

Assessing the Educational and Ethical Impacts of Artificial Intelligence Among Students of Public Universities in Karachi.

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Abstract

The rapid integration of Artificial Intelligence (AI) in higher education has intensified academic, social, and ethical discourse, particularly in developing urban contexts such as Karachi. This study examines the educational impacts and ethical implications of AI among students of public sector universities, focusing on awareness, perceptions, academic usage, and future-oriented concerns. The research explores students' understanding of AI technologies and their attitudes toward critical ethical issues, including academic integrity, plagiarism, data privacy, and dependency on AI-generated content. It also assesses perceptions regarding AI's influence on career prospects and evolving labor market dynamics. A mixed-method research design was employed, integrating quantitative and qualitative approaches. A sample of 160 students was selected through simple random sampling. Primary data were collected using structured questionnaires and semi-structured interviews, while secondary data were obtained from scholarly sources. Statistical tools, including frequency distribution, percentages, tabulation, and chi-square tests, were applied for systematic analysis. The findings indicate that students possess basic awareness of AI applications and generally perceive AI as a supportive educational tool. However, ethical concerns do not significantly influence AI adoption in academic practices. Additionally, students show limited perception of AI as a transformative factor affecting their future careers. The study emphasizes the need for institutional policies, ethical frameworks, and digital literacy programs to promote responsible AI integration and ensure sustainable and ethically informed educational practices.

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INTRODUCTION

The Technological Context

Artificial Intelligence (AI) has emerged as one of the most influential technologies of the modern era, reshaping multiple sectors, particularly education. It refers to systems capable of performing tasks that normally require human intelligence, such as learning, reasoning, decision-making, and problem-solving (Russell & Norvig, 2021). In education, AI includes intelligent tutoring systems, automated assessment tools, learning analytics platforms, and

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natural language processing applications such as ChatGPT, which are increasingly used by both students and educators (Zawacki-Richter et al., 2019).

In higher education, AI has significantly transformed traditional teaching and learning practices. It enables more personalized learning experiences by adapting content to students' individual needs while also supporting teachers by reducing administrative workload and improving feedback efficiency (Holmes et al., 2019; Luckin et al., 2016). Consequently, AI has become an integral part of modern educational systems worldwide.

In developing urban contexts such as Karachi, public universities often face structural challenges including overcrowded classrooms, limited faculty availability, and insufficient academic resources. In this environment, AI-based tools have created new opportunities for academic support. Students increasingly rely on AI applications for writing assistance, research, presentations, and exam preparation, which has significantly reshaped their learning behavior and access to information (Khan et al., 2022; Rahman & Hussain, 2023). Although these advantages, the growing use of AI also raises important academic and ethical concerns. One of the most critical issues is academic integrity, as AI-generated content can increase the risk of plagiarism and reduce originality in student work (Cotton et al., 2023; Dwivedi et al., 2023). In addition, over-reliance on AI may negatively affect students' critical thinking, creativity, and analytical skills (Kasneci et al., 2023).

Other concerns include data privacy, algorithmic bias, and lack of transparency. AI systems often process large volumes of personal data, raising questions about how securely this information is stored and used (Floridi et al., 2018). Moreover, algorithmic limitations can sometimes produce biased outcomes, potentially affecting students from different socio-economic backgrounds (O'Neil, 2016; Binns, 2018). Beyond education, AI is also reshaping labor markets by automating routine tasks and increasing demand for digital and technical skills (Brynjolfsson & McAfee, 2017; World Economic Forum, 2023). However, many students still have limited awareness of how these changes may influence their future careers and skill requirements (UNESCO, 2021).

In Pakistan, particularly in Karachi, empirical research on students' experiences and ethical understanding of AI remains limited. While international studies have explored AI in education extensively, there is still a need to examine its impact within local socio-cultural and academic contexts (Ali et al., 2024). Understanding how students engage with AI and perceive its ethical implications is therefore essential for developing responsible educational policies.

Human Intelligence and AI in Education

The development of AI is closely linked to the diverse dimensions of human intelligence, including linguistic, logical, emotional, creative, and interpersonal abilities. Gardner's theory of multiple intelligences emphasizes that intelligence is not singular but multidimensional in nature (Gardner, 1983). Modern AI systems attempt to replicate aspects of human cognition through machine learning, natural language processing, and adaptive algorithms. In academic contexts, these tools support students in writing, research, summarization, and idea generation, thereby enhancing learning efficiency and productivity (Holmes et al., 2019). However, AI systems still lack essential human qualities such as empathy, ethical reasoning, and emotional understanding.

A growing concern in higher education is that excessive reliance on AI may weaken students' independent thinking, analytical reasoning, and problem-solving skills (Kasneci et al., 2023). Tools such as ChatGPT and Grammarly allow students to complete academic tasks quickly with minimal effort, which, while efficient, may encourage passive learning behavior.

Researchers describe this emerging pattern as "pragmatic dependency," where students rely on AI not just as a support tool but as a primary source for completing academic work (Cotton et al., 2023). This dependency may reduce intellectual engagement and creativity while increasing ethical concerns related to plagiarism and authenticity of academic output (Selwyn, 2019).

In public universities in Karachi, these issues are further intensified by structural limitations such as large class sizes, limited teacher-student interaction, and inadequate academic support systems. As a result, students increasingly turn to AI tools, gradually changing their study habits and learning strategies (Khan et al., 2022).

At the same time, awareness of ethical issues such as data privacy, algorithmic bias, and responsible AI usage remains limited among students. Many users interact with AI systems without fully understanding how their data is collected, stored, or processed, raising concerns about digital security and ethical responsibility (Floridi et al., 2018).

Literature Review

Artificial Intelligence in Higher Education

Artificial Intelligence (AI) has emerged as one of the most influential technological developments in modern society, particularly in the field of education. Over the last decade,

AI technologies have increasingly been integrated into higher education systems to improve teaching, learning, assessment, and administrative processes. AI generally refers to computer systems that can perform tasks commonly associated with human intelligence, such as reasoning, learning, decision-making, and language processing (Russell & Norvig, 2021). In educational settings, AI includes applications such as intelligent tutoring systems, automated grading software, predictive analytics, virtual assistants, and generative AI platforms like ChatGPT.

The growing integration of AI into higher education has transformed traditional learning environments. Universities across the world are increasingly adopting AI-powered tools to provide personalized learning experiences, improve student engagement, and enhance academic performance (Holmes et al., 2019). These systems can analyze students' learning behaviors and adapt educational content according to their individual needs and abilities. As a result, AI has become an important tool for supporting student-centered learning and improving accessibility to educational resources. Research indicates that AI technologies can significantly improve efficiency in academic tasks. Students use AI applications for writing assistance, language translation, research support, and exam preparation. Teachers also benefit from AI through automated grading systems, plagiarism detection software, and data-driven decision-making tools (Luckin et al., 2016). Moreover, AI allows educational institutions to manage administrative responsibilities more effectively, reducing workload and improving communication processes.

In developing countries such as Pakistan, AI adoption in higher education is gradually increasing. Public universities in Karachi are experiencing growing student engagement with AI-based technologies because of easy internet access and the popularity of digital learning platforms. According to Khan et al. (2022), AI applications are becoming common among university students for academic writing, online learning, and information gathering. These technologies offer practical support in contexts where educational institutions face challenges such as overcrowded classrooms, shortage of faculty members, and limited academic resources. Although these benefits, researchers argue that the integration of AI in higher education must be approached carefully. Selwyn (2019) emphasizes that while AI can improve educational efficiency, it may also alter the relationship between teachers and students by reducing direct interaction and encouraging technology-dependent learning behaviors. Similarly, Williamson and Eynon (2020) note that the increasing automation of

educational practices may reshape the role of educators and redefine traditional learning methods.

Educational Benefits and Academic Dependency on AI

The educational advantages of AI have been widely discussed in contemporary academic literature. One of the most significant contributions of AI is the personalization of learning. AI-powered systems can identify students' strengths and weaknesses, recommend learning materials, and provide immediate feedback, helping students learn more effectively (Holmes et al., 2019). This personalized approach enhances student motivation and allows learners to progress at their own pace.

Another major benefit is increased academic efficiency. AI tools such as ChatGPT and Grammarly enable students to generate ideas, improve writing quality, and summarize lengthy texts, and access information quickly. These applications save time and reduce academic workload, particularly for students who struggle with language barriers or limited access to educational support services (Rahman & Hussain, 2023). Additionally, AI technologies support inclusive education by assisting students with disabilities through speech recognition systems, text-to-speech applications, and adaptive learning platforms.

However, despite these advantages, researchers have raised concerns regarding students' growing dependency on AI technologies. Excessive reliance on AI tools may reduce students' independent learning abilities and discourage active intellectual engagement. Kasneci et al. (2023) argue that overdependence on generative AI applications can negatively affect critical thinking, creativity, and problem-solving skills among students. When students rely heavily on AI-generated responses, they may become less motivated to conduct independent research or develop analytical reasoning abilities.

The concept of "pragmatic dependency" has become increasingly important in discussions about AI in education. This term refers to situations where students begin using AI systems as primary solutions for academic tasks rather than supportive learning tools. Cotton et al. (2023) explain that such dependency may lead to passive learning behaviors, reduced originality, and limited academic participation. Students may prioritize convenience and speed over genuine understanding and intellectual development. Furthermore, the increasing use of AI-generated content has raised concerns about academic integrity. AI applications can generate essays, assignments, and research summaries that appear highly sophisticated and difficult to distinguish from human-written work. As a result, universities face growing

challenges in detecting plagiarism and maintaining standards of authenticity in academic submissions (Dwivedi et al., 2023). Researchers warn that without proper ethical guidelines and institutional policies, AI technologies may contribute to academic dishonesty and reduce the value of independent learning.

Ethical Concerns Related to AI

Ethical issues surrounding AI have become a major topic of debate in educational research. One of the most widely discussed concerns is plagiarism and misuse of AI-generated content. Students can easily use AI tools to complete assignments without fully understanding the material, which raises questions regarding fairness, originality, and intellectual honesty (Selwyn, 2019). This issue is particularly important in higher education, where independent learning and critical analysis are considered essential academic skills.

Data privacy and digital security are also significant ethical concerns associated with AI usage. Most AI systems collect large amounts of personal information to improve their performance and personalize user experiences. Floridi et al. (2018) argue that many users are unaware of how their data is collected, stored, and processed by AI platforms. This lack of transparency creates concerns regarding surveillance, misuse of personal information, and potential violations of digital privacy.

Another ethical issue is algorithmic bias. AI systems are trained on large datasets that may contain social, cultural, or economic biases. As a result, AI technologies may unintentionally produce unfair or discriminatory outcomes for certain groups of students (Binns, 2018). O'Neil (2016) highlights that biased algorithms can reinforce existing inequalities and negatively affect marginalized populations. In educational contexts, algorithmic bias may influence grading systems, admissions processes, or recommendations generated by AI-powered platforms.

Researchers also emphasize the importance of responsible AI usage in educational settings. UNESCO (2021) stresses that educational institutions should develop ethical frameworks and digital literacy programs to help students understand the opportunities and risks associated with AI technologies. Ethical awareness is necessary to ensure that AI tools are used responsibly and in ways that support learning rather than replace human intellectual effort.

AI and Future Career Implications

The impact of AI extends beyond educational practices and significantly influences future employment trends and labor market structures. AI technologies are rapidly automating

routine and repetitive tasks across different industries, leading to changes in job requirements and professional skills (Brynjolfsson & McAfee, 2017). Consequently, students are increasingly expected to develop digital literacy, adaptability, and technological competence to remain competitive in future job markets.

According to the World Economic Forum (2023), AI is expected to create new employment opportunities while simultaneously replacing certain traditional occupations. Skills such as critical thinking, creativity, emotional intelligence, and technological literacy are becoming more valuable in AI-driven economies. Therefore, universities play a crucial role in preparing students for these changing professional environments.

However, several studies suggest that students often possess limited awareness regarding the long-term implications of AI on careers and employability. UNESCO (2021) reports that many students focus primarily on the immediate academic benefits of AI tools while overlooking broader economic and societal transformations. In Pakistan, limited research has explored students' understanding of AI's role in shaping future career opportunities and challenges.

In Karachi's public universities, students are increasingly engaging with AI technologies for educational purposes, yet there is insufficient awareness regarding how these tools may influence future workplace expectations. This gap highlights the need for career counseling, digital literacy training, and educational policies that encourage responsible and informed use of AI technologies.

Overall, the existing literature demonstrates that AI offers significant educational opportunities while simultaneously creating ethical, academic, and social challenges. Although AI technologies can improve learning efficiency and accessibility, excessive dependency, academic dishonesty, and ethical concerns remain important issues that require further investigation. Therefore, this study seeks to contribute to existing knowledge by examining students' perceptions, awareness, and ethical understanding of AI within the context of public universities in Karachi.

OBJECTIVES OF THE RESEARCH

- To assess the awareness and understanding of AI among government universities of Karachi.
- To evaluate the ethical and social concerns related to AI usage in academic setting.

- To identify the advantages and challenges students face in adopting AI based tools and technologies.
- To examine the role of AI in education including its influence on learning methods, academic performances and research capabilities.
- To investigate how AI tools contribute to the development of critical thinking, problem solving and technical skills.
- To analyze students attitudes towards AI impact on academic integrity e.g. plagiarism, reliance on AI generated content.

RESEARCH QUESTIONS

- How does the level of awareness and understanding of AI influence its academic usage among students of public universities in Karachi?
- What educational benefits and challenges do students experience while using AI-based tools in learning, research, and academic activities?
- How do ethical concerns such as academic integrity, plagiarism, data privacy, and dependency on AI-generated content affect students' perceptions and use of AI technologies?

HYPOTHESES

- Awareness of AI is limited due to a lack of formal AI-focused education.
- Ethical concerns like data privacy and academic integrity significantly influence the acceptance of AI tools.
- Students perceive AI as a transformative force in future career opportunities.

METHODOLOGY

This study used a mixed-method research design to examine the educational and ethical impacts of Artificial Intelligence (AI) among students of public universities in Karachi. A sample of 160 students was selected through simple random sampling. The majority of respondents were female (71.7%), while 50% belonged to the 21–23 age group. Primary data were collected through structured questionnaires and semi-structured interviews, while secondary data were gathered from scholarly sources. The data were analyzed using frequency distribution, percentages, tabulation, and chi-square tests to examine students' awareness, learning behavior, and ethical perceptions regarding AI usage.

RESULTS AND FINDINGS

The study was conducted among 160 students from public universities in Karachi. The demographic findings indicate that the majority of respondents were female students and most participants belonged to the age group of 21–23 years, reflecting the common enrollment trend in higher education institutions as shown in the table below.

Table 1
Gender and Age Distribution of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	45	28.1%
Gender	Female	115	71.9%
Total (Gender)		160	100%
Age	18–20 Years	48	30.0%
Age	21–23 Years	80	50.0%
Age	24 Years and Above	32	20.0%
Total (Age)		160	100%

The demographic distribution shows a higher proportion of female respondents (71.9%) compared to male respondents (28.1%). This pattern is commonly observed in social science and education-related surveys where female participation tends to be higher due to greater engagement in academic and research activities. Research in digital and social behavior also suggests that women are increasingly active in educational and survey-based platforms, particularly in urban contexts (Pew Research Center, 2023).

Table 2
Frequency of AI Tool Usage

Response Category	Frequency	Percentage
Daily	85	53.1%
Weekly	46	28.8%
Occasionally	21	13.1%
Rarely	8	5.0%
Total	160	100%

The results indicate that more than half of the respondents use AI tools daily, demonstrating the increasing integration of AI technologies into students' academic routines. This trend aligns with the findings of Rahman and Hussain (2023), who observe a growing dependence on AI-powered applications for daily tasks such as writing assignments, conducting research,

and preparing for examinations. Such frequent usage is often driven by a perceived increase in academic productivity, which students in the Karachi context estimate to be as high as 76.7%. However, this daily reliance also points toward the emergence of "pragmatic dependency," where AI shifts from a supplementary resource to a primary solution for completing core intellectual tasks.

Table 3
Preferred Use of AI Tools for Academic Purposes

Academic Purpose	Frequency	Percentage
Writing and Editing	75	46.9%
Literature Review and Summaries	57	35.6%
Data Analysis	57	35.6%
Exam Preparation	64	40.0%
Research Assistance	69	43.1%

The data show that writing assistance emerged as the most common academic use of AI applications, followed by research support and exam preparation. Students increasingly depend on AI tools to improve efficiency and save time during academic activities. These findings are supported by recent research conducted by Kim et al. (2025), which found that university students widely use generative AI tools for academic writing, editing, idea generation, and research-related tasks because such technologies enhance productivity and simplify the writing process. Similarly, Anani et al. (2025) reported that students in higher education perceive AI applications as valuable academic support tools that improve writing quality, reduce workload, and assist in completing assignments more efficiently.

Table 4
Perceived Educational Benefits of AI

Educational Benefits	Frequency	Percentage
Faster access to information	53	33.1%
Improved assignment efficiency	123	76.9%
Better understanding of complex topics	121	75.6%

Increased productivity	118	73.8%
Improved research skills	87	54.4%

The study concluded that AI-based learning tools significantly enhance personalized learning, academic productivity, student engagement, writing assistance, and research support in higher education. The authors also emphasized that students increasingly use AI technologies for academic writing, literature review preparation, idea generation, and understanding complex educational content. At the same time, the study highlighted ethical concerns related to data privacy, algorithmic bias, and excessive dependency on AI-generated information (Younas et al. 2025).

Table 5

Ethical Awareness and Evaluation of AI Content

Ethical Concerns	Frequency	Percentage
Evaluate AI-generated information before use	125	78.1%
Believe AI is mostly accurate with limitations	85	53.1%
Concerned about plagiarism and academic dishonesty	98	61.3%
Concerned about data privacy	76	47.5%
Do not trust AI for academic purposes	42	26.3%

The results indicate that students are aware of ethical concerns associated with AI technologies, particularly plagiarism and data privacy; however, despite these concerns, they continue to use AI applications extensively. This "Awareness-Usage Gap" aligns with recent research by (Lund et al, 2025), who suggest that students engage in "Pragmatic Compliance," where the functional necessity of AI to meet academic demands outweighs ethical hesitation.

DISCUSSION

The findings of this study highlight the growing integration of Artificial Intelligence (AI) into the academic lives of students enrolled in public universities in Karachi. The results demonstrate that AI technologies are increasingly being used for academic support, particularly for writing assistance, research activities, assignment completion, and understanding difficult concepts. However, the findings also reveal important educational and ethical concerns regarding dependency, academic integrity, critical thinking, and students' awareness of AI's long-term implications.

The study found that more than half of the respondents use AI tools on a daily basis, while a large majority perceive AI as beneficial for improving productivity and completing academic tasks efficiently. The findings indicate that AI technologies have become an important educational support system for students. Students particularly valued AI applications such as ChatGPT and Grammarly for providing faster access to information, generating summaries, assisting in assignments, and explaining complex topics. These findings are consistent with Holmes et al. (2019) and Luckin et al. (2016), who argued that AI technologies improve personalized learning, academic accessibility, and student engagement.

The popularity of AI tools among students reflects a broader transition toward digital learning environments. In developing urban contexts such as Karachi, where universities often face overcrowded classrooms, limited faculty interaction, and insufficient academic support systems, AI technologies appear to function as alternative educational support mechanisms. Similar findings were reported by Khan et al. (2022), who observed that students in Pakistani universities increasingly rely on digital technologies to compensate for institutional and infrastructural limitations.

The findings further reveal that students mainly use AI as a “brainstorming partner” rather than a complete replacement for learning. Most respondents reported using AI tools for generating ideas, preparing outlines, simplifying academic material, and improving writing structure. However, a notable proportion of students admitted that AI encourages “paraphrasing without understanding,” which reflects concerns regarding superficial learning and passive academic engagement. This finding supports the arguments of Kasneci et al. (2023), who warned that overdependence on generative AI may weaken critical thinking, creativity, and analytical reasoning skills among students.

One of the most significant findings of this study is that lack of awareness, rather than ethical hesitation, remains a major barrier to effective AI usage among students. Although many respondents reported no difficulties in using AI tools, those who experienced barriers mainly identified limited awareness of available technologies and applications. This reflects an important dimension of the digital divide in Karachi, where inequalities are not limited to internet access alone but also include technological literacy and informational awareness. UNESCO (2021) emphasized that AI literacy has become an essential component of modern education systems, particularly in developing societies where students often acquire digital skills informally without structured guidance.

The findings indicate that most students learn about AI tools through self-learning, peers, online platforms, and social media rather than through formal educational channels. This suggests that students possess operational knowledge of AI technologies but limited understanding regarding their broader educational and ethical implications. Williamson and Eynon (2020) similarly argued that educational institutions globally are struggling to adapt curricula and policies to rapidly evolving AI technologies. Therefore, the issue of AI awareness in Karachi is not merely technological but also educational and structural.

The study also demonstrates that students perceive AI-based tools as highly beneficial for improving academic productivity and efficiency. Most respondents reported using AI applications for writing assistance, literature review preparation, idea generation, summarizing difficult concepts, and research support. Students particularly appreciated AI technologies because they reduced academic workload and saved time during assignments and examinations. These findings align with Chan and Hu (2025), who found that students perceive generative AI as an effective educational tool that improves learning efficiency, understanding, and academic performance.

Despite these educational benefits, the study identified several challenges associated with AI usage. Some respondents expressed concern regarding the reliability and authenticity of AI-generated information. Although students frequently use AI technologies, many still question the accuracy and trustworthiness of automated content. This demonstrates that students recognize the limitations of AI systems but continue using them because of convenience and accessibility.

The findings further reveal that ethical concerns such as plagiarism, academic integrity, dependency, and data privacy significantly shape students' perceptions regarding AI technologies. A majority of respondents expressed concern about plagiarism and misuse of AI-generated content in assignments and academic work. Students acknowledged that AI tools can generate written content quickly and efficiently, increasing the risk of academic dishonesty and reducing originality in academic practices. These findings are consistent with Cotton et al. (2023), who argued that generative AI technologies have created new challenges for academic integrity because students can easily generate assignments and paraphrased content with minimal intellectual effort. Similarly, Dwivedi et al. (2023) explained that AI-generated content challenges traditional concepts of authorship, originality, and independent academic work. Another important issue identified in this study is students' growing dependency on AI technologies. Some respondents feared that excessive use of AI tools could

reduce intellectual independence, creativity, and problem-solving abilities. Selwyn (2019) similarly argued that although AI technologies improve efficiency and accessibility, they may also encourage passive learning behaviors if students rely too heavily on automated systems. The findings therefore suggest that while AI technologies improve educational convenience, excessive dependence may negatively influence deep learning and independent thinking.

Data privacy emerged as another important ethical concern among respondents. Many students demonstrated limited understanding regarding how AI systems collect, process, and store personal information. Floridi et al. (2018) emphasized that lack of transparency in AI systems creates ethical risks related to surveillance, misuse of personal data, and digital insecurity. In developing educational contexts such as Karachi, where awareness regarding digital privacy remains limited, these concerns become even more significant.

An important dimension of this study relates to students' concerns regarding the impact of AI on human interaction and professional values, particularly within disciplines such as Social Work. Nearly half of the respondents expressed concern that excessive dependence on AI could reduce empathy, emotional understanding, and interpersonal communication skills. These findings are highly significant because Social Work as a profession relies heavily on empathy, active listening, counseling, and human relationships. Students feared that overreliance on AI technologies might weaken the human-centered values necessary for rehabilitation, counseling, and community-based interventions. These concerns align with O'Neil (2016), who argued that algorithmic systems often fail to fully understand social realities, emotions, and human complexities.

The findings also indicate that students possess mixed perceptions regarding the impact of AI on future career opportunities, skill development, and changing labor market demands. Although many respondents recognized that AI technologies are becoming increasingly important in modern workplaces, students generally viewed AI as an academic support tool rather than a transformative force capable of reshaping industries and employment structures. This reflects limited awareness regarding the long-term implications of AI-driven automation and technological transformation.

According to the World Economic Forum (2023), AI and automation are expected to significantly transform global labor markets by increasing demand for technological, analytical, and digital skills. Brynjolfsson and McAfee (2017) similarly argued that AI technologies will replace repetitive tasks while simultaneously creating new employment opportunities that require creativity, adaptability, and advanced problem-solving skills.

However, the findings of this study suggest that many students in Karachi have not yet fully connected their academic use of AI with its broader professional and economic implications.

Overall, the findings suggest that AI has become an essential part of students' academic experiences in public universities of Karachi. Students generally perceive AI as a supportive educational technology that improves efficiency, accessibility, and productivity. However, the study also highlights significant concerns regarding academic dependency, ethical responsibility, digital literacy, critical thinking, and future career preparedness. Therefore, universities need to develop institutional policies, ethical guidelines, and AI literacy programs to ensure the responsible and sustainable integration of AI technologies within higher education environments.

AI and Career Opportunities in the Digital Era

This finding reflects a disconnect between students' present academic use of AI and their awareness of future economic transformations. According to the World Economic Forum (2023), AI and automation are expected to significantly transform labor markets by creating demand for new technological and digital competencies.

Brynjolfsson and McAfee (2017) further explain that AI-driven automation will increasingly replace repetitive tasks while creating new opportunities requiring creativity, adaptability, and advanced digital skills. However, many students in developing countries remain insufficiently prepared for these changes because of limited institutional focus on AI education and career readiness.

The findings suggest that universities in Karachi should introduce AI literacy programs, career counseling services, and digital skills training to prepare students for AI-driven workplaces. Without such initiatives, students may continue using AI technologies academically without fully understanding their long-term professional implications.

This study demonstrate that AI has become an integral part of students' academic experiences in public universities of Karachi. Students generally perceive AI as a supportive educational technology that improves productivity, accessibility, and efficiency. However, the study also highlights important concerns related to academic dependency, ethical awareness, data privacy, and future career preparedness. The analysis and discussion reveal that AI integration in higher education is not simply a technological issue but also an educational, ethical, and social challenge. While students benefit from AI applications, there remains a strong need for

institutional policies, ethical guidelines, and digital literacy programs to ensure responsible and sustainable AI usage.

CONCLUSIONS

This study concludes that Artificial Intelligence (AI) has become an increasingly important part of academic life among students of public universities in Karachi. Students widely use AI tools such as ChatGPT and Grammarly for assignments, research, academic writing, and understanding complex topics, reflecting the growing role of digital technologies in higher education. The findings reveal that students generally perceive AI as a supportive educational tool that improves productivity, accessibility, and learning efficiency. However, the study also highlights several educational and ethical challenges associated with AI integration. Concerns regarding plagiarism, dependency on AI-generated content, reduced critical thinking, misinformation, and data privacy remain significant issues among university students. Despite awareness of these ethical concerns, students continue to adopt AI technologies because of their convenience and academic usefulness. The findings further indicate that students possess limited understanding of AI's long-term impact on future careers, labor market transformation, and professional skill requirements. Overall, the study emphasizes that while AI offers substantial opportunities for improving higher education, its integration must be guided through responsible policies, ethical frameworks, and AI literacy programs. Universities should promote balanced and ethical use of AI technologies to ensure that students benefit from innovation without compromising academic integrity, independent learning, and human-centered educational values.

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