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ACADEMIC RESEARCH: ROLE OF AI IN SCHOLARLY PRACTICES

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ABSTRACT

The present study investigated the role of AI tools in academic research pursued by scholars for their research work at the universities of Jammu and Kashmir. The study further intended to explore the diverse AI tools used in content generation and evaluate their efficiency in research paper/dissertation/thesis writing. Preliminary findings revealed that most respondents utilise the AI tool Grammarly for grammar checking and clarity. The study focused on identifying the AI tools researchers use for effective writing. A questionnaire (Likert Scale with 03 alternatives: Agree to Disagree) developed by M. Monika, V. Divyavarsini and C. Suganthan with 40 items was employed to assess variables such as academic writing, content generation, paraphrasing, academic referencing & citation, and proofreading and grammar check. The questionnaire was sent online (via email and social media) in a Google Form to research scholars registered in various universities in Jammu and Kashmir. In this study, 342 research scholars participated. Data collected were analysed using descriptive statistics, which included frequency analysis, percentages, and graphical representation.

Furthermore, most respondents acknowledged that AI tools facilitate the writing process, mainly simplifying the referencing style. While recognising the benefits of AI tools, researchers emphasised the importance of critical evaluation and the need for human judgment. They indicated that AI tools are used strategically for tasks such as paraphrasing, grammar checking, and citation management rather than as a complete replacement for human authorship.

Keywords: Artificial Intelligence, Academic Writing, Content Generation, Paraphrasing, Academic Referencing & Citation

1. INTRODUCTION

Artificial Intelligence (AI) encompasses computers proficient in performing tasks traditionally involving human cognitive faculties, like language translation, visual awareness, administration and speech detection. In the second part of the 20th century, the concept of machine intelligence was introduced by Alan Turning (2020), who devised the Turing Test to assess a machine's capability to display behaviour impossible to differentiate from that of humans.

The growth of AI is categorised into numerous diverse phases. The early period (1950s-60s) saw the development of general problem-solving algorithms to achieve artificial general intelligence. This transitioned in the 1970s to the 1980s towards developing area-specific specialist systems and understanding demonstration techniques, focusing on narrow tasks such as medical diagnosis.

The advent of robust computational power and the availability of massive datasets in the first decade of the 21st century shaped the new era of data-driven machine learning. A surge in machine learning methodologies characterises the contemporary era, particularly those employing statistical and neural network models, achieving remarkable successes in diverse domains, like computer vision, language processing and robotics. Across various disciplines, AI has demonstrated continuous advancement and an escalating range of capabilities.

AI has permeated numerous sectors, fundamentally transforming how tasks are approached and accomplished. This essay explores the multifaceted applications of AI in healthcare, business and manufacturing, transportation, finance, education, and research.

AI has significantly impacted the educational and research landscapes. AI tools assist students, researchers and professionals with content generation, logical calculations, and script tasks, including thesis preparation and academic publication. AI facilitates the development of high-quality research papers by improving content structure, grammar, and style. AI tools have reorganised the research process by supporting the literature review, citation generation, and research topic identification.

The AI plays a vital role in research by helping the analysis of complex datasets. AI algorithms can rapidly process big data, uncovering unseen patterns and generating valuable insights for researchers. These insights can formulate new hypotheses and research questions, propelling scientific discovery. Different AI models may also assess these drafts and may provide feedback on the latest trends and gaps in the literature, the logical flow of arguments, and the need for additional citations. This feedback empowers researchers to refine their work and ensure better-quality research outputs.

The utilisation of AI writing assistance tools in academic settings presents ethical considerations. Miyuki Sasaki (2023) emphasises the importance of leveraging a student's native language literacy alongside AI tools. Her research has been based on the comparison between machine translation and teacher feedback to improve L2 writing, advocating for a focus on empowering those scholars who are non-native in order to participate in academic publishing effectively.

Basic *et al*. (2023) studied the use of ChatGPT to help students with challenging essays, evaluating its impact on writing time, text originality and essay quality. Malik *et al*.(2023) explored student perspectives on AI script tools in Indonesian higher education. Their findings suggest a positive student perception of AI writing tools, particularly for grammar checking, essay outlining and plagiarism detection. However, concerns were also identified regarding the potential curtailment of creative writing and critical thinking skills.

While AI-based classifiers offer promising results, accuracy limitations necessitate a cautious approach, emphasising the need for ongoing detector development and human oversight. This aligns with findings by Muhammad Imran *et al*. (2023), which suggest that AI writing assistants should augment rather than replace human effort.

Talaue's (2023) case study explores student use of AI script tools in the English language, highlighting the potential for over-dependence on these tools. The study underscores the need for robust support structures and ongoing research to address the evolving landscape of AI use in education. The research conducted by M. Monika, *et al.* (2023) on research scholars found that AI has significantly helped research scholars of Vallor in their research work.

Guleria *et al.* (2023) emphasise the significance of ethical reflection and transparency regarding AI tools like ChatGPT, highlighting the potential risks of misinformation propagation. Critical evaluation remains paramount to ensure responsible AI.

2. RESEARCH OBJECTIVES AND QUESTIONS

The present research investigates the role and influence of various Artificial Intelligence tools for scholarly writing and publication. Specifically, the study seeks to:

1. Analyse the prevalence and utilisation of AI tools for academic writing.
2. Study the effectiveness of AI tools in content generation.
3. Determine the extent of awareness among research scholars about the availability of AI tools for paraphrasing, citation management and grammar checking.

Based on these objectives, 02 research questions have been formulated:

- RQ1: How effective are AI tools for academic writing?
- RQ2: Which AI tools are most prominently utilised by researchers?

3. METHODOLOGY

A survey design has been employed to investigate the role, impact, and usage of AI tools within the context of academic writing, content generation, paraphrasing, citation, and grammar checks among research scholars in Jammu and Kashmir. This quantitative approach utilises a cross-sectional survey (where scholars from all disciplines) to assess awareness and perceived effectiveness of AI-powered tools across diverse disciplines among research scholars.

3.1SAMPLE

The questionnaire was disseminated via Google Form to almost 650 research scholars pursuing their research degrees in various State and Central Universities of Jammu and Kashmir. The researcher received 433 questionnaires, of which

91 were found not to use any AI tool. Hence, these 91 respondents were dropped, and only 342 (191 male and 151 female) research scholars were selected for the current study. Of the 342, 112 were from the Jammu region, and the remaining 230 were from the Kashmir region. For the analysis of data, the researcher used descriptive statistics, which includes frequency distributions and percentages.

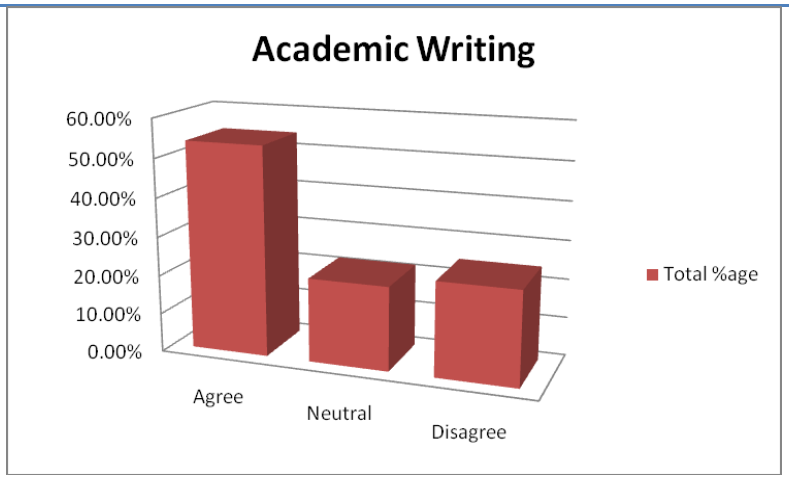
3.2TOOL USED

A standardised questionnaire was developed by M. Monika, V. Divyavarsini and C. Suganthan on Artificial Intelligence in Academic Writing and Publication ***(AIWQ-40)*** for data collection. The AIWQ-40, a 05-point Likert form, comprises 40 items. The questionnaire assesses perspectives across five key domains: *academic writing* (09 items), *content generation* (12 items), *paraphrasing* (08 items), *citation management* (03 items), and *proofreading* (08 items). The validity of the questionnaire ranges from 0.432 to 0.978, and the reliability is 0.868. For the present study, the researcher has again calculated its validity and reliability on 200 sample subjects, recorded as 0.81 and 0.92, respectively. The researcher converted the scale from five points to a three-point Likert scale (Agree, Neutral and Disagree, scoring 01 for Disagree, 02 for Neutral and 03 for Agree).

4. ANALYSIS AND INTERPRETATION

Table 1: AI Tools and Academic Writing

Academic Writing										
Item No.	**01**	**08**	**09**	**10**	**16**	**17**	**23**	**28**	**39**	**Total %age**
Agree	213	221	260	210	112	208	113	179	144	53.93%
Neutral	67	37	45	21	112	56	141	77	109	21.60%
Disagree	62	84	37	111	118	78	88	86	89	24.27%



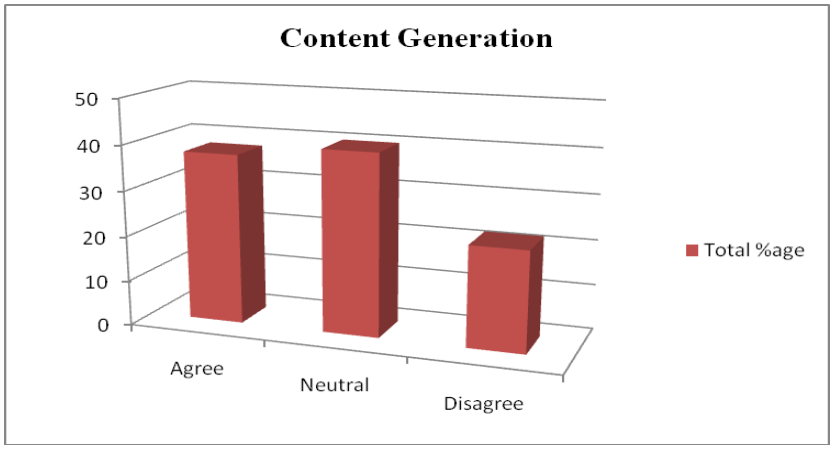
The first dimension of *AIWQ-40* assesses the significance of AI tools within the context of academic writing through nine items. Notably, 53.93% of researchers highlighted that AI tools enhanced their overall academic writing efficiency. The table further revealed that 62.28% of scholars pointed out that AI tools have enhanced their ability to carry out relevant review literature. The table further depicted that 64.62% of participants concurred that AI tools have enhanced eminence in their academic writing. Furthermore, 76.02% of participants confirmed that utilising AI tools has accelerated data analysis within their research endeavours. Additionally, 61.40% of participants were very positive about using AI tools to foster creativity, which is essential for their academic research.

A considerable percentage of participants (32.72%) found AI tools assist in identifying potential journals for publication of their research work. Notably, 60.82% of participants highlighted that AI tools have significantly helped to augment their research impact, 33.04% revealed that AI has enhanced their confidence, and 52.34% responded that AI has helped them conduct statistical analysis of their collected data. Finally, 42.10% of participants confirmed that AI tools have helped in the overall improvement of their research rigour.

Table 2: AI Tools and Content Generation

Content Generation

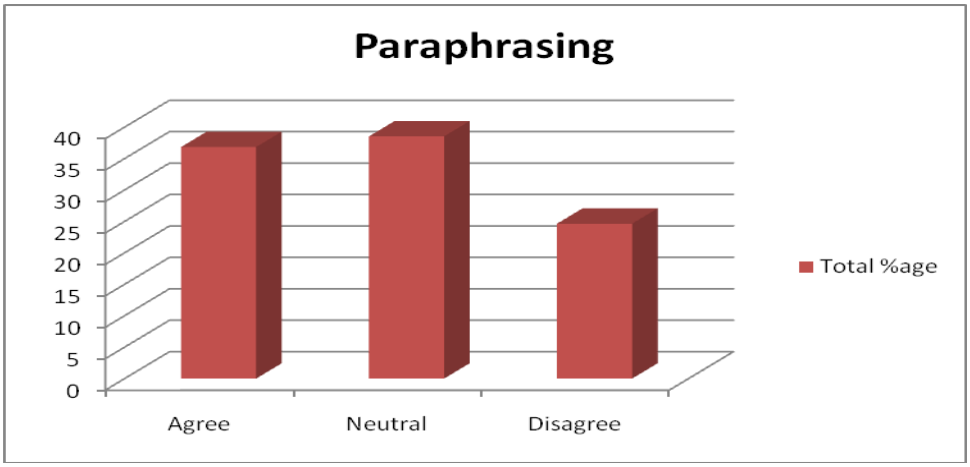
Item No.	2	3	5	12	13	20	24	27	30	31	32	40	Total %age
Agree	191	143	78	98	201	20	101	79	98	121	96	132	37.68
Neutral	89	120	223	199	87	34	91	112	161	89	154	87	40.12
Disagree	62	79	41	45	54	188	50	51	83	32	92	23	22.20



The next dimension of *AIWQ-40* assessed the efficiency of AI tools in generating the content. The table reveals that 37.68% of scholars have agreed that AI tools have enhanced their efficiency in generating content. The table also reflects that 55.84% believed that AI tools have enhanced their accuracy in generating better research findings, and only 22.80% of scholars feel that ChatGPT has facilitated them in identifying relevant research resources. The table also highlights that 58.77% of researchers thought AI was user-friendly. Notably, only 5.84% of research scholars have complete faith and trust in the suggestions or the recommendations offered by AI tools, 29.53% believe that AI tools have enhanced their diverse perspectives, and 23.09% believe that AI tools also help avoid plagiarism in their manuscripts. Further, the table also reflects that 28.65% believed that AI has increased the impact of their research, and 35.38% depicted that AI tools have simplified their complex formats and manuscripts. The table also shows that 28.07% of researchers think that AI has helped them generate insightful visual representations of data, and 38.59% believe that AI tools have definitely helped them in their decision-making during research.

Table 3: AI Tools and Paraphrasing

	Paraphrasing								
Item No.	**4**	**11**	**19**	**21**	**22**	**29**	**33**	**34**	**Total %age**
Agree	156	112	66	64	165	143	106	122	36.83
Neutral	57	68	220	112	110	137	132	141	38.53
Disagree	29	62	56	166	67	62	104	79	24.64



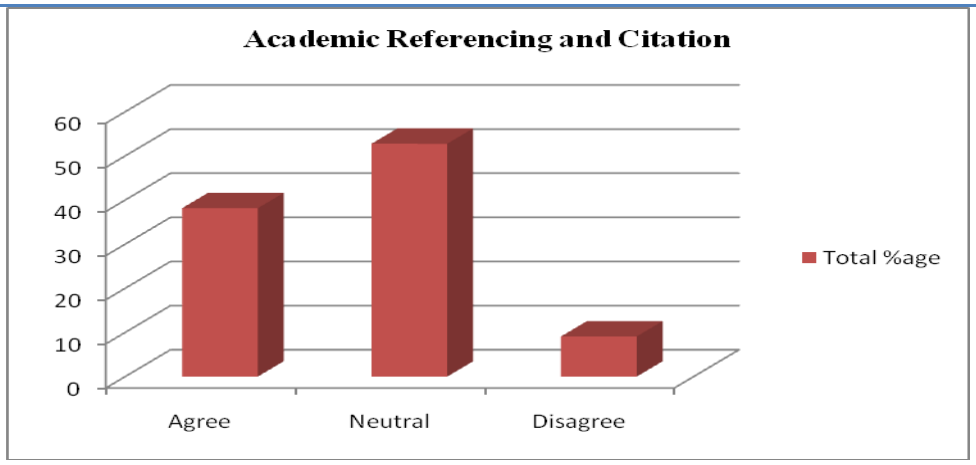
The third dimension of *AIWQ-40* is related to paraphrasing. The table shows that 36.83% of participants acknowledged the crucial role of AI tools in paraphrasing. The table revealed that 45.61% of respondents agreed that tools like

Grammarly or Quillbot have effectively improved the organisation and structure of their research papers. Moreover, 32.75% of learners reported a positive impact of AI tools on their research productivity. While 17.54% of respondents disagreed that AI tools have made any significant improvement in their collaboration with co-authors, 19.30 % asserted that AI tools at some point in time have improved the overall quality of their research output.

A significant proportion of participants, 48.25%, remained optimistic regarding the effectiveness of AI tools in paraphrasing and summarising research content. Similarly, nearly 41.81% of participants believed that the AI tools positively impacted their ability to present complex data effectively. Conversely, 35.67% of participants agreed that AI tools effectively suggest relevant keywords for their research. Finally, a substantial majority (35.67%) of participants affirmed that AI tools have significantly accelerated the creation of initial drafts within their research process.

Table 4: AI Tools and Academic Referencing and Citation

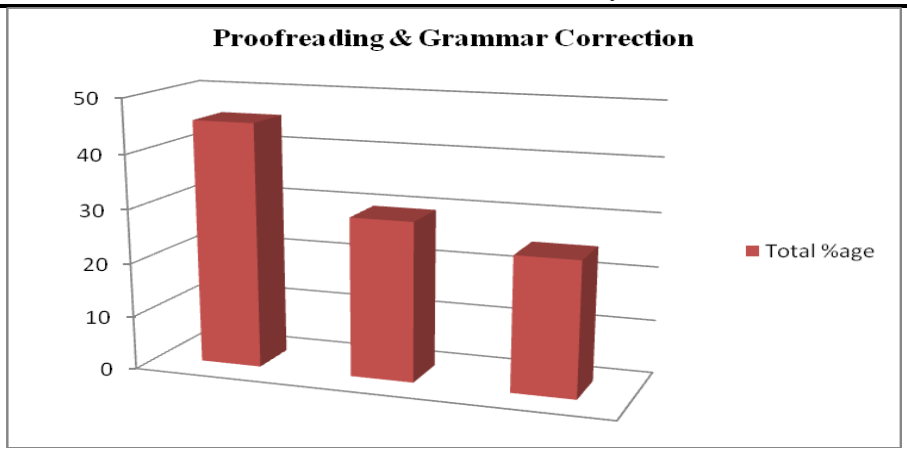
Academic Referencing and Citation				
Item No.	6	7	18	Total %age
Agree	89	97	91	38.15
Neutral	121	133	129	52.76
Disagree	32	12	22	9.09



Automating citation tasks facilitated by AI frees researchers to concentrate on more critical aspects of their scholarly endeavours. Still, Table 3 findings do not support this observation as 23.39%% of participants reported increased accuracy in source citation attributed to using AI tools such as Mendeley and Zotero. Moreover, only nearly 28.37% of respondents expressed heightened confidence in their ability to cite sources accurately due to the implementation of these tools. Furthermore, 26.61% of participants acknowledged the effectiveness of AI tools like Zotero in managing and organising their reference lists.

Table 5: AI Tools and Proofreading & Grammar Corrections

AI Tools and Proofreading & Grammar Corrections									
Item No.	**14**	**15**	**25**	**26**	**35**	**36**	**37**	**38**	**Total %age**
Agree	234	156	210	86	136	112	211	98	45.43
Neutral	66	110	68	117	64	89	43	122	29.57
Disagree	42	76	64	139	142	141	88	122	25



The findings of Table 05 highlight that a major proportion (45.43%) of participants agreed that AI tools are invaluable for proofreading and grammar check. The table also reveals that 68.42% reported reduced errors within their academic writing through AI tools such as Grammarly. Furthermore, 45.61% of respondents acknowledged improved clarity and coherence of their research papers facilitated by AI tools like Grammarly. Notably, 61.40% of participants observed a reduction in the time required for proofreading and editing due to implementing these tools.

While the highest number, 40.64% of participants, disagreed with the statement that AI tools have considerably enhanced the overall structure of their research manuscripts, a substantial majority (39.77%) affirmed that AI tools have enhanced the consistency of citation styles within their papers. Conversely, 41.23% of respondents also disagreed regarding the positive impact of AI tools on the readability of their research papers. Despite this, a significant majority (61.70%) expressed trust in the accuracy of the grammar and spell-checking features integrated within AI tools. Finally, only 28.65% of respondents reported that AI tools have made some improvement in communicating their research findings in the best possible way.

5. DISCUSSION OF THE STUDY

The findings of the present study align with the wider academic dialogue concerning the transformative influence of AI tools across disciplines, particularly in the field of education and research. The results of the present study highlight the significant impact of AI in enhancing efficiency, excellence, and originality in academic writing. Malik et al. (2023) also concluded that students have positively perceived AI tools for enhancing their grammar and helping them reduce errors. The high agreement (64.62%) on the quality enhancement of academic writing underscores AI's ability to streamline content structure and improve grammar, as supported by Guleria et al. (2023), who highlighted the need for ethical AI utilisation in educational contexts.

AI tools' role in accelerating data analysis (76.02%) and fostering creativity (61.40%) reflects their capability to process large datasets and generate novel insights, as observed by Talaue (2023) in AI's potential to support complex research tasks. However, the relatively lower agreement (32.72%) on AI tools assisting with journal identification highlights a gap in their effectiveness for targeted academic tasks, requiring further optimisation of these tools for academic-specific applications.

In content generation, 55.84% of participants acknowledged the tools' accuracy in research findings, resonating with the conclusions from Miyuki Sasaki (2023), who emphasised AI's contribution to refining text structure and argument strength. Nevertheless, the study reveals limited trust in AI for identifying relevant research resources (22.80%), suggesting a need for improved reliability and contextual accuracy in AI recommendations. This skepticism is consistent with the concerns highlighted by Guleria et al. (2023) regarding misinformation propagation.

The findings on paraphrasing (36.83% agreement) and summarisation (48.25%) align with Basic et al. (2023), and M. Monika, *et al.* (2023) who observed that tools like Grammarly and Quillbot effectively improve text organisation and readability. However, the lower impact on overall research quality (19.30%) and collaboration with co-authors indicates a limitation in AI's ability to support dynamic, multi-authored academic environments. These findings underscore the importance of developing tools to facilitate seamless collaborative workflows, as Talaue (2023) advocates.

Despite AI tools being perceived as effective for proofreading and grammar correction (45.43%), their contribution to enhancing research communication (28.65%) remains moderate. This observation aligns with the broader concern regarding over-dependence on AI tools, which may stifle the development of critical writing skills (Basic et al., 2023 & M. Monika, *et al.* 2023). The high trust in grammar-checking features (61.70%) affirms the reliability of these tools for error reduction, a critical aspect emphasised by Malik et al. (2023).

Regarding referencing and citation, most participants expressed neutrality (52.76%), reflecting the limited impact of AI tools like Zotero and Mendeley in streamlining citation tasks. The relatively low agreement on citation accuracy (23.39%) aligns with findings by Muhammad Imran et al. (2023) and M. Monika, *et al. (*2023), who emphasises human oversight in AI-assisted citation tasks to ensure precision and compliance with academic standards.

6. MAJOR FINDINGS

From the present study, the following major findings are drawn:

1. AI TOOLS AND ACADEMIC WRITING

i. 53.93% of participants acknowledged that AI tools enhance efficiency in academic writing.
ii. 64.62% agreed that AI tools improve the quality of academic writing, and 76.02% affirmed that these tools accelerate data analysis.
iii. 61.40% indicated that AI tools foster creativity in research.
iv. A smaller proportion (32.72%) noted AI's role in identifying relevant journals for publication.

2. AI TOOLS AND CONTENT GENERATION

i. 37.68% agreed that AI tools enhance content generation efficiency, and 55.84% believed these tools improve accuracy in research findings.
ii. 58.77% noted the user-friendliness of AI tools, but only 22.80% credited AI for effectively identifying relevant research resources.
iii. Around 38.59% reported a positive influence on research decision-making.

3. AI TOOLS AND PARAPHRASING

i. 36.83% recognised AI's crucial role in paraphrasing.
ii. 48.25% were optimistic about AI's effectiveness in summarising research content.
iii. A smaller proportion (19.30%) noted improved overall research quality facilitated by AI tools.

4. AI TOOLS AND ACADEMIC REFERENCING AND CITATION

i. Only 23.39% credited AI tools for increased citation accuracy, and 26.61% acknowledged their effectiveness in managing references.
ii. The majority (52.76%) remained neutral regarding AI's role in academic referencing and citation.

5. AI TOOLS AND PROOFREADING & GRAMMAR CORRECTIONS

i. 45.43% found AI tools helpful for proofreading and grammar checks.
ii. 68.42% reported a reduction in writing errors, while 61.70% trusted grammar and spell-check features.
iii. Only 28.65% felt that AI tools improved communication of research findings.

7. CONCLUSION

The analysis reveals that AI tools significantly enhance certain aspects of academic research, particularly in improving efficiency, quality, and creativity in writing. They excel in accelerating data analysis and reducing proofreading and grammar correction errors. However, their effectiveness in tasks like citation management, identifying journals, and enhancing research findings remains moderate, with a substantial proportion of participants expressing neutrality or skepticism. These findings also highlight the potential and limits of AI tools, highlighting a need for further refinement to address specific academic needs comprehensively.

The study focused on researchers in Jammu and Kashmir, highlighting the integration of AI tools as an essential component of modern academic publishing. Rapid advancements in natural language processing have revolutionised academic writing by automating complex processes such as citation generation and error detection, thereby improving efficiency, accuracy, and overall quality. AI-powered citation technologies simplify the intricate demands of formatting references, while sophisticated proofreading tools identify errors, suggest rephrasing, and enhance vocabulary diversity.

These innovations empower researchers to allocate more effort to high-level intellectual tasks, such as argument development and stylistic refinement, affirming the complementary role of AI in augmenting, rather than replacing, human expertise. As AI technologies continue to evolve, their potential to elevate the standards of academic writing and accelerate knowledge production across disciplines is immense.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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