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THE ROLE OF AI TOOLS LIKE CHATGPT IN STUDENT RESEARCH PROJECTS: BENEFITS, CHALLENGES, AND ETHICAL CONSIDERATIONS

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Abstract:

The incorporation of Artificial Intelligence (AI) tools like ChatGPT has brought transformative changes in the students' approach towards research projects and dissertation.

The major objectives of the study is to analyze the usage of AI tools like ChatGPT among students in research projects. It will also study the benefits and challenges and the impact of AI tools on research skills and academic integrity associated with using AI tools in academic research.

The benefits will encompass enhanced efficiency, support in idea generation, and improved writing quality, while challenges comprise issues of accuracy, ethical concerns, and potential over-reliance. The research will follow the approach of surveys to gather insights from students across various academic levels and disciplines.

This study is descriptive in nature and has collected data from both primary and secondary sources. The study involved 104 respondents as a sample size maximum representing the age group of 18-35 involved in Post-graduation or Master's degree research for their academic purposes.

Key Words: *Artificial intelligence, ChatGPT, Higher Education research.*

Introduction:

The rapid rise of artificial intelligence (AI) is reshaping education and research, offering students powerful new tools to enhance their academic work. Among these, AI-powered applications like ChatGPT have become particularly valuable, helping students brainstorm ideas, draft content, analyze data, and improve overall productivity. As research projects grow increasingly complex, many students are turning to these tools for guidance, efficiency, and support. While the benefits of AI in academia are clear, its use also raises important questions. Concerns about the accuracy of AI-generated content, ethical considerations, and the risk of over-reliance highlight the need for a balanced approach. This study explores both the opportunities and challenges AI tools like ChatGPT present in student research projects. By examining how students use these technologies and the difficulties they encounter, this research aims to offer valuable insights into the responsible and effective integration of AI in academic settings. The findings will contribute to ongoing discussions about the future of AI in education, emphasizing the importance of harnessing technology while preserving essential research skills.

Review of Literature:

Zeb, Ali & Ullah (2024) explore AI in academia, highlighting ChatGPT's opportunities and challenges in higher education. They discuss academic dishonesty concerns and suggest ethical strategies for universities to ensure responsible AI use.

Labadze, Grigolia & Machaidze (2023) highlight AI chatbots' benefits for students (study assistance, personalized learning, skill development) and educators (time-saving, improved pedagogy).

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However, they stress challenges like reliability, accuracy, and ethical concerns.

Objectives of study:

1. To analyze the usage of AI tools like ChatGPT among students in research projects.
2. Identify the benefits of AI tools in enhancing academic research.
3. Explore challenges students face when using AI for research tasks.
4. Evaluate the impact of AI tools on research skills and academic integrity.
5. Provide recommendations for ethical and effective AI integration in academia.

Research Methodology:

This descriptive study used secondary data for literature review and conceptual framework. Primary data was collected via a Google Forms questionnaire with 2 demographic questions (Age, Education) and 23 study-related questions, completed by 104 respondents. Data analysis used Descriptive Statistics and Relative Frequency methods, including Mean, Median, Mode, Standard Deviation, Skewness, and Percentages. These measures helped assess data distribution, central tendency, variability, and shape, with percentages offering a clearer category distribution.

Data Analysis and Findings:

Table 1: Demographic Analysis:

Category	Key Insights
Age Group Distribution	Majority are 18-25; 25-35 and 35+ are equally represented. Mean: 1.9, Median: 2, Mode: 1. Low variability (SD: 0.84), slight right skew (0.20) suggests a small presence of older individuals.
Academic Level Distribution	Masters/Postgraduate is most common (Median & Mode: 2). Low variability (SD: 0.52) with near-zero skew (0.06), indicating balanced representation of undergraduates and doctoral candidates.
Familiarity with AI Tools	Most are highly familiar (Mean: 1.61, Median: 1.5, Mode: 1). Moderate variation (SD: 0.67), slight positive skew (0.67), and negative kurtosis (-0.62) suggest responses are spread out.

Sources: Researcher's primary data

Table 2: To analyze the usage of AI tools like ChatGPT among students in research projects.

Survey Question	Key Insights
Used AI tools in academic work?	Most have used AI (Mean: 1.13, Median: 1, Mode: 1). Low variation (SD: 0.34), strong positive skew (2.17), and high kurtosis (2.77) confirm dominant AI use.
Research stages using AI?	Usage varies (Mean: 3.02, Median: 3, Mode: 1). High variation (SD: 1.81), slight positive skew (0.43), and negative kurtosis (-1.16) indicate spread across phases with some clustering.
AI access method?	Vast majority (~93%) use free version (Mean: 1.07, Median: 1, Mode: 1). Minimal variation (SD: 0.25), strong skew (3.50), and extreme kurtosis (10.48) confirm preference for free access.
Use other AI tools?	Most (~64%) use other AI tools (Mean: 1.36, Median: 1, Mode: 1). Moderate variation (SD: 0.48), slight positive skew (0.61), and negative kurtosis (-1.66) suggest AI tool integration.

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Table.3: To Identify the benefits of AI tools in enhancing academic research.

Survey Question	Key Insights
Ease of use for research	Most find AI tools easy to use (Mean: 1.72, Median: 2, Mode: 2). Low variation (SD: 0.70), slight skew (0.44), and no "difficult" ratings.
Improvement in research quality	AI enhances research (Mean: 1.85, Median: 2, Mode: 2). Some variation (SD: 0.82), slight skew (0.94), and clustered agreement (kurtosis: 1.21).
Help with language barriers	Strong agreement on AI aiding language barriers (Mean: 1.85, Median: 2, Mode: 2). Some variation (SD: 0.82), with responses clustered around agreement.
AI use beyond research	Respondents agree AI is used beyond research (Mean: 2.05, Median: 2, Mode: 2). Moderate variation (SD: 0.89), slight skew (0.67), and response concentration (kurtosis: 0.31).

Table 4: To explore challenges students face when using AI for research tasks.

Survey Question	Key Insights
AI struggles with complex topics	Most agree (Mean: 2.46, Median: 2, Mode: 2). Moderate variation (SD: 0.99), slight skew (0.35), and even distribution (kurtosis: -0.47) reflect mixed skepticism.
Concerns about AI originality	Widespread concern (Mean: 2.46, Median: 2, Mode: 2). Moderate variability (SD: 0.99), slight skew (0.35), and even distribution (kurtosis: -0.47).
Need for fact-checking	Fact-checking is common (Mean: 2.37, Median: 2, Mode: 3). Moderate variation (SD: 1.04), slight skew (0.26), and even distribution (kurtosis: -0.46).
Risk of AI bias in research	Many agree AI can introduce bias (Mean: 2.32, Median: 2, Mode: 2). Low variability (SD: 0.85), slight skew (0.40), and even distribution (kurtosis: -0.47).

Table 5: To Evaluate the Impact of AI Tools on Research Skills and Academic Integrity

Survey Question	Key Insights
AI improves critical thinking	Most agree (Mean: 2.41, Median: 2, Mode: 2). Moderate variation (SD: 1.01), slight skew (0.70) reflects mixed views
AI for problem-solving	Lean toward agreement (Mean: 2.56, Median: 2.5, Mode: 2). Moderate variation (SD: 1.01), slight skew (0.18), even spread (kurtosis: -0.66).
AI reduces independent research	Mixed views (Mean & Median: 2.5, Mode: 3). Moderate variation (SD: 1.11), balanced distribution (skew: 0.13, kurtosis: -0.99).
Confidence in reviewing AI content	Most feel confident (Mean: 2.15, Median: 2, Mode: 2). Low variation (SD: 0.71), normal distribution (skew: 0.28, kurtosis: 0.06).

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Table 6: Provide recommendations for ethical and effective AI integration in academia.

Survey Question	Key Insights
Ethical concerns with AI	Most agree or stay neutral (Mean: 2.25, Median: 2, Mode: 2). Moderate variation (SD: 0.82), balanced responses (skew: 0.04, kurtosis: -0.66).
Need for AI guidelines	Strong agreement (Mean: 1.93, Median: 2, Mode: 2). Moderate variation (SD: 0.87), concentrated responses (skew: 1.02, kurtosis: 1.15).
Over-reliance on AI	Agreement on heavy reliance (Mean: 1.78, Median: 2, Mode: 2). Moderate variation (SD: 0.80), strong clustering (skew: 1.12, kurtosis: 1.90).
Support for AI training	Strong support (Mean: 1.86, Median: 2, Mode: 2). Low variation (SD: 0.74), high agreement (skew: 1.11, kurtosis: 2.80).
Future AI use	Likely to continue (Mean: 1.93, Median: 2, Mode: 2). Consistent responses (SD: 0.78), strong clustering (skew: 1.12, kurtosis: 2.38).
AI replacing research methods	General agreement (Mean: 1.86, Median: 2, Mode: 2). Moderate variation (SD: 0.84), responses clustered around agreement (skew: 0.98, kurtosis: 1.19).

Findings:

Most respondents using AI tools like ChatGPT are young (18-25) and pursuing postgraduate education. They are generally well-versed in AI, with high familiarity levels. While AI is used across different research stages, many students rely on it primarily for drafting papers, analyzing data, and conducting literature reviews. Cost plays a role in accessibility, with most students opting for free versions rather than paid alternatives.

ChatGPT is widely regarded as easy to use, and many believe it enhances research quality and helps overcome language barriers. Beyond academic research, students also use AI tools for career planning and skill development. However, despite these benefits, some challenges remain. Many respondents feel that AI struggles with handling complex academic topics, making them skeptical about its reliability in higher-level research. Concerns about originality and plagiarism are common, leading students to frequently fact-check AI-generated content. Additionally, AI's potential to introduce bias in research is a notable concern.

Regarding research skills, AI tools are seen as improving critical thinking and problem-solving abilities, but opinions are mixed on whether they weaken independent research skills. Most students feel confident in reviewing and modifying AI-generated content to ensure accuracy. However, there is a growing concern about over-reliance on AI, highlighting the need to strike a balance between AI assistance and independent research efforts.

Ethical concerns are also significant, particularly regarding plagiarism. There is strong support for universities to establish clear guidelines on AI use and integrate AI literacy training into academic curricula. Many students believe responsible AI use should be encouraged to uphold academic integrity and ensure AI complements, rather than replaces, traditional research methods.

Conclusion:

AI tools like ChatGPT have become an integral part of academic research, making tasks more efficient and accessible. However, students must remain cautious—fact-checking information, avoiding over-reliance, and ensuring originality are essential. Universities have a crucial role to play in providing clear guidelines and AI

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training to help students use these tools responsibly. With the right balance, AI can serve as a powerful support system while maintaining the integrity and quality of academic research.

Suggestions:

Universities should establish clear AI usage guidelines to uphold academic integrity and originality. AI literacy should be integrated into curricula through training sessions on responsible use and bias awareness. Students must be encouraged to fact-check AI-generated content and use AI as a research aid rather than a replacement for critical thinking. Institutions should also work toward improving access to AI tools, ensuring equitable use. With proper guidelines, training, and oversight, AI can enhance research while maintaining ethical standards.

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