Probing the Adoption of AI-Driven Tools in Research

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Abstract

Integration of Artificial Intelligence (AI) transformed the generation and dissemination of the knowledge. AI influences the research processes right from designing to communication of the findings to the world. The present study tried to capture how AI-driven tools utilized by doctoral research scholars for carrying out researches. The study probed the benefits derived from using these tools along with the challenges encountered by them. Exploratory research design was employed by the investigator. 26 doctoral research scholars pursuing doctorate degree in various discipline from a central university located in NCT of Delhi were interviewed based on semi-structured schedule. The findings of the study revealed that research scholars frequently used AI- tools for searching literature, doing literature review, data analysis, academic writing, reference generator, paraphrasing and editing. The tools included RefSeek, Litmaps, Connected Papers, ChatGPT, Paper Digest, Flourish, Paperpal, Grammarly, etc., however, adoption of these tools was advantageous to them in terms of advancement, digital fluency, accessibility and reduction of human dependency. Researchers also encountered numerous challenges such as lack of human emotions, ethical concerns, authenticity and over dependency on technology. This study suggests that using AI tools definitely enable to do smart work and save resources but it should be used in a way which doesn't affect humans thinking and potential.

Key-words: Artificial Intelligence (AI), AI- driven tools, Adaptability, Digital Fluency

Introduction

Artificial Intelligence has transformed the landscape of Education. It offered a new approach to generate knowledge and make it presentable in different formats. Learning as the key component of education revolutionized after the emergence of AI. This has been found to be beneficial in terms of enhancing productivity, speed, access and connecting with peoples for meeting learning goals. Gateways to access information from diverse sources has been created. However, it is utmost significant to have a discussion for taking logical decisions regarding optimizing the use of such tools (Chubb et al., 2021). AI integrated in the dimensions of education range from planning to evaluation. It can be customized based on the need and the

context (Ekin et al., 2025). Persons with special needs has been supported through AI tools (Gursoy & Cai, 2024)**.** The dynamics of learning changes due to interplay of AI factors in the learning processes. Students as a component of the learning in combination with AI can act as an inquirer and receiver of outputs whereas AI work as the content generator and provider, however, teacher has been provided the role of enabler and observer in which teacher see the interaction developed by students by adopting AI functions and encourage and facilitate the process of learning by eliciting more engaging sessions in collaboration with AI (Chiu, 2025). Adoption of AI definitely calls for a regulatory guideline otherwise it may invite legal and ethical issues (Gursoy & Cai, 2024)**.**

Application of AI tools not only influence the learning but it also shifted the process of doing research. It raised the level of the researches conducted and promoted the integration of interdisciplinary and cross-disciplinary knowledge in collaborative work of researches. It can support in processing large scale data and bring accuracy in results (Wan et al., 2025). AI leveraged the process of process of research proposal system by automatizing with reference to submission, review and tracking. Human resources can be diverted for another tasks. It can bring collaboration with various experts across the world and also connect with the possibilities of funding (Munagandla et al., 2024). There are many tools available in the cyberworld which can shape the research in another tangents. However, few of them are free to access whereas others are paid ones. Still researchers are harnessing the potential of these tools. Thus, the present study was conducted to find the purposes behind adoption of these AI tools in the researches, how these tools are added advantage for doctoral researchers and challenges faced by them due to utilizing these AI tools for the work of research.

Research Methodology

The present study adopted exploratory research design, which was conducted on 26 Doctoral researchers belonged to different departments of a central university situated in NCT of Delhi. The selection of university was based on convenience sampling and researchers were selected by using random sampling method. A Semi-structured interview schedule was developed concerning questions such as listing of AI tools used with the purpose behind, positive outcomes felt after using such tools, challenges encountered due to use of AI tools. The responses obtained from the interviews were analyzed by thematic analysis.

Objectives of the study

1. To identify the purposes of using AI-driven tools in research work.
2. To explore the benefits derived from using AI-driven tools in research work.

3. To understand the challenges encountered due to usage of AI-driven tools in research work.

Results and Discussion

Analysis of the responses captured through interviews resulted in the formation of themes, which are discussed as follows:

Purposes behind using AI-driven tools in research work

Searching existing related studies

Most of the respondents mentioned that they use AI-powered tools in the research work for searching existing studies due to its quick and relevant output in a single search. Adding to this, other cited that AI tools give more comprehensive and significant studies at the top as compare to the traditional searching methods. In a single search, it covers multiple databases and resulted into expand and accurate search. These tools offered them recommendation based on previous searches. The AI-powered search quoted as specific and accurate. The AI-tools which were used by the respondents for searching existing studies included Consensus, Scinapse, Scispace, Semantic Scholar, RefSeek.

Reviewing existing related studies

"Reviewing full paper is not as difficult as it was earlier" cited by one of the respondents. Searching and reviewing are two different task and for these two different tasks, separate category of tools used by the researchers. For reviewing the existing literature, tools such as Connected Papers, Elicit, Research Rabbit, Raxter, Mendeley, Litmaps. These tools provide the literature with summary and pictorial representation of the paper which enabled them to understand the complexities involved in a paper. These tools helped them to identify influential work and the person involved. These tools update frequently to match the pace of development. It was also told by the respondents advanced sorting and filter features helped them to track studies very easily. Paper Digest and SummarizeBot was used by researchers to study summary of the whole papers. Paperpal is another tool used for multiple purpose such as searching, summarization, citation and grammar tips.

Streamline the citations

Majority of the respondents revealed that they organized their readings in the form of various folders in Mendeley. This would be helpful to them generate citations in a single tap. Other than Mendeley, QuilBot was used by the researchers to generate in-text citations and end-text citations. The accuracy of these tools was suggested as good by the respondent users.

Producing content

It was also reported by the researchers that for informal writings such as letter, mails etc., they used ChatGPT. To get answers of some random queries, they used this tool as well. "It was also used to search explanation of any pictures and graph" added by respondent. Gemini was also used by few of the respondents for the same content generation purpose.

Paraphrasing

To paraphrase the content, QuilBot was the only tool which was used by majority of the researchers. It was the most trustable tool and even their university library also conducted a session on this to orient about its features. It was revealed by the respondents that it offered them different styles such as standard, fluency, creative and shorten. It has termed as efficient but human need to see it otherwise the essence of the content lost.

Visualization of content

Respondents revealed that for making presentations, they use Canva, Gamma app and Prezi. These made the content crisp and easy to understand through graphics. Adding to this, one said through Gamma app modification of old and boring slides carried out with ease. Even, slides with prompt can be generated on any topic just by a single command. Another effective tool named "Flourish" was used by researchers to generate charts and maps.

Checking grammatically

Respondents said that they used Grammarly for checking grammar aspects of their piece of work. It has been claimed as more reliable by them. Other than this QuilBot was also used by few of the respondent for editing their work. One of the respondents also cited the use of Ginger for such work.

Positive consequences stemming from employment of AI tools

Lead towards advancement

It was stated by most of the respondents that adoption of AI tools in their work make them aware about the latest development of skills and knowledge which in turn made them to use it. Though, there are many options available in terms of application of AI tools but at the same time, it propels them to think how to use and where to utilize. It offered a sort of skills training and prepare for this competitive century. It was also quoted by one of the respondents that:

"AI tools help the users of AI to stand out from the lot; I use it but wisely which offer me edge over non-users"

This signifies that in future, segregation would occur and maybe it narrows down the future endeavors for non-users of AI.

Raised digital fluency

Respondents asserted that adoption of AI tools transform their abilities right from search literature to crafting a research paper. Continuous utilization of such platforms increased their automation, devising personalized learning trajectories, hands on training and seeking feedback for bringing improvement. Access and harnessing the tools potential offer free resources, software, tutorials, data interpretation, writing, reading, extracting, summarizing like functions which develop a sense of ownership and provide them a hold over their work. These all contributes to be become more digitally competent and fluent.

Communication and Collaboration

It was also reported by the respondents that AI powered platforms such as Microsoft Teams, Mendeley, Research Gate, RStudio, Semantic Scholar, Grammarly, Research Rabbit bestowed them with the opportunities to communicate and collaborate in various formats. It was in the form of sharing information, exchanging research work, visualization of the work, writing and reviewing for common projects, taking feedbacks, holding virtual sessions, data interpretation and analysis, academic writing, networking and many more such relevant functions.

Resources efficient and Time-saving

This was inferred from the responses of the respondents that earlier access to the literature/ existing work of the research area required physical visit of the library which offered very less information, this was later replaced due to advent of technology, however, the searching from the databases was still time consuming and tedious job. Now, after the arrival of the AI powered platforms, literature searching tools became so advanced, shows highly relevant and connected work in a single search. These tools offered them summary of the articles/papers in just a few seconds. They could read the part of the paper they wanted to.

It was also told by the respondents that they manage their bibliographies and reading list through these tools only which save their time, energy and resources as well. Many of the tools offered free access and even paid ones are less costly in comparison to the investment in other means of doing task.

Reduction of Human-Dependency

Majority of the respondents said that previously they relied on human support for learning something new and whenever stuck in between while performing any task. When they started using AI tools in research work, this dependency got reduced to an extent as most of these are user-friendly and easy to use. These platforms have virtual assistants and chatbot to provide explanation and solutions. Manuals and Tutorial placed on the websites of these tools served

as an added advantage. Through several prompt generative AI tools, respondents add their queries in the form of text or image with command and get instant solution or answer.

Accessibility

Respondents revealed that inclusion of AI tools improved their access to the literature review, data analysis, data presentations and sharing of findings with other people. It was told by one of the respondent scholars that

"I searched a particular keyword for accessing literature review on Semantic Scholar, then I started getting so many related studies on my mail account".

This signifies the importance of using AI tools that even prompts appeared later when you search something.

Encountered array of challenges due to utilization of AI tools

Over-reliant on AI tools undermines critical thinking, creativity and problem-solving skills

It was told by few respondents that adoption of AI tools rendered to focus more on seeking type behavioral practices which sometimes makes them a mere seeker of information through generative AI platforms. Rather than thinking the solution on own first, respondents said they seek help from these tools first. This exhibit that it affects them in terms of critical thinking, problem solving and creativity. To devise something innovative such platforms were their preference, this highlights the suppression of skills of creativity.

Overdependency on technology/ machine

Respondents themselves asserted now a technology/machine culture has been created which made them to more rely on AI technologies to keep themselves updated to meet latest demands of the era. Manual designing and development to devising strategies of work was overtaken by AI and mindset of such kind has been setup. Basic understanding/intent behind and the processes of the work is no longer required as due to AI tools, people turned out to be more product oriented.

Authenticity

Another obstacle quoted by the respondents belongs to authenticity of the information. It was told by respondents that using generative AI such as ChatGPT, Deepseek doesn't guarantee the authenticity of the information. Searching and obtaining research studies with proper author credentials served as the proof of trust to an extent but these generative texts are relevant or true, that's questionable or cause of concern.

Increased competitivity

Respondents that using AI tools in the research work created a sort of competition among those who can use it efficiently or those who are not using it. It created a divide and form the categories "AI-literate and AI-illiterate". This created a sense of competitiveness among people those who are doing fast-paced work by using AI tools and those who are using non-AI based technologies.

Ethical issues

It was reported by respondents that AI tools store personal data and information of the system which is a breach of privacy of user. There is lack of transparency in the algorithm processed by AI for a particular command. It perpetuates biases as told by respondents:

"I searched for an Indian boy image thrice as a part of one of my works, every time it came up with brown complexion boy"

This is just an example shared by the other, there could be other possibilities too if explored. Other respondent shared that attacks from AI-driven malwares pose potential risk to the user data and raise security concerns.

Human Values and Emotions

It was quoted by majority of the respondents that AI tools have no emotions. It doesn't bother about emotional wellbeing of the user. Another one added to it that:

"Some of my friends aren't good at using technology, when they see those who are using it, they become insecure and stressed"

The issue of getting insecure can be tackled through learning AI tools. It was also reported by the respondents that AI fails to understand emotions and doesn't concern with emotions and feeling. Emotions are crucial for learning but it is more mechanical. More use of AI in work had reduced their human interaction which limit their human connections.

Adaptability issues

Due to frequent updates of list of various AI tools for different works and within that also updating of features of these tools were cited as the challenge by the respondents. Sometimes they juggle with such changes. It confused them how to go about it. Respondents said that it is difficult to decide which tool is safe to use for the purpose. Such state of dilemmas posed issue of adaptability with the context.

Conclusion

The present study unpacked that AI tools such as Consensus, Scinapse, Scispace, Semantic Scholar, RefSeek, Grammarly, Quilbot, Ginger, Flourish, Gamma app, Mendeley for the

purpose of searching and reviewing the literature associated to their research area, writing and editing, generating citations, summarize and extract meanings from the papers, paraphrasing and presenting content. These tools speed up their process of research and support in meeting the current needs of the era. It reduced human-dependency and enhanced their digital fluency. Integration of AI tools in the process of researches calls for decision making which have to sound ethical, however, overdependency has to be avoided, dominancy should be in terms of Human over AI not vice-versa.

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