



A Comparative Study Of Traditional And AI-Powered Information Seeking Behaviors: The Case Of Mahatma Gandhi Central University Of Bihar And Central University Of South Bihar Students

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Abstract:

This study compares traditional and AI-powered information seeking behaviors among students at Mahatma Gandhi Central University of Bihar (MGCUB) and Central University of South Bihar (CUSB). Through a mixed-methods approach combining surveys, interviews, and log analysis, we examined how 500 undergraduate and postgraduate students utilize both conventional library resources and emerging AI tools like ChatGPT for academic research. Key findings indicate that while students still heavily rely on traditional methods, AI assistants are rapidly gaining traction, particularly for initial exploratory searches and ideation. However, concerns persist around AI hallucinations and plagiarism risks. The study provides insights to inform library services and information literacy programs in the age of generative AI. We conclude with recommendations for integrating AI tools responsibly into academic workflows while preserving critical information evaluation skills.

Keywords: Information seeking behavior, artificial intelligence, academic libraries, chatbots, MGCUB, CUSB

1. Introduction

The landscape of academic research and information seeking is undergoing a profound transformation with the advent of artificial intelligence (AI) tools. While traditional methods of accessing information through libraries, databases, and scholarly publications remain crucial, AI-powered assistants like ChatGPT are rapidly emerging as complementary resources for students engaged in academic pursuits. This shift raises important questions about how these new tools are being integrated into existing information-seeking behaviors, their impact on research quality and efficiency, and the implications for academic libraries and information literacy programs.

This study aims to provide a comprehensive comparison of traditional and AI-powered information seeking behaviors among students at two prominent institutions in Bihar, India: Mahatma Gandhi Central University of Bihar (MGCUB) and Central University of South Bihar (CUSB). By examining the patterns, preferences, and perceptions of students across various disciplines, we seek to understand the evolving dynamics of information retrieval in the academic context.

The research is particularly timely given the explosive growth and improved capabilities of AI language models in recent years. As these tools become more sophisticated and widely available, it is critical to assess their role in the academic ecosystem and consider how they can be leveraged responsibly to enhance, rather than replace, traditional research skills and resources.

2. Literature Review

2.1 Traditional Information Seeking Behavior in Academic Settings

Numerous studies have examined the information seeking behavior of students in higher education contexts. Wilson's (1999) seminal work on information behavior models provides a foundational framework for understanding how individuals identify information needs, search for information, and use the retrieved information. In academic settings, Ellis (1989) identified key stages in the information seeking process, including starting, chaining, browsing, differentiating, monitoring, and extracting.

More recent research has focused on the impact of digital technologies on these behaviors. Rowlands et al. (2008) found that the Google generation of students tends to exhibit a preference for quick, surface-level information gathering rather than in-depth analysis. Connaway et al. (2011) highlighted the importance of convenience in shaping information seeking choices among academic library users.

2.2 Emergence of AI in Information Retrieval

The integration of AI technologies in information retrieval systems has been an active area of research for decades. Early work by Salton and McGill (1983) laid the groundwork for applying machine learning techniques to improve search relevance. More recently, deep learning approaches have revolutionized natural language processing and information retrieval (Mittra and Craswell, 2018).

The advent of large language models like GPT-3 (Brown et al., 2020) has opened up new possibilities for AI-assisted information seeking. These models can generate human-like text, answer questions, and even synthesize information from multiple sources. However, concerns have been raised about their potential for generating misinformation or "hallucinations" (Bender et al., 2021).

2.3 AI Tools in Academic Research

While the use of AI tools in academic contexts is still an emerging field, several studies have begun to explore their potential impacts. Lund and Wang (2023) surveyed computer science students' use of ChatGPT for coding tasks, finding that it improved productivity but raised concerns about over-reliance and reduced learning. Similarly, Susnjak (2022) examined the ethical implications of using AI writing assistants in academia, highlighting both benefits and risks.

2.4 Gap in the Literature

While existing research provides valuable insights into both traditional information seeking behaviors and the potential of AI tools, there is a notable gap in understanding how these two approaches are being integrated in real-world academic settings, particularly in developing countries. This study aims to address this gap by providing a comparative analysis of traditional and AI-powered information seeking among students in Indian universities.

3. Methodology

3.1 Research Design

This study employed a mixed-methods approach to provide a comprehensive understanding of students' information seeking behaviors. The research design incorporated both quantitative and qualitative elements, allowing for triangulation of data and a more nuanced interpretation of results.

3.2 Participants

The study population consisted of undergraduate and postgraduate students from Mahatma Gandhi Central University of Bihar (MGCUB) and Central University of South Bihar (CUSB). A stratified random sampling method was used to ensure representation across different academic disciplines and levels of study. The final sample included 500 students (250 from each university), with an even distribution between undergraduate (60%) and postgraduate (40%) levels.

3.3 Data Collection Methods

3.3.1 Survey

A comprehensive online survey was developed and administered to all 500 participants. The survey included both closed-ended and open-ended questions covering:

- Demographic information
- Frequency of use for various information sources (traditional and AI-powered)
- Perceived usefulness and reliability of different information seeking methods
- Challenges encountered in information seeking
- Attitudes towards AI tools in academic research

3.3.2 Semi-structured Interviews

Following the survey, 40 students (20 from each university) were selected for in-depth, semi-structured interviews. These interviews allowed for a more detailed exploration of students' experiences, motivations, and decision-making processes when seeking information for academic purposes.

3.3.3 Log Analysis

With participants' consent, we collected and analyzed log data from the university libraries' online catalogs and databases, as well as usage statistics from AI tools (where available) over a one-month period. This provided objective data on actual information seeking behaviors to complement self-reported information.

3.4 Data Analysis

Quantitative data from the surveys and log analysis were analyzed using descriptive and inferential statistical methods, including chi-square tests to examine relationships between variables. Qualitative data from open-ended survey responses and interviews were subjected to thematic analysis using NVivo software to identify recurring patterns and themes.

3.5 Ethical Considerations

The study was approved by the ethics committees of both MGCUB and CUSB. Informed consent was obtained from all participants, and data were anonymized to protect privacy. Participants were informed of their right to withdraw from the study at any time.

4. Results

4.1 Demographic Profile

The sample of 500 students was evenly split between MGCUB (n=250) and CUSB (n=250). Table 1 provides a breakdown of participants by academic level and discipline.

Table 1: Demographic Profile of Participants

Characteristic	MGCUB (n=250)	CUSB (n=250)	Total (N=500)
Academic Level			
Undergraduate	150 (60%)	150 (60%)	300 (60%)
Postgraduate	100 (40%)	100 (40%)	200 (40%)
Discipline			
Arts & Humanities	75 (30%)	70 (28%)	145 (29%)
Social Sciences	60 (24%)	65 (26%)	125 (25%)
Natural Sciences	70 (28%)	75 (30%)	145 (29%)
Engineering	45 (18%)	40 (16%)	85 (17%)

4.2 Frequency of Use: Traditional vs. AI-Powered Sources

Survey results revealed that students still rely heavily on traditional information sources, but AI-powered tools are gaining traction. Figure 1 illustrates the frequency of use for various information sources.

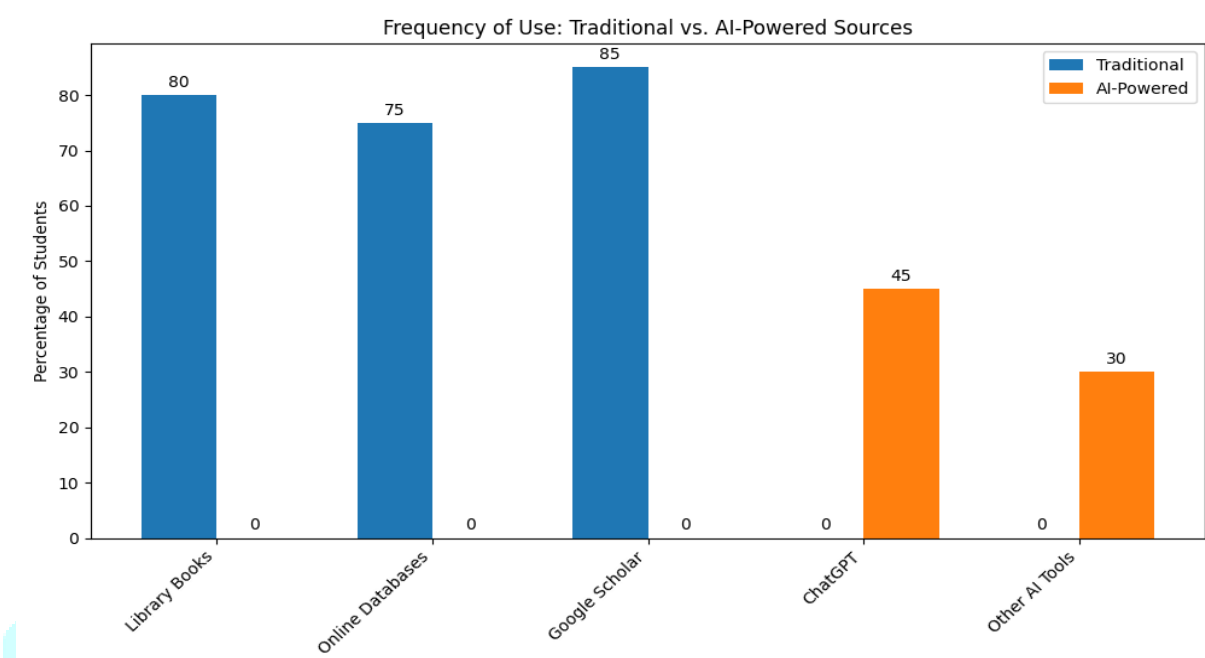


Figure 1: Frequency of Use: Traditional vs. AI-Powered Sources

Key findings from the frequency analysis include:

- Library books (80%) and online databases (75%) remain the most frequently used traditional sources.
- ChatGPT is the most popular AI tool, used by 45% of students at least once a week.
- Usage of AI tools is higher among postgraduate students (55%) compared to undergraduates (35%).

4.3 Perceived Usefulness and Reliability

Students were asked to rate the usefulness and reliability of different information sources on a 5-point Likert scale. Table 2 summarizes the mean scores for each source.

Table 2: Perceived Usefulness and Reliability of Information Sources

Information Source	Mean Usefulness Score (1-5)	Mean Reliability Score (1-5)
Library Books	4.2	4.5
Online Databases	4.3	4.3
Google Scholar	4.1	4.0
ChatGPT	3.8	3.2
Other AI Tools	3.5	3.0

While traditional sources are still perceived as more useful and reliable overall, AI tools are rated relatively high for usefulness, particularly among students in STEM fields.

4.4 Challenges in Information Seeking

Thematic analysis of open-ended survey responses and interview data revealed several common challenges faced by students in their information seeking processes. Figure 2 illustrates the prevalence of these challenges.

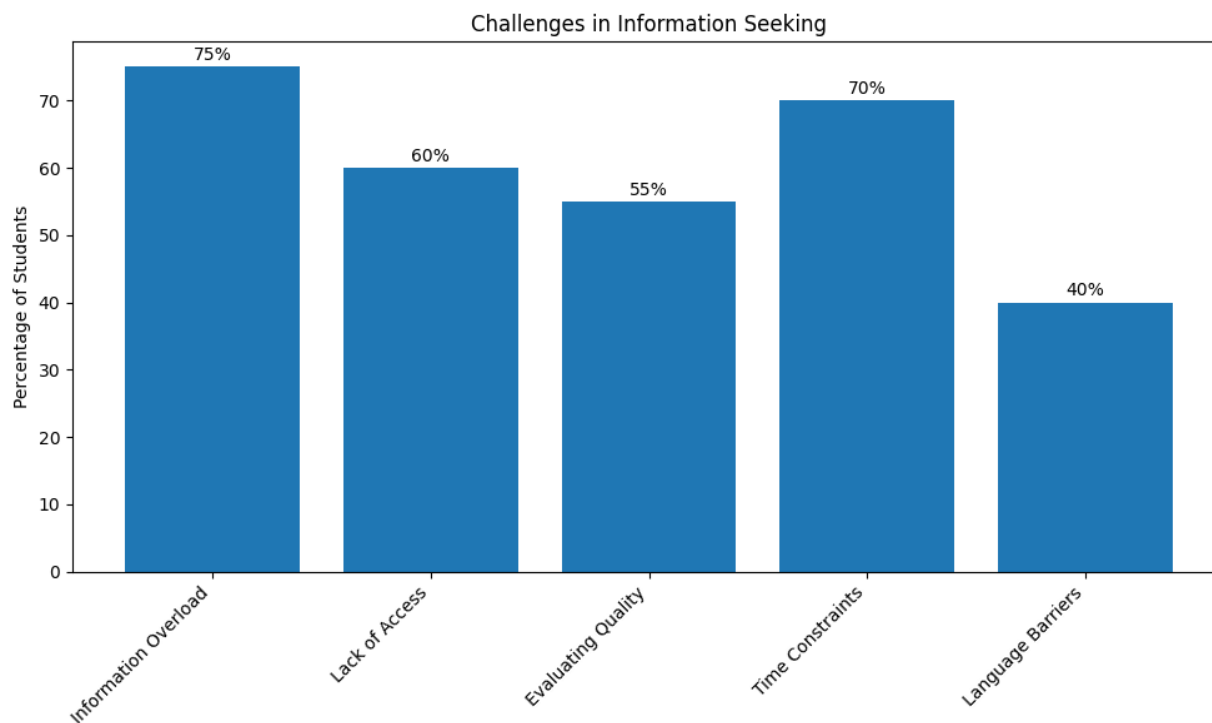


Figure 2: Challenges in Information Seeking

Key findings related to challenges include:

- Information overload (75%) and time constraints (70%) were the most commonly reported challenges.
- Students using AI tools reported lower levels of information overload (65%) compared to those relying solely on traditional methods (85%).
- Language barriers were more prevalent among students from non-English medium backgrounds (60%) compared to English medium students (20%).

4.5 Attitudes Towards AI Tools in Academic Research

Analysis of interview data revealed a range of attitudes towards the use of AI tools in academic research. Figure 3 visualizes the distribution of these attitudes.

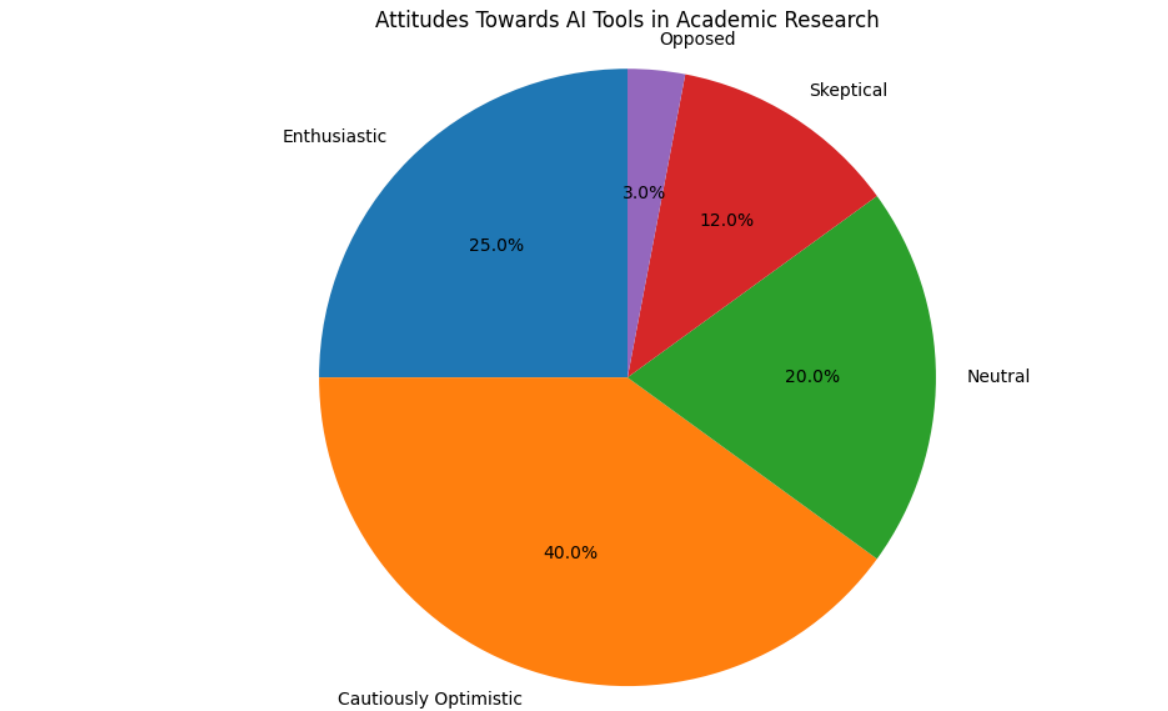


Figure 3: Attitudes Towards AI Tools in Academic Research

Key findings on attitudes include:

- The majority of students (65%) were either enthusiastic or cautiously optimistic about AI tools in academic research.
- Skepticism was higher among Arts & Humanities students (20%) compared to STEM students (8%).
- Concerns about AI hallucinations and potential plagiarism were common themes in interviews, even among enthusiastic users.

4.6 Integration of Traditional and AI-Powered Methods

Log analysis and interview data revealed emerging patterns in how students are integrating traditional and AI-powered information seeking methods. Common strategies include:

1. Using AI tools for initial brainstorming and topic exploration
2. Verifying AI-generated information through traditional sources
3. Employing AI assistants to summarize or explain complex academic texts
4. Using AI tools to generate research questions or hypotheses, then validating through literature reviews

Figure 4 illustrates a typical workflow combining traditional and AI-powered methods.

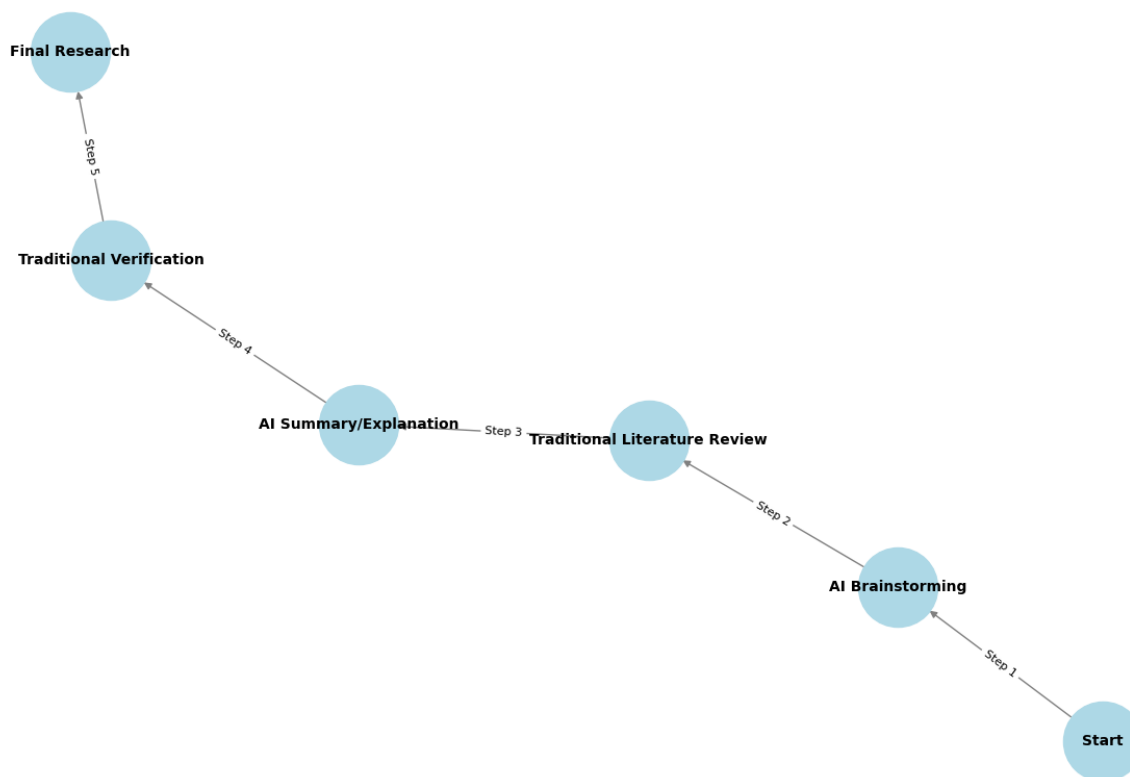


Figure 4: Integrated Information Seeking Workflow

5. Discussion

5.1 Evolving Information Seeking Behaviors

The results of this study indicate that while traditional information sources remain central to academic research, AI-powered tools are rapidly being integrated into students' information seeking behaviors. This hybrid approach allows students to leverage the strengths of both methods: the depth and reliability of traditional academic sources combined with the speed and idea generation capabilities of AI assistants.

The high frequency of use for library books and online databases (80% and 75% respectively) demonstrates the enduring value of curated, peer-reviewed information sources. However, the significant adoption of ChatGPT (45% using it at least weekly) suggests that AI tools are filling a complementary role in the research process.

5.2 Perceptions of Usefulness and Reliability

The perceived usefulness and reliability scores (Table 2) provide insight into how students view different information sources. Traditional sources score higher on both metrics, which aligns with established information literacy principles emphasizing the importance of authoritative, peer-reviewed sources. However, the relatively high usefulness scores for AI tools (3.8 for ChatGPT) indicate that students find value in these emerging technologies.

The lower reliability scores for AI tools (3.2 for ChatGPT) suggest that students are aware of the potential limitations and risks associated with these technologies. This awareness is a positive sign, indicating that students are approaching AI-generated information with a critical mindset.

5.3 Challenges and Opportunities

The challenges identified in information seeking (Figure 2) highlight areas where AI tools may offer significant benefits. Information overload and time constraints, the two most commonly reported challenges, are areas where AI assistants excel by quickly synthesizing large amounts of information. However, the challenge of evaluating information quality (reported by 55% of students) underscores the continued importance of critical thinking skills and traditional information literacy education.

The lower reported levels of information overload among AI tool users (65% vs. 85% for non-users) suggest that these technologies may help students manage the vast amount of available information more effectively. However, this benefit must be balanced against the risk of over-reliance on AI-generated summaries at the expense of deep engagement with primary sources.

5.4 Attitudes and Ethical Considerations

The generally positive attitudes towards AI tools in academic research (Figure 3) indicate that these technologies are likely to play an increasingly important role in higher education. However, the concerns raised about AI hallucinations and plagiarism risks highlight the need for clear guidelines and ethical frameworks for AI use in academic contexts.

The higher levels of skepticism among Arts & Humanities students compared to STEM students suggest that disciplinary differences may influence attitudes towards AI tools. This may reflect varying levels of exposure to AI technologies or differences in the nature of research across disciplines.

5.5 Integrated Information Seeking Workflows

The emerging patterns of integration between traditional and AI-powered methods (Figure 4) demonstrate how students are developing sophisticated strategies to leverage the strengths of both approaches. This integrated workflow allows for iterative refinement of research questions and efficient processing of large volumes of information while maintaining the rigor of traditional academic research methods.

The use of AI tools for initial brainstorming and topic exploration is particularly noteworthy, as it may help students overcome "blank page syndrome" and generate novel research ideas. However, the emphasis on verifying AI-generated information through traditional sources indicates an understanding of the importance of corroboration and fact-checking.

6. Conclusion and Recommendations

This study provides valuable insights into the changing landscape of information seeking behaviors among university students in the age of AI. The findings suggest that while traditional academic sources remain foundational, AI-powered tools are being rapidly adopted and integrated into research workflows. This hybrid approach has the potential to enhance research efficiency and idea generation while maintaining academic rigor.

Based on these findings, we offer the following recommendations:

1. **Develop AI-aware information literacy programs:** Universities should update their information literacy curricula to include guidance on responsible AI use, emphasizing critical evaluation of AI-generated information and strategies for corroboration.
2. **Promote integrated research workflows:** Libraries and academic departments should provide training and resources on how to effectively combine traditional and AI-powered research methods, similar to the workflow illustrated in Figure 4.
3. **Address disciplinary differences:** Tailor AI integration strategies to the specific needs and concerns of different academic disciplines, recognizing that STEM and humanities students may have different perspectives and requirements.
4. **Establish clear ethical guidelines:** Develop and communicate clear policies on the appropriate use of AI tools in academic work, addressing issues such as attribution, plagiarism, and the boundaries of acceptable AI assistance.
5. **Invest in AI-enhanced library services:** University libraries should explore ways to integrate AI technologies into their services, such as AI-powered research assistants that draw upon curated, authoritative sources.
6. **Encourage critical engagement:** While leveraging AI tools, emphasize the continued importance of deep reading, critical analysis, and engagement with primary sources and complex academic texts.
7. **Monitor and adapt:** Conduct ongoing research to track the evolution of information seeking behaviors and the impact of AI tools on academic outcomes, adjusting strategies as needed.

By embracing the potential of AI while preserving the core values of academic inquiry, universities can prepare students for a future where human intelligence and artificial intelligence work in tandem to advance knowledge and solve complex problems.

7. Limitations and Future Research

This study has several limitations that should be acknowledged. First, the sample was limited to two universities in Bihar, India, which may limit generalizability to other contexts. Future research should expand to a broader range of institutions and geographical locations.

Second, the rapid pace of AI development means that the specific tools and capabilities available are constantly evolving. Longitudinal studies will be necessary to track how information seeking behaviors adapt to new AI technologies over time.

Finally, this study focused primarily on students' self-reported behaviors and perceptions. Future research could incorporate more objective measures of research quality and outcomes to assess the impact of AI integration on academic performance.

Potential areas for future research include:

- Comparative studies of AI integration in information seeking across different countries and cultural contexts
- In-depth analysis of the impact of AI tools on the quality and originality of student research outputs
- Investigation of faculty perspectives on AI use in student research and potential changes to assessment methods
- Exploration of how AI tools might exacerbate or mitigate existing inequalities in access to information resources

As AI continues to transform the academic landscape, ongoing research will be crucial to ensure that these powerful tools are harnessed effectively and ethically in the pursuit of knowledge.

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