statistically significant mean difference in the impact of perception of ABTs on academic performance between the three streams in the public higher educational sector, H(2) = .833, p=.659.

A **Kruskal Wallis Test** showed that there is a statistically significant mean difference in the impact of perception of ABTs on academic performance between the three streams in the private higher educational sector, H(2) = 9.609, p =.008. **Mann - Whitney U-test** was used to compare the pairs of groups to identify the exact groups.

Mann - Whitney U Test revealed significant mean differences in the perception of ABTs on academic performance in science (Mean Rank = 75.91, n = 46) and commerce (Mean Rank = 101.14, n = 143) streams for respondents of the private higher educational sector (U =2411.000, z = -2,723, p =.006, r = .198).

Mann - Whitney U-test revealed no significant mean difference in the perception of ABTs on academic performance in science and arts & humanities stream, commerce and arts & humanities streams for respondents of private higher educational sector.

E. Findings

1. There is a significant and positive relationship between the impact of perception of ABTs and academic performance in both male and female respondents in public and private higher education sectors in Jharkhand and there are no significant differences in the perception of ABTs on academic performance in public and private higher education sectors based on gender.

2. There is a significant and positive relationship between the impact of perception of ABTs and academic performance in three levels of the employment status of respondents who have studied in public higher education sectors - students, those who have completed their studies and are employed, and those who have completed their studies and are unemployed.

3. There is a significant and positive relationship between the impact of perception of ABTs and academic performance in the students studying in private higher education sectors. However, there is no significant relationship between the impact of perception of ABTs and academic performance in the other two levels of the employment status of respondents who have studied in private higher education sectors - who have completed their studies and are employed and who have completed their studies and are unemployed.

4. There is a significant and positive relationship between the impact of perception of ABTs and academic performance in all three levels of streams – science, commerce, and arts & humanities in both responses from public and private higher educational sectors. There are significant differences in the perception of ABTs on academic performance in science and commerce streams for respondents of the private higher educational sector. However, the effect is small.

5. The respondents of all the streams, employment status, and gender perceive challenges in implementing the ABTs for academic excellence in Jharkhand for both public and private educational sectors. No statistically significant differences were found.

6. The main challenges perceived by Gen Z in implementing ABTS for academic excellence are:

a. Lack of internet connection (Mean = 5.32, S.D. = 1.868)

b. They believe that AI cannot replace human intelligence or creativity. (Mean = 5.10, S.D. = 1.969)

c. Lack of facilities for ABTs implementation (Mean = 4.44, S.D. = 1.765)

d. ABT dependence would create an unworthy future generation by hindering creativity and thinking. (Mean = 4.43, S.D. = 1.771)

e. Errors in results (Mean = 4.32, S.D. = 1.635)

f. Authorities and Faculties are unaware of the importance of ABTs. (Mean = 4.27, S. D. = 1.845

g. Ethical implications - Using AI for assignments and projects is a form of cheating and plagiarism. (Mean = 3.96, S. D. = 1.888)

h. AI affects mental health and induces stress. (Mean = 3.94, S. D. = 1.835)

i. Technology unavailability in Jharkhand. (Mean = 3.67. S. D=1.867)

j. ABTs not user-friendly. (Mean = 3.47, S.D. = 1.643)

7. Other Challenges.

a. Lacks emotional touch.

b. Gives only limited options

c. Lack of uniqueness.

d. Writing correct prompts was a big challenge as the same query or prompt has various answers. Choosing the most appropriate prompt and answer is challenging.

F. **Discussions and Conclusion**

A comparative analysis of the Gen Z of public and private educational sectors revealed perception of ABTs has a very significant positive impact and can predict the academic performance of Gen Z in both public and private educational sectors of Jharkhand irrespective of gender and stream. However, the respondents who had completed their studies from the private educational sector did not find the significant impact of perception of ABTs on academic performance.

It was also statistically inferred that there is no significant difference in the perception of ABTs on academic performance in the public and private educational sectors based on gender, employment status, and stream

except the mean difference between the academic performance of science and commerce private sector students are different, though the difference is small.

However, they all believed that their generation still faces some critical challenges in the implementation of ABTs for academic excellence - internet connectivity being the prime challenge. Some other challenges are confusion in selecting appropriate prompts and interpretation of results, plagiarism, and heavy dependence on AI leading to low heuristic and creative abilities. Another important reason for less acceptance of ABTs was the lack of human touch.

G. Practical Implications

Jharkhand has a very rich history of producing professionals in all fields and has always been a pioneer in academics. Still, the lack of awareness of AI in HEIs is very concerning. The schools have a reasonable implementation of ABTs in large cities than in less developed cities. Although students are given proper computer education in schools and colleges, they should have Artificial Intelligence as a mandatory component in the school and university curriculum. They should be taught about how to exactly form prompts and queries and the use of the internet in the best judicial way possible. Ethics should be mandatory in UG classes highlighting not just the ethics in their profession, but also the various ethical implications of plagiarism. The faculties should also be oriented on the use of artificial intelligence and its essence. Proper guidelines, policies, and procedures for the use of AI should be framed. Proper awareness is the key to all the challenges that Gen Z perceives as hindrances to the use of ABTs for academic excellence.

H. Limitations of the Study

1. The majority of respondents were from Ranchi (90.8%).
2. Lack of awareness about ABTs to Gen Z.

G. Scope for Future Study

1. Data collected equitably from all districts would have more unbiased results.
2. Before collecting the data, if the respondents had been given training on basic ABTs, the results would be more appropriate. A paired t-test could be used for the same.
3. The data collected from faculties could also reconfirm this study.

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