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Research Article

Assessing the Transformative Influence of ChatGPT on Research Practices among Scholars in Pakistan

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ABSTRACT

This article investigates the transformative impact of ChatGPT on research practices within the scholarly community in Pakistan. ChatGPT, a powerful AI language model, has added significant consideration for its possibility of improving academic research. Survey data was gathered via a structured questionnaire distributed to researchers in Pakistan. A total of 278 questionnaires were distributed for the randomly chosen sample, of which 223 were returned. For calculating descriptive statistics, SPSS was utilized. Results of the study indicated that 90% of scholars are familiar with the practice of ChatGPT in research activities. 86% of scholars used 3.5 (Basic version) of ChatGPT for their research and only 14% used 4 (Plus version) of ChatGPT for their research work. The overall satisfaction level was 46% response satisfied with the usage of ChatGPT in research activities. The article discusses how ChatGPT's natural language processing capabilities have advanced literature reviews, data analysis, and content generation, thereby saving time and fostering greater productivity. Moreover, it examines how the tool's accessibility and affordability have democratized research, making it more inclusive and open to a broader range of scholars. By shedding light on these critical aspects, this article provides valuable insights into the evolving landscape of research practices in Pakistan and highlights the potential for ChatGPT to revolutionize academic scholarship in the digital age.

1. INTRODUCTION

Artificial intelligence (AI) has had an important influence on numerous industries, including education, as an outcome of the rapid advancement of technology and the globalization of connectivity. Artificial Intelligence has the potential to foster progress and creativity in learning environments in a number of ways[1]. ChatGPT (Generative Pre-trained Transformer) is one of the new AI tools that can be used in education. The AI chatbotChatGPT was developed by OpenAI, an American startup. In just one week following its November 30, 2022 introduction, ChatGPT's user base has amazingly grown by more than one million individuals [2]. ChatGPT is a type of artificial intelligence (AI) that uses natural language processing (NLP) to connect with users. It works like a virtual assistant, allowing you to answer questions and assist with various tasks such as writing emails, essays, creating software, and more [3]. This artificial intelligence (AI) tool was firstly accessible to the public at no cost since the goal of the GPT-3.5 research and demo version was to enable broad general testing for the aim of obtaining reinforcement learning from user feedback for inclusion in the upcoming GPT-4 version [4].

Chatbots, a type of artificial intelligence (AI) based on natural language models, have become a promising tool in the field of education for improving learning and supporting education. The large-scale language model ChatGPT, created by OpenAI, is currently attracting a lot of attention from the education research community. An overview of the state of the research on ChatGPT in Vietnamese and worldwide education is given in this article. It also covers some current debates and future research directions pertaining to ChatGPT's use in a learning environment [5, 6, 7, 8].

Artificial intelligence (AI) tools, such as ChatGPT powered by GPT-4, exhibit significant potential in revolutionizing the student learning experience. Investigating the impact of these advanced AI technologies on both students and educational institutions, particularly universities, is imperative as they become increasingly sophisticated and accessible. This study aims to explore the perceptions of academics and students regarding the influence of ChatGPT on the learning process and higher education [9].

In the digital age technology is growing faster and easier to use for a variety of objectives, including education. Technology, student development, and effective teaching are all crucial elements of a successful educational experience. Students can

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succeed academically and realize their full potential when they have teachers who are effective at using technology to enhance their lessons. Technology may give instructors, students, and parents' access to a wealth of educational resources, personalized learning opportunities, and channels for communication and cooperation. Teachers can enhance the caliber and efficacy of the learning process by introducing technology into the classroom [10,11,12].
Researchers have suggested that ChatGPT has major drawbacks in addition to its many potential educational benefits [13,14,15]. According to a research by [16] when ChatGPT was first evaluated, it couldn't reliably provide correct answers when users asked questions concerning anatomical facts. The existence of this cutting-edge AI technology thus has advantages as well as drawbacks.
Artificial intelligence integration has become increasingly common in today's rapidly changing academic landscape, disrupting established paradigms of research and scholarship. The advent of AI language models like ChatGPT brought in a new era of scholarly investigation, requiring us to rethink and modify our research approaches. This research investigates the transformative impact of ChatGPT on research practices among scholars in Pakistan, with the goal of elucidating the tremendous impact of this technology on the scholarly landscape in a country with a long tradition of academic endeavor and intellectual discovery.

1.1 Problem Statement

The problem addressed in this study is the lack of comprehensive understanding regarding the extent to which ChatGPT, an advanced AI language model, has impacted research practices among scholars in Pakistan. The need arises from the potential transformative effects of this technology, and the absence of research assessing its specific influence on scholarly activities and knowledge dissemination within the Pakistani academic community.

1.2 Objective of the study

The main objectives of this article are:

1. To assess the level of integration of ChatGPT within Pakistani academic research procedures.
2. To measure the impact of ChatGPT on the efficiency and productivity of research workflows in the academic context.
3. To investigate ChatGPT's contribution to expanding Pakistani academics' use of resources and tools for study.

To provide insights on ChatGPT's potential to influence academic research methods in Pakistan and contribute to the global scholarly landscape.

1.3 Significance of the study

This study is significant because it examines how the use of ChatGPT is altering the way that researchers in Pakistan carry out their job. It is essential for teachers and scholars to understand this shift in order to adjust to new research technology. It serves in developing policies and lesson plans for the morally and practically responsible use of these instruments. Furthermore, it adds to the worldwide discussion about how technology is affecting research techniques globally; it is not limited to Pakistan.

2. LITERATURE REVIEW

According to [9] while the use of AI to education is not new, it has been a prominent issue in the first quarter of 2023 due to OpenAI's ChatGPT application's quick growth. Despite GPT-4's relatively recent introduction into common usage, the body of research on the subject has grown quickly. The increasing popularity of AI-driven chatbots in higher education is evident as educators explore their potential to enhance learning outcomes and foster student engagement. Extensive research has been conducted over the past few decades to assess the effectiveness of chatbots in various educational contexts.. This study, in particular, focuses on ChatGPT's effects on educational processes and how these effects may affect universities.
AI-based chatbot integration into educational activities is a key area for enhancing student engagement and the learning process. Chatbot technology can improve student connection and learning processes, according to research [17]. The field of artificial intelligence (AI) studies how to teach software, a computer, or a robot to think like a human. In order to create intelligent software, it is necessary to understand how the human brain functions and how people learn, make decisions, or approach problems studied by [18].
The 1950s witnessed the beginning of scientific research into artificial intelligence, which is when chatbots and AI first emerged [19][20]. mentioned that even though many of us may not think much of the AI discussion, it has been going on for decades. In 1951, the first artificial intelligence program was created with the goal of teaching a computer how to play checkers. The computer was able to play checkers at a respectable pace by the next year.

Further, in order to assess ChatGPT's efficiency, [21] wrote a research paper named "Artificial Intelligence for Education." The results showed that ChatGPT can help academics write research articles that are accurate, methodical, logical, and enlightening. He claims that users don't need to be subject matter experts because the chatbot can produce a very effective write-up in two to three hours. Instead of concentrating on broad abilities, [21] advised schools to look for methods to employ ChatGPT and other AI tools to encourage students' creativity and critical thinking. Additionally, new assessment forms may be required due to the possibility of using ChatGPT for assessment tasks [21].
[22] includes that it makes sense to say that academics that focus on machine learning and natural language processing will benefit the most from ChatGPT. With appropriate piloting, researchers studying text classification, sentiment analysis, machine translation, and speech recognition can fully profit from ChatGPT. However, ChatGPT can also be strategically used by researchers in a variety of sectors, including social science, life sciences, health, business, and engineering. For example, ChatGPT can help with the creation of surveys or questionnaires for study. We gave ChatGPT the responsibility of creating a survey questionnaire in order to assess the impact of social media on consumer behavior.

3. METHODOLOGY

In this present quantitative study a survey method was use to get a response from the study sample (n=223) of Pakistani scholars. A structured questionnaire was used in both electronic and hard form to conduct that survey. The Raosoft sample size calculator was used to calculate for study sample with a 95% confidence level and 5% margin error it covers 40% of the research population. For the randomly selected sample, a total of 278 questionnaires were distributed out of which 223 returned. The formula for calculating the response rate was used as (the total number of returned questionnaires divided by the total number of distributed questionnaires multiplied by 100). Thus, the response rate was 80%. Further, descriptive tests were applied on all data trough SPSS. The outcome of that findings is illustrated below in tables, Pie charts, bar graph and many more.

4. FINDINGS AND DISCUSSIONS

1. Gender

The provided descriptive statistics illustrate the gender distribution within a given sample. Out of the total respondents, 53.8% identified as male, while 46.2% identified as female. These percentages offer insight into the gender composition of the surveyed population, indicating a slight numerical majority of males. The data suggests a relatively balanced representation between the two genders, with a marginal preponderance of males.

TABLE I. SPECIFY YOUR GENDER

	N	%
Male	120	53.8%
Female	103	46.2%

2. Age

The provided descriptive statistics outline the age distribution of the surveyed population, categorizing respondents into different age groups. Most participants fall within the 18-22 age bracket, comprising 44.4% of the total sample. The subsequent age group, 23-28, represents 31.8% of respondents, indicating a substantial portion of young adults. As the age categories progress, there is a gradual decline in the number of participants, with 13.9% falling in the 29-33 range, 6.7% in the 34-40 range, and a smaller 3.1% above the age of 40.

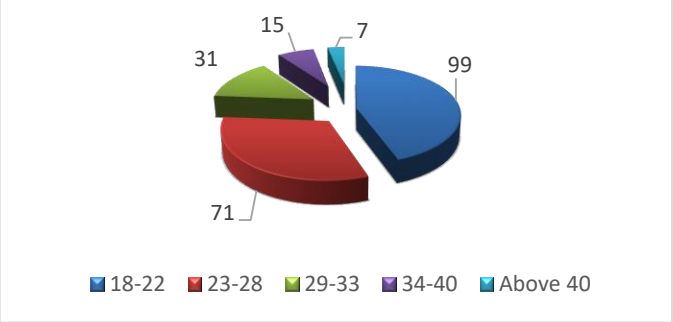

Fig.1. Age wise distribution of respondents

3. Study

The data illustrates the distribution of respondents across different levels of study. The majority, comprising 53.8%, are at the bachelor's level, while 14.8% are pursuing master's degrees. Additionally, 22.0% are enrolled in MS/MPhil programs, and 9.4% are at the PhD level, providing a snapshot of the educational diversity within the surveyed population.

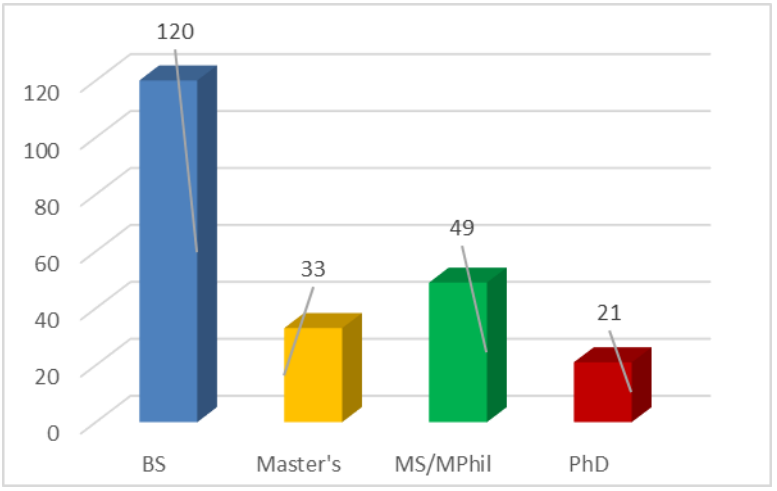

Fig.2. Level of Study

4. Item No. 1

The descriptive statistics provided reveal a high level of familiarity with ChatGPT and its applications in research among the surveyed population, with 90.1% of respondents indicating awareness. In contrast, 9.9% reported not being familiar with ChatGPT in the context of research. This strong majority suggests that a significant portion of the surveyed individuals is knowledgeable about ChatGPT and its potential applications in research settings. This widespread familiarity could imply a growing recognition of the model's relevance and utility in various research domains.

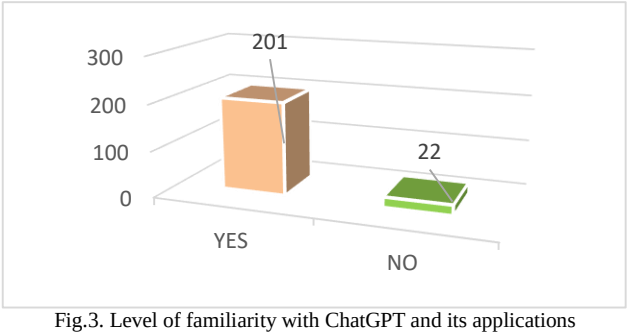

Fig.3. Level of familiarity with ChatGPT and its applications

5. Item No. 2

The presented data indicates the extent to which respondents have incorporated ChatGPT into their research activities. A substantial majority, comprising 73.1%, reported having utilized ChatGPT in their research endeavors, suggesting a widespread adoption of this language model in academic pursuits. On the other hand, 26.9% of respondents indicated they have not employed ChatGPT in their research activities, reflecting a portion of the surveyed population that has yet to integrate this tool into their scholarly work. These findings highlight both the prevalent use and some level of non-utilization of ChatGPT within the research community.

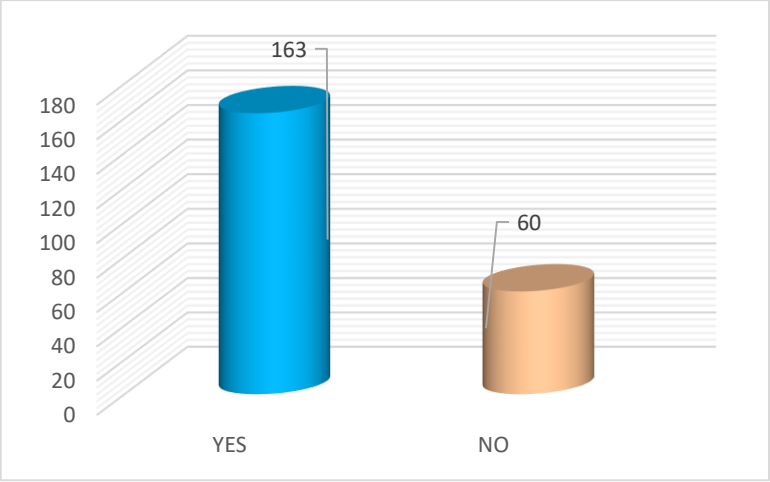

Fig.4. Incorporated ChatGPT into their research activities

6. Item No. 3

A particular version of ChatGPT was adopted by the majority of academics due to its affordability or relevancy to their work. In the below figure no. 5 it shows that 86% respondents uses basic version of ChatGPT in their research activities and only 14% respondents purchased plus version for more efficient results.

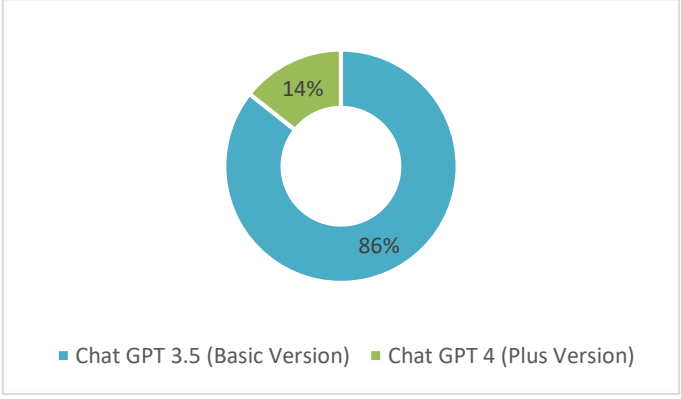

Fig.5. Version of ChatGPT

7. Item No. 4

It is observed that 60% of the respondents were know about ChatGPT and its use from social media, 35% of the respondents were know from other sources, 1% of the respondents know from Webinar and Newspaper article and 2% of the respondents know from Conference panel discussion. Which is shown in the below given figure.

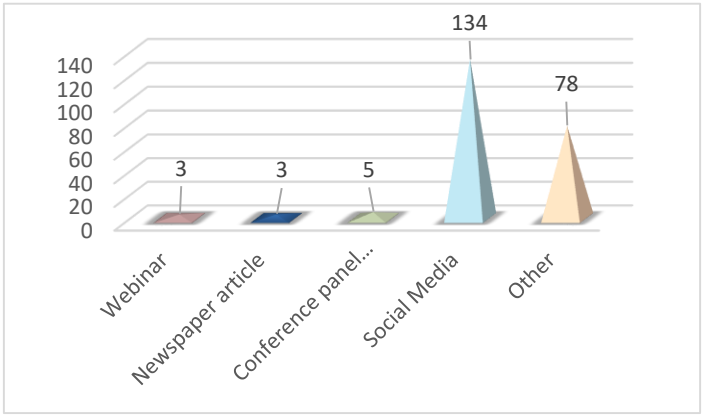

Fig.6. Mode of access to ChatGPT

8. Item No 5

Most of the participations considered themselves as weekly users of ChatGPT in their research activities with the percentage of 28. The percentage ratio of the daily users 26%. Quarterly usage of ChatGPT were 42 participations with the percentage of 19. Monthly basis users of participations percentage were 13 and 15% participations used ChatGPT occasionally.

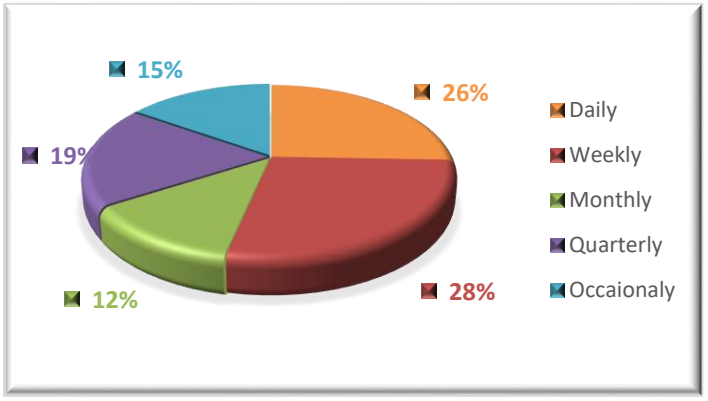

Fig.7. Frequency of using ChatGPT in research activities

9. Item No 6

From the analysis of the responses it has found that scholars influenced by Idea generation which percentage shows in the figure no. 8 is 44%, Drafting research papers and Data analysis has same percentage 6, Literature reviews shows 13% in the below figure and at the last 67 respondents uses influenced by other features of ChatGPT with the percentage of 30.

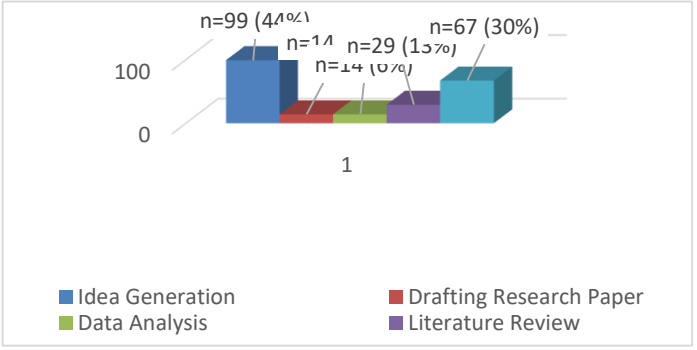

Fig.8. Ways ChatGPT influenced in research activities

10. Item No 7

Respondents has asked how ChatGPT important in research activities, 36% respondents found that ChatGPT is important for their research activities, 21% found most important, 26% respondents tick on Neutral option, 9% respondents found ChatGPT not important for them in their research activities and 7% found least important.

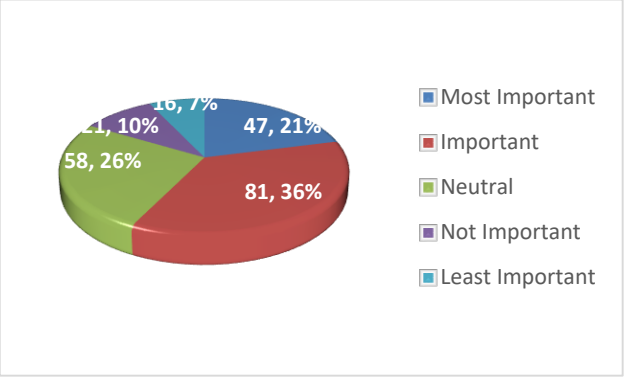

Fig.9. Importance of ChatGPT in research activities

11. Item No 8

Most of the responses illustrated that 31% response observed ChatGPT to Easy to use, 27% response shown that all of the benefits shown in table no. 2 of ChatGPT, 19% respondents said that reliable answers of ChatGPT is the benefit of using ChatGPT, 17% replied that ChatGPT is more informative for them and only 14% responses are shown to Always available.

TABLE II. BENEFITS OF USING CHATGPT

Benefits of using ChatGPT	No of Respondents	Percentage
Always Available	32	14.30%
Easy to use	70	31.40%
More Informative	38	17.00%
Reliable Answers	24	18.80%
All of the above	59	26.50%

12. Item No 9

A question was asked to know the satisfaction level of using ChatGPT in research activities. It was observed that majority 46% of respondents are satisfied with usage of ChatGPT, 31% respondents are average with the usage of ChatGPT, 14% of respondents are highly satisfied, 8% respondents are not satisfied with ChatGPT and only 1% respondents are highly not satisfied.

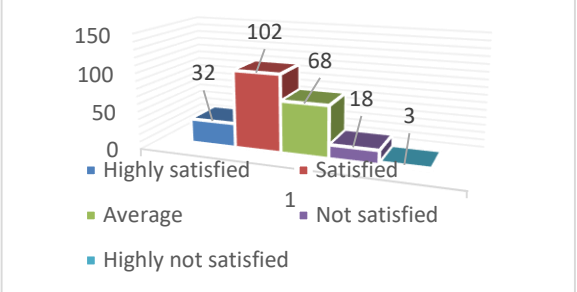

Fig.10. Satisfaction Level of usage ChatGPT

13. Item No 10

When respondents were asked that ChatGPT improved quality. It is observed that 80% of the respondents preferred to yes and only 20% of the respondents answer with No.

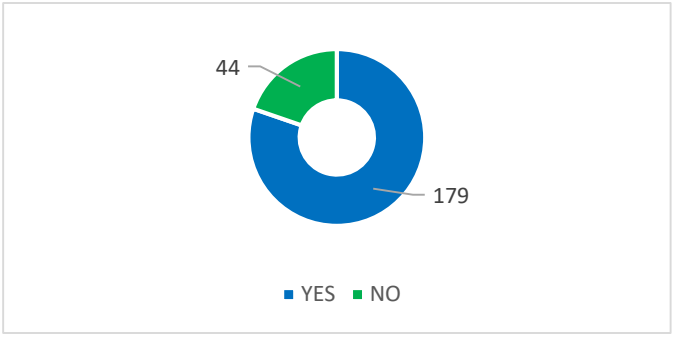

Fig.11. Satisfaction Level of usage ChatGPT

14. Item No 11

Respondents were asked the most important question that how has ChatGPT affected the accuracy and reliability of your research findings? It was observed that 40% of the responses to improved accuracy and reliability, 31% of the respondents were neutral, 13% of the respondents were not sure, 12% of the respondents had no impact and only 4% of the respondents to reduced accuracy and reliability.

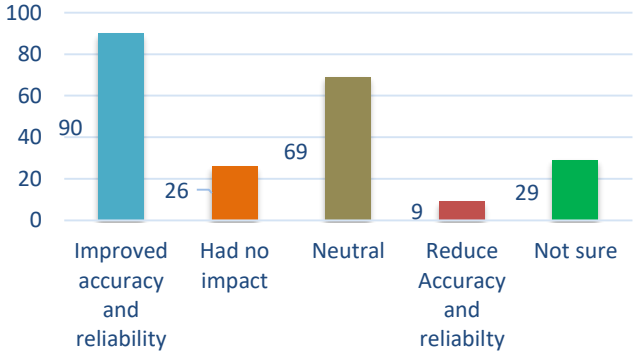

Fig.12. ChatGPT affected the accuracy and reliability

15. Item No 12

From the returned questionnaires, it is found that most of them 29% scholars have plagiarism concerns, 27% of the respondents have no concerns, 24% respondents have generated quality contents challenge, 12% of the people have other challenges or concerns and only 9% of the respondents have Ethical concerns.

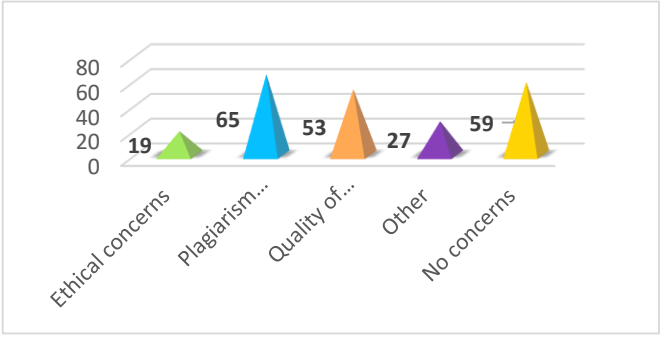

Fig.13. Challenges and Concerns while using ChatGPT

5. RESEARCH GAP

This research doesn't fully explore how students from different academic levels and fields use and adjust to AI technology when looking at how ChatGPT has changed the way research is done in Pakistan. People who study different subject as need to talk more about the specific problems or chances they face when they use ChatGPT in their own fields. This technology also affects the quality and depth of study, and we need to know more about it. This information could help a lot with making rules that work for Pakistani universities.

6. CONCLUSION

The impact of ChatGPT on Pakistani researchers' research practices was examined in this study. An extensive examination revealed that ChatGPT has had a profound impact on the way academics conduct research by giving them access to an effective tool for collaboration, idea generation, and information collection.

The results showed that ChatGPT was largely accepted by Pakistani academics as a useful tool for their research projects. Its ability to generate ideas, offer quick information, and help get across language hurdles has completely changed the field of research. Academics discussed how ChatGPT improved their productivity by giving them access to knowledge that would have been difficult to get in the past and the opportunity to consider many points of view.

Moreover, the study indicated that researchers particularly found ChatGPT useful for literature reviews, brainstorming sessions, and getting beyond language barriers in their research. This AI-powered technology not only made their job go more quickly, but it also encouraged researcher collaboration by allowing for information sharing and discussion.

However, the research also highlighted some limitations and challenges associated with ChatGPT, such as occasional incorrectness and the need for critical evaluation of generated content. It was noted that while ChatGPT is a powerful tool, scholars must use it carefully and verify information from reliable sources.

In summary, the study highlights the significant impact that ChatGPT has had on Pakistani academics' research practices. Research projects have advanced greatly as a result of its revolutionary effects on cooperation, information accessibility, and idea production. The appropriate use of ChatGPT in conjunction with conventional research techniques would improve the caliber and scope of scholarly work in Pakistan and worldwide as academics continue to negotiate the rapidly changing technology landscape.

7. RECOMMENDATIONS

The recommendations derived from this study are as follows:

1. Scholars and researchers in Pakistan should actively use ChatGPT as a useful tool to increase the productivity and efficiency of their research.
2. Academic institutions should think about including ChatGPT and other AI technologies in their curriculum and research support.
3. To encourage inclusive research practices, policymakers should make AI technologies more affordable and accessible.
4. To fully utilize AI in research procedures, scholars and AI expert collaboration should be promoted.

In order to promote a fruitful and morally sound research environment in Pakistan, these proposals are meant to make it easier for academics to integrate AI tools, such as ChatGPT, into their work.

Conflicts Of Interest

The author's affiliations, financial relationships, or personal interests do not present any conflicts in the research.

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