Combatting Fake News on Social Media Using AI: A Study Among Public Sector University Students of Sindh Province

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ABSTRACT

In an era dominated by digital communication, the widespread circulation of fake news on social media poses a serious threat to informed decision-making and public trust. This study aims to investigate the role of Artificial Intelligence (AI) in identifying and combating fake news among public sector university students in Sindh Province, Pakistan. quantitative research design using a descriptive cross-sectional survey method to collect data from public sector university students in Sindh' exposure to misinformation, their awareness and use of AI-based fact-checking tools, and the perceived effectiveness of such technologies. A structured survey had been used to conduct the quantitative insights. The findings are expected to highlight key gaps in digital literacy and propose actionable recommendations for integrating AI tools into academic settings to foster critical thinking and responsible media consumption. This study contributes to ongoing efforts to create a digitally literate youth population capable of navigating social media with discernment and responsibility.

Keywords: *Fake News, Artificial Intelligence, Social Media, Fact-Checking, Universities students*

INTRODUCTION

The rise of social media has revolutionized how people access and share information. While these platforms offer real-time updates and global connectivity, they have also become breeding grounds for the rapid spread of fake news and misinformation. This challenge is especially concerning in developing regions like Pakistan, where digital literacy is still evolving, and many users may lack the skills or tools to critically assess the authenticity of online content. (Raman et al., 2024)

Examining how audiences interact with misinformation on social media is essential given the role that social media plays in disseminating false information about contemporary political and social issues. Fake political and social news spreads swiftly on social media.

Fake news sources may deceive consumers because they use names and web addresses that are similar to those of legitimate news organizations. Unintentional misinformation could mislead and confuse people. Social media is where a lot of people obtain their political and social news. (T., 2024).

In the digital age, the widespread use of artificial intelligence (AI) has brought about both amazing advancements and special difficulties, especially with regard to information integrity. The ability of AI technologies to produce convincingly fake texts, images, audio, and videos often referred to as "deepfakes"makes it extremely difficult to discern real content from artificially produced material. This feature greatly increases the reach and impact of disinformation campaigns by enabling wrongdoers to automate and scale them. But in this story, AI is not a bad guy. It is also very important in the fight against false and misleading information. Cutting-edge AI-powered tools (like as GORK, google Fact check explorer, NLP, International Centre for Investigative Reporting (ICIR) and google reverse image search) can analyze context, language usage, and patterns to help with fact-checking, content moderation, and the identification of misleading information.(Tsotniashvili, 2025)

Among the most active social media users are university students, who rely heavily on digital platforms for academic, social, and political engagement. In the public sector universities of Sindh, students are increasingly exposed to misleading or fabricated news, which can influence their beliefs, attitudes, and behaviors. Despite this, there is limited awareness about Artificial Intelligence (AI)-based tools that can help verify and flag fake news.(García-Faroldi et al., 2025)

AI technologies such as machine learning algorithms, natural language processing (NLP), and automated fact-checking systems offer promising solutions to this issue. These tools can scan large volumes of online content, detect patterns associated with misinformation, and assist users in identifying false narratives. However, the effectiveness of these tools depends not only on their technical capacity but also on users' willingness and ability to adopt them.(Atif Ur Rehman et al., 2025)

This study aims to explore the role of AI in combating fake news on social media among students in public sector universities across Sindh. It will assess their level of exposure to misinformation, evaluate their knowledge and use of AI tools, and propose strategies to enhance awareness and digital resilience among youth in Pakistan.(Denniss & Lindberg, 2025)

Problem Statement

The growing prevalence of fake news on social media has raised serious concerns about its influence on youth, particularly university students who are among the most active digital users. (Nabiha Khan,2023).In Sindh's public sector universities, students are frequently exposed to unverified content, yet there is limited awareness or use of AI-based tools designed to detect and prevent the spread of misinformation. Despite the growing availability of such technologies, the gap between technological solutions and user application remains largely unaddressed in the local context. This disconnect poses a risk to academic integrity, critical thinking, and informed decision-making among students.

Objectives

1. To assess the extent of university students' exposure to fake news on social media.

2. To evaluate students' awareness, knowledge, and use of AI-based fact-checking tools.

3. To examine the relationship between students' perceptions of AI effectiveness and their adoption of AI tools for news verification.

4. To propose educational interventions that enhance AI literacy and responsible digital media use among university students**.**

Research Questions

1. What is the level of exposure of university students to fake news on social media platforms?

2. How aware are students of AI-based fact-checking tools, and to what extent do they use them?

3. How do students perceive the effectiveness of AI tools in detecting and combating fake news?

4. What educational strategies can be introduced to promote AI tool adoption and improve digital literacy in higher education?

Scope of the Topic

This study focuses on public sector university students in Sindh Province, Pakistan, and examines:

- Their exposure to fake news on social media

- Their awareness and use of AI tools for detecting misinformation

- The effectiveness and potential of integrating AI into media literacy initiatives The study does not focus on private universities, political misinformation specifically, or technical development of AI tools but rather their usage, perception, and effectiveness from the user perspective.

Theoretical Framework

This study is grounded in the Technology Acceptance Model (TAM) by Davis (1989), which explains how users come to accept and use a technology. The two core beliefs — Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) — directly influence the user's attitude toward using a technology, which in turn affects actual usage. TAM is appropriate in understanding why students may or may not adopt AI tools for fact-checking purposes.
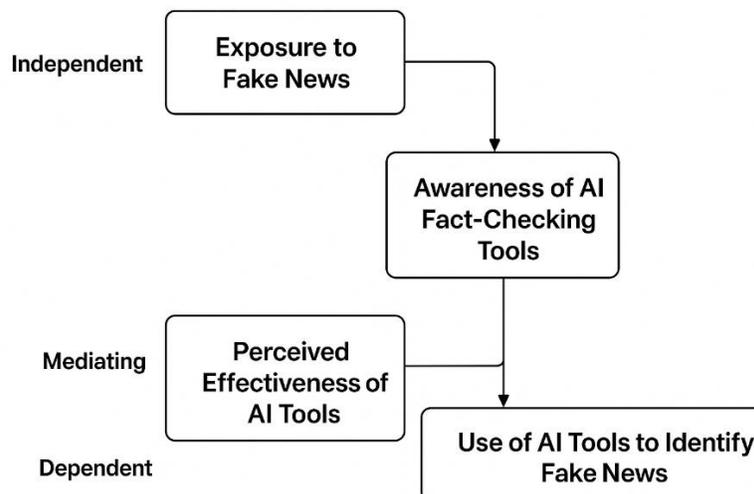
Variables

Type	Variable
Independent	Awareness of AI tools
Independent	Exposure to fake news
Mediating	Perceived effectiveness of AI tools
Dependent	Use of AI tools to identify fake news
Control	Gender, age, university, year of study

LITERATURE REVIEW

The spread of fake news on social media platforms has emerged as a global challenge, influencing public perception, political opinions, and social behaviors (Allcott & Gentzkow, 2017). University students, who are active users of platforms like Facebook, Twitter, and Instagram, are particularly vulnerable to misinformation due to their constant online engagement and reliance on these platforms for information and news (Pennycook & Rand, 2019).

Artificial Intelligence (AI) is increasingly being explored as a tool to combat fake news. AI-based systems can detect misinformation using techniques like natural language processing (NLP), machine learning algorithms, and semantic analysis to analyze patterns and flag suspicious content (Zhou & Zafarani, 2018). Several studies have demonstrated that AI tools, such as automated fact-checkers and content classifiers, can assist users in identifying fake news more effectively than manual verification (Shu et al., 2020).

Despite these advancements, the adoption and awareness of AI tools among young users remain limited, especially in developing regions. In Pakistan, digital literacy among students is growing, but many still lack access to or knowledge about AI-powered resources that can help verify the authenticity of information (Khan & Shah, 2021). Moreover, cultural factors, trust in social media, and lack of media literacy education contribute to the problem (Ali, Hassan, & Ahmad, 2020).

The Technology Acceptance Model (TAM) provides a useful framework to understand how students perceive and adopt new technologies. According to TAM, perceived usefulness and ease of use are key factors influencing the adoption of AI tools (Davis, 1989). Studies applying TAM to digital tools have shown that when users believe a tool is effective and easy to operate, their willingness to use it increases significantly (Venkatesh & Bala, 2008).

There is limited research exploring how public sector university students in Pakistan use AI tools to combat misinformation. This study aims to fill this gap by examining their exposure to fake news, evaluating their awareness of AI tools, and identifying factors that influence adoption and usage in the academic context of Sindh province.

METHODOLOGY

Research Design:

This study adopted a quantitative research design using a descriptive cross-sectional survey method to collect data from public sector university students in Sindh. The purpose is to assess their exposure to fake news, awareness and use of AI tools, and perceptions of AI's effectiveness in combating misinformation.

Population and Sample:

Target Population: Undergraduate and postgraduate students enrolled in public sector universities across Sindh, specifically, University of Sindh Jamshoro, Shaheed Benazir Bhutto University, SBA, Shah Abdul Latif University Khairpur Mir's, Sukkur IBA University, Sukkur and University of Karachi.

Sampling Technique: Stratified random sampling had been used to ensure representation from different universities, disciplines, and academic years.

Sample Size: A total of approximately 300 students had been selected based on Krejcie & Morgan's (1970) sample size formula for finite populations.

Data Collection Tool:

A structured questionnaire had been developed and divided into four sections:

- Demographic information (age, gender, university, academic level)

- Exposure to fake news on social media platforms

- Awareness and use of AI-based fact-checking tools

- Perception of AI's effectiveness in combating fake news

- Responses will be recorded using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree".

Data Collection Procedure:

- The questionnaire had been distributed through Google Forms and email/social media groups with permission from university administrations.

- A pilot test had been conducted on 30 students to refine the instrument and ensure clarity.

Data Analysis:

- Data had been analyzed using SPSS (Statistical Package for the Social Sciences).

- Descriptive statistics (mean, standard deviation, frequency, percentages) had been summarized demographic data and responses.

- Inferential statistics (e.g., Pearson correlation, independent t-tests, ANOVA) to test hypotheses.

- Reliability of the questionnaire had been measured using Cronbach's alpha.

Table 1: Gender Distribution of Respondents

Sno:	Gender	Frequency	Percentage (%)
1	Male	168	56%
2	Female	132	44%
	Total	300	100%

The table shows that 56% of respondents are male, while 44% are female. This indicates a relatively balanced gender representation among university students participating in the survey. The diversity of gender responses ensures that the findings reflect perspectives from both male and female students regarding fake news exposure and AI-based fact-checking tools.

Table 2: Age Distribution of Respondents

Sno:	Age	Frequency	Percentage (%)
1	18-20	96	32%
2	21-23	132	44%
3	24-26	54	18%
4	27+	18	6%
	Total	300	100%

The majority of respondents belong to the 21–23 age group (44%), followed by 18–20 years (32%). This indicates that most participants are undergraduate students, who are typically more active on social media platforms and therefore more likely to encounter fake news.

Table 3: Respondents by University

Sno:	University	Frequency	Percentage (%)
1	University of Sindh Jamshoro	72	24%
2	Shaheed Benazir Bhutto University, SBA	48	16%
3	Shah Abdul Latif University, Khairpur Mir's	54	18%
4	Sukkur IBA University, Sukkur	60	20%

| 5 | University of Karachi | 66 | 22% |
| | Total | 300 | 100% |

Students from five major public universities in Sindh participated in the survey. The University of Sindh Jamshoro (24%) had the highest representation, followed by the University of Karachi (22%) and Sukkur IBA University (20%). This distribution provides a broad representation of students from different academic environments across Sindh.

Table 4: Exposure to Fake News on Social Media

Sno:	Response	Frequency	Percentage (%)
1	Strongly agree	84	28%
2	Agree	96	32%
3	Neutral	60	20%
4	Disagree	42	18%
5	Strongly Disagree	18	6%
	Total	300	100%

The results reveal that 60% of students (Strongly Agree + Agree) frequently encounter fake news on social media platforms. Only 20% remained neutral, while 20% disagreed or strongly disagreed. This indicates that misinformation is a common and widespread issue among university students, highlighting the importance of effective verification tools.

Table 5: Awareness of AI-Based Fact-Checking Tools

Sno:	Response	Frequency	Percentage (%)
1	Strongly agree	78	26%
2	Agree	102	34%
3	Neutral	66	22%
4	Disagree	36	12%
5	Strongly Disagree	18	6%
	Total	300	100%

The findings show that 60% of respondents are aware of AI-based fact-checking tools, suggesting a growing familiarity with technological solutions for combating misinformation. However, 22% of respondents remained neutral, which indicates that a considerable portion of students still lack clear knowledge about AI verification technologies

Table 6: Perceived Effectiveness of AI in Combating Fake News

Sno:	Response	Frequency	Percentage (%)
1	Strongly agree	90	30%
2	Agree	105	35%
3	Neutral	57	19%
4	Disagree	33	11%
5	Strongly Disagree	15	5%
	Total	300	100%

The majority of students (65%) believe that artificial intelligence can effectively combat fake news. Only 16% expressed disagreement, suggesting that students generally trust technological solutions for identifying misinformation. This indicates strong potential for integrating AI-driven fact-checking systems within digital media environments.

Table 7: Mean and Standard Deviation of Key Variables

Sno:	Variable	Mean	Standard Deviation
1	Exposure to Fake News	3.62	0.94
2	Awareness of AI Tools	3.68	0.88
3	Perceived Effectiveness of AI	3.74	0.91

The mean scores above 3.5 indicate that students generally agree with the statements regarding fake news exposure and AI effectiveness. The relatively low standard deviation values demonstrate moderate consistency in responses, suggesting similar perceptions among respondents.

Table 8: Pearson Correlation Among Key Variables

Variable	FakeNews Exposure	AI Awareness	AI Effectiveness
Exposure to Fake News	1.00	0.42	0.36
Awareness of AI Tools	0.42	1.00	0.55
Perceived Effectiveness of AI	0.36	0.55	1.00

The correlation analysis reveals a moderate positive relationship between AI awareness and perceived effectiveness (r = 0.55). This suggests that students who have greater knowledge of AI technologies are more likely to believe that AI can effectively combat fake news. Additionally, exposure to fake news also

shows a positive relationship with AI awareness, indicating that students encountering misinformation may seek technological solutions for verification

DISCUSSION

The purpose of this study was to examine university students' exposure to fake news on social media, their awareness of artificial intelligence (AI)–based fact-checking tools, and their perceptions regarding the effectiveness of AI in combating misinformation. The findings reveal several important patterns that highlight the increasing role of digital technologies in addressing misinformation within the academic community. The demographic analysis shows that the majority of respondents were between 21 and 23 years of age, representing active undergraduate students who are frequent users of social media platforms. This age group is highly engaged with digital media, which increases both their exposure to online information and the likelihood of encountering misinformation. The relatively balanced gender representation in the sample further indicates that perceptions of fake news and AI technologies are shared across the broader student population rather than being limited to a specific gender group. The results also demonstrate that a large proportion of students are frequently exposed to fake news on social media platforms, with more than half of the respondents reporting that they encounter misinformation regularly. This finding reflects the growing concern surrounding misinformation in the digital media environment, where information spreads rapidly through platforms such as Facebook, Twitter, Instagram, and WhatsApp, emphasizing the need for effective mechanisms to verify and authenticate digital content. Another significant finding is the increasing awareness of AI-based fact-checking tools among university students, as a majority of respondents indicated that they are familiar with technological tools that help detect or verify misinformation, suggesting that students are gradually becoming more digitally literate and aware of technological solutions for identifying unreliable information sources; however, the presence of neutral responses indicates that a considerable number of students still lack comprehensive knowledge about AI-based verification technologies. Furthermore, the findings reveal a generally positive perception of AI's effectiveness in combating fake news, with most respondents agreeing that artificial intelligence has the potential to detect misleading information, verify digital content, and assist fact-checkers in identifying false claims. The correlation analysis also demonstrates a moderate positive relationship between awareness of AI tools and perceived effectiveness, indicating that individuals who are more knowledgeable about AI technologies are more likely to trust their capabilities in addressing misinformation. Overall, the results highlight that although fake news remains a prevalent issue among university students, there is growing recognition of the role that AI technologies can play in mitigating the spread of misinformation, aligning with previous research that emphasizes the importance of integrating technological solutions, digital literacy, and fact-checking mechanisms to improve the reliability of information in the digital age.

CONCLUSION

This study examined the exposure of university students to fake news on social media and assessed their awareness and perceptions regarding the use of artificial intelligence in combating misinformation. The findings reveal that fake news is a common phenomenon encountered by students across public sector universities in Sindh. A significant number of respondents reported frequent exposure to misleading or false information on social media platforms.

Despite the prevalence of misinformation, the study also found encouraging evidence regarding students' awareness of AI-based fact-checking tools. Many students demonstrated familiarity with technological solutions designed to verify information and identify false claims. Furthermore, the majority of respondents expressed confidence in the ability of artificial intelligence to assist in detecting and combating fake news.

The statistical analysis indicates that awareness of AI technologies is positively associated with perceptions of their effectiveness. This suggests that increasing knowledge and exposure to AI-based verification tools may strengthen public trust in technological approaches to misinformation detection.

In conclusion, artificial intelligence has the potential to play a crucial role in addressing the challenges posed by fake news in the digital information environment. However, technological solutions alone are not sufficient. Enhancing digital literacy, promoting critical thinking, and strengthening media education among university students remain essential components in the broader effort to combat misinformation

REFERENCES

Ali, Z., Hassan, M., & Ahmad, N. (2020). Media literacy and fake news: Challenges in digital environments. *Journal of Communication and Media*, 15(1), 45–58.

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives*, 31(2), 211–236.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.

Khan, S., & Shah, A. (2021). Exploring digital literacy among university students in Pakistan. *Asian Journal of Education and e-Learning*, 9(3), 12–20.

Pennycook, G., & Rand, D. G. (2019). Fighting misinformation on social media using crowdsourced judgments of news source quality. *PNAS*, 116(7), 2521–2526.

Shu, K., Sliva, A., Wang, S., Tang, J., & Liu, H. (2020). Fake news detection on social media: A data mining perspective. *ACM SIGKDD Explorations Newsletter*, 19(1), 22–36.

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, 39(2), 273–315.

Zhou, X., & Zafarani, R. (2018). Fake news detection: A survey. *arXiv preprint arXiv:1812.00315*.

Atif Ur Rehman, Shabeer Ullah, Anwar Khan, Dr. M., & IhsanUllah. (2025). Navigating fake news: Pakistan's struggle to combat disinformation and bridging gaps for national security. *Social Sciences Spectrum*, *4*(3), 156–178. https://doi.org/10.71085/sss.04.03.327

Denniss, E., & Lindberg, R. (2025). Social media and the spread of misinformation: Infectious and a threat to public health. *Health Promotion International*, *40*(2), daaf023. https://doi.org/10.1093/heapro/daaf023

García-Faroldi, L., Teruel, L., & Blanco, S. (2025). Unmasking AI's Role in the Age of Disinformation: Friend or Foe? *Journalism and Media*, *6*(1), 19. https://doi.org/10.3390/journalmedia6010019

Raman, R., Kumar Nair, V., Nedungadi, P., Kumar Sahu, A., Kowalski, R., Ramanathan, S., & Achuthan, K. (2024). Fake news research trends, linkages to generative artificial intelligence and sustainable development goals. *Heliyon*, *10*(3), e24727. https://doi.org/10.1016/j.heliyon.2024.e24727

T., S. S. (2024). SOCIAL MEDIA AND THE INFLUENCE OF FAKE NEWS DETECTION BASED ON ARTIFICIAL INTELLIGENCE. *ShodhKosh: Journal of Visual and Performing Arts*, *5*(7). https://doi.org/10.29121/shodhkosh.v5.i7.2024.1955

Tsotniashvili, Z. (2025). Leveraging Artificial Intelligence to Combat Fake News. *Studies in Media and Communication*, *13*(4), 233. https://doi.org/10.11114/smc.v13i4.7897

Nabiha Khan, Zafar Ali, Asim Ali, and Mehdi Hassan. (2023). Exploring Strategies Used by University Students of Karachi to Combat Online Misinformation and Fake News. *SBBU Journal of Social Sciences,*1 (June 2023) pp. 035-046.