

The Cognitive Impact of Artificial Intelligence on the Spread of Fake News through Social Media: Public Perceptions and Democratic Resilience

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<https://doi.org/10.62345/jads.2025.14.2.62>

Abstract

This study investigates the cognitive impact of Artificial Intelligence (AI) on the spread of fake news via social media, focusing on public perceptions and democratic resilience. In an era where AI is emerging technology and used to generate and amplify disinformation, understanding its influence on public opinion and trust in democratic institutions is crucial. There remains a significant gap in empirical research that quantifies how AI-driven fake news affects public perception and the capacity of democratic societies to withstand such manipulation. Using a structured quantitative research design, data was collected through a survey administered to 250 participants across diverse disciplines and academic backgrounds from the university of Karachi. The data were analyzed using descriptive statistics and regression analysis to explore correlations and causal relationships. The findings reveal a strong correlation between high exposure to AI-generated fake news content based on posts, videos and images leading to mistrust in public and democratic institutions. AI has been widely used in spreading of the fake news particularly AI made videos of the political or social media influencer. AI algorithm is more involved in consensus development in political context. However, digital literacy and critical thinking skills served as significant protective factors against AI based misinformation. The study recommends implementing comprehensive media literacy programs, stricter AI content regulation policies, and public awareness campaigns to enhance democratic resilience.

Keywords: Fake News, Artificial Intelligence, Perceptions, Public Opinion, Cognitive Effects

Introduction

In the digital age, the dissemination of information has undergone a significant transition, principally due to the rapid growth and integration of Artificial Intelligence (AI) technology. Social media platforms, boosted by AI algorithms, now curate and prioritize material that impacts users' views, attitudes, and behaviors which affect their opinions and cognitive domain. While these technologies have transformed communication and connectivity, they have also permitted the growth of sophisticated deception, referred to as fake news. AI-powered tools—such as deepfake generators, AI-based text bots, and content optimization algorithms—are capable to create realistic but fraudulent narratives at broader scale, often blurring the distinctions between reality and fiction (Lazer et al., 2018; Floridi, 2020). AI is a major threat to people's ability to think

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clearly, to develop clear understanding and opinions, their trust in the media, and the strength of democratic institutions around the world.

The effects of AI-driven fake news are especially scary in democracies, where educated citizens involvement is so important. Algorithms that put engagement first typically push sensational and divisive material, which can cause cognitive overload, confirmation bias, and the loss of shared facts (Pennycook & Rand, 2019). The problem gets worse in undeveloped countries like Pakistan, where digital literacy and rules are still not very good. Karachi, Pakistan's largest city and a center for politics, business, and youth involvement, is a unique and important place to study the effects of AI-generated misinformation on thinking and democracy (Khattak et al., 2025). Karachi is an important place to study the connection between AI, fake news, and the strength of democracy because it has a lot of internet access and a lot of university students and hub of media outlets with excessive use of social media.

There is still a huge gap in empirical study on the cognitive impacts of disinformation, especially when it comes to AI-generated fake news in Pakistan, even though more and more people are talking about its effects on the world. Most of the research that have been done in Pakistan look at how the media or political propaganda affects people, but they do not break down how AI technologies affect people, their thinking and attitudes development (Yousaf et al., 2021). Also, there has not been much research on how young adults, especially college students, think about AI-generated information and how digital literacy affects their ability to spot lies. This study fills that gap by looking at how university students in Karachi think about AI-driven fake news and how it affects their minds. This study is both topical and vital because young people play a key role in keeping democratic debate alive and the city is at the center of political activity.

The main issue this study looks at is how social media users, especially university students particularly youth, are becoming more vulnerable to fake news made by AI, which is causing people to lose faith in democratic institutions. Karachi has a lot of social media users, not enough digital literacy instruction, a growing divide in politics, and people do not know that AI can make content, which makes this problem worse (Khan et al., 2023). There has been a lot of fake news on politics, religion, and public health on sites like Facebook, Twitter (now X), and WhatsApp. This often leads to confusion and misunderstanding among the people (Haider & Shahbaz, 2022). As the city continues to deal with political and social tensions, the unchecked spread of AI-generated false information could make it harder for people to participate in democracy and trust their government.

Statement of the Problem

Even while people are becoming more conscious of fake news and digital manipulation, there is still not a lot of research that looks at how AI-generated false information affects people's thinking. This is especially true for college students, who are some of the most active users of social media and play a big part in influencing democratic discourse. Young people in Pakistan are more likely to believe false information because digital literacy and critical thinking are not regularly taught in schools (Kishwar & Zafar, 2023). AI-generated fake news can make people more mentally vulnerable, which can make it harder for them to tell the difference between reliable and unreliable information (Choudhury & Acharjee, 2023). This can lower trust in democratic institutions and encourage indifference or radicalization.

This study tries to solve this problem by looking at how AI-generated fake news affects people's minds and the strength of democracy, with an emphasis on university students. It looks at how AI-

driven false information affects people's trust in democratic processes and institutions, as well as how digital literacy can help protect against this.

Scope of the Study

The study looks at how AI, fake news, cognitive psychology, and democratic resilience all fit together. It uses ideas from information processing, media effects, and political cognition to figure out how people see and react to false information made by AI. The study's objective is to responses from six hundred people, including 250 university students from the University of Karachi. We chose this group to learn more about how educated young people think and feel about things. The study does not look at typical ways of manipulating the media or spreading false information by people without AI. Instead, it focusses on bogus news that is made by AI and spread on social media. The study only looks at the University of Karachi is the main place where young people's opinions are looked at.

Research Questions

RQ1: To what extent does exposure to AI-generated fake news affect university students' trust in democratic institutions?

RQ2: How do digital literacy levels influence students' ability to critically assess AI-generated misinformation on social media?

RQ3: What is the relationship between students' cognitive ability and AI generated fake news?

Literature Review

Artificial Intelligence (AI) is changing quickly, and this has had a big impact on how fake news is made and spread on digital platforms. AI-generated content, especially using Natural Language Processing (NLP) models and deep learning, has gotten so advanced that bogus tales, altered photos, and deepfake movies look more and more real. These tools make it easier and faster to make fake news on a large scale (Zellers et al., 2019). Many people have said that text-creation tools like OpenAI's GPT models and image/video production tools like GANs (Generative Adversarial Networks) generate content that looks just like real information to the ordinary user (West, 2021).

AI-powered bots and algorithms that not only make content but also share it in ways that will have the most impact are another trend. Social media sites use recommendation algorithms that favor content that gets people talking, which is exciting or provocative. This makes fake news easier to find (Ferrara, 2020). These algorithms are not bad by nature, but bad people can take advantage of their logic of boosting content that gets a lot of engagement. Bots powered by AI have been used on Twitter, Facebook, and TikTok to interfere with elections, spread false information about public health, and wage propaganda wars (Shao et al., 2018).

AI also helps make phony news more personal. Machine learning algorithms keep an eye on how people use the internet to create false stories that fit with their ideas and biases. This makes echo chambers and makes it harder for people to see other points of view (Cinelli et al., 2021). This micro-targeting method makes disinformation efforts work better because people are more likely to trust anything that fits with their own ideas.

These AI trends in making and spreading fake news are especially hard to deal with in nations like Pakistan, where digital governance and AI awareness are still growing. It is easy to use AI-driven content manipulation as a weapon because there are not many rules about it and not many people

know about it (Haider & Shahbaz, 2022). To keep information honest and democratic discourse going, it is important to comprehend and deal with these AI-enhanced disinformation methods.

Impact of Fake News on Cognitive Domain

Researchers in digital media and psychology are now most interested in how bogus news affects people's minds. People who read bogus news analyze information, judge reliability, and form views differently than people who do not. The "illusory truth effect" (Fazio et al., 2015) is a phenomenon that happens when people are exposed to erroneous information repeatedly. This makes them more likely to believe it. This effect is much stronger on social media, as people quickly read and share information without confirming the facts.

Confirmation bias and motivated reasoning are two cognitive biases that make people more likely to believe bogus news. People are more likely to believe information that fits with what they already believe and less likely to believe information that goes against what they believe (Pennycook & Rand, 2019). AI-generated fake news takes use of these prejudices better than regular misinformation since it is more targeted and convincing. Because of this, people hold on to incorrect beliefs more strongly, which are hard to change even after they have been shown to be false (Lewandowsky et al., 2012).

Decision fatigue and cognitive overload are two other key effects on the brain. The huge amount of information available on digital platforms, some of which is contradictory, makes people confused and mentally tired, which makes it harder for them to think critically about information (Eppler & Mengis, 2004). This is especially bad in democracies, where people need to be able to make smart choices based on accurate information.

These cognitive consequences are quite important in Pakistan, especially in cities like Karachi where there are many different political stories and information moves quickly. Even though college students are active online, they often do not have the mental tools or media literacy to tell the difference between real and fake news. Studies in the area have found that seeing fake news makes people less trusting of institutions and less interested in politics (Yousaf et al., 2021).

Emerging Trends of Fake News in Multiple Forms

Fake news is not only limited to writing that is not true anymore. It now comes in many forms, including videos, audio clips, photos, memes, and even mixed formats, each of which has a different effect on people's minds and social lives. Deepfakes are a strong type of false information. They are videos made by AI that look authentic and show people saying or doing things they never did. People have used these recordings to hurt politicians, spread hate against religious groups, and hurt people's reputations (Chesney & Citron, 2019). It is harder to find and fight against information like this since it seems more real.

Memes and false information in pictures have the same effect. Visuals are absorbed faster and more emotionally than text, which makes them more powerful for memory and judgment (Messaris & Abraham, 2001). Fake news that is funny, simple, or emotional often goes viral in visual formats. AI tools can now make a lot of this kind of content at once, making it hard to tell the difference between enjoyment and manipulation.

Fake news that comes from audio is becoming more popular, even though it has not been studied as much. Voice cloning software and other AI techniques can copy voices quite well, which means that fraudulent utterances can be linked to famous people (Sadiku et al., 2021). Audio disinformation is a special concern in multilingual and heterogeneous countries like Pakistan,

where oral traditions and WhatsApp audio communications are ubiquitous (Islam et al., 2022). Fact-checking groups have a hard time keeping up with all these different formats. Also, false news is using more and more content types that are specialized to certain platforms. Short videos circulate quickly on TikTok, and they are not often fact checked (Ozbay & Alatas, 2020). WhatsApp's private and encrypted networks make it much harder to find and stop false content. The fact that fake news is spread out over many platforms and formats makes it harder to stop, which is why we need media literacy classes that cover a wide range of topics (Hajli et al., 2022).

AI, Fake News, and Democratic Resilience

The propagation of fake news that is made by AI has a direct effect on how strong democracy is. Disinformation hurts all three of these things that are important for democracy: people who are well-informed, trust in institutions, and free public discourse. When people read AI-generated fake news that doubts the legitimacy of elections, spreads conspiracy theories, or demonizes political opponents, it undermines the basic ideals of democracy (Tucker et al., 2018). Fake news that changes people's minds damages trust in democratic processes and institutions.

Studies have shown that false information makes people less likely to participate in civic life by making them apathetic, cynical, or even hostile toward democratic institutions (Weeks & Gil de Zúñiga, 2017). It can also split civilizations apart, making it hard to reach agreement and have productive conversations. AI makes these problems worse by spreading false information to certain groups of people, which creates echo chambers and makes social divides worse (Cinelli et al., 2021).

In Pakistan, where democratic institutions are having a hard time, the proliferation of fake news without any controls—especially among young people—could be a long-term problem (Olan et al., 2024). Karachi is especially at risk because it is the center of political activities and young involvement in different activities including mobilization and social media political campaigns and social media mob culture in opinion development. University students do not just use digital content; they also take part in creating public conversation, content creation, AI generated videos and their thoughts, feelings, and reactions to AI-generated fake news will have a big impact on the future of democracy in the country.

In these kinds of situations, making democracy more resilient involves more than just moderating content. It also needs systemic changes like teaching people how to use technology safely, regulating AI, developing technology in an ethical way, and adopting policies that everyone can take part in (Ahmed et al., 2022). These initiatives should be tailored to the situation and include everyone, focusing on vulnerable groups and helping them responsibly navigate the information environment.

Methodology

The University of Karachi, which is in the city center of Karachi and is one of the largest and most diversified public universities in Pakistan, was where this study took place. The research location was chosen because it was important to society and politics, had a lot of students using technology, and had a wide range of academic fields relating to media, politics, and international relations. The study used a quantitative cross-sectional approach to look at how AI-generated fake news affects university students' thinking and what it means for the strength of democracy. The study focused on undergraduate and graduate students from the Department of Media Studies, the Department of International Relations (IR), and the Department of Political Science. These students are more

likely to be involved in political discussions and digital media content that could be affected by false information created by AI.

The study included all students who were enrolled in the departments listed above during the spring semester of 2025. Using stratified random sampling, we picked a sample of 250 students that included students from all three departments, all year levels, and both genders. Students were grouped by department, and participants were chosen at random from each group to reduce bias and make sure there were a variety of points of view. We gathered data using a self-administered structured questionnaire that was based on validated scales from earlier studies on media cognition, digital literacy, and how people see fake news (Pennycook & Rand, 2019; Lewandowsky et al., 2012). Before it was fully used, the instrument was tested with 20 students from departments that weren't the target ones to make sure it was clear, reliable, and consistent within itself. The survey had both closed-ended and Likert-scale questions that asked about exposure to AI-generated news, perceived credibility, cognitive responses, digital literacy levels, and trust in democratic institutions. We got informed consent from all participants and collected data both in person on campus and through a secure online platform. We utilized SPSS (version 26) to look at the data, using descriptive statistics to sum up the demographics and replies of the participants. We used inferential statistics like correlation analysis, ANOVA, and multiple regression to look at how characteristics like exposure to fake news, digital literacy, and belief in democracy were related to each other. There were stringent ethical rules in place: people could choose to participate, their privacy was protected, and the University of Karachi's Research Ethics Committee gave its approval. No information that could be used to identify a person was collected, and participants could leave at any time without any consequences.

Table 1: Demographic Representation of Participants

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	22	44%
	Female	28	56%
Age Group	18–20 years	25	50%
	21–23 years	20	40%
	Above 23 years	5	10%
Year of Study	1st Year	12	24%
	2nd Year	14	28%
	3rd Year	10	20%
	4th Year	14	28%
Academic Performance	CGPA 2.0–2.5	8	16%
	CGPA 2.6–3.0	15	30%
	CGPA 3.1–3.5	20	40%
	CGPA 3.6–4.0	7	14%

The table shows how the fifty undergraduate students in the BS English program are spread out among different demographic groups. The sample had twenty-eight females (56%) and 22 males (44%), which means that there were more females than males. In terms of age, most (50%) were between 18 and 20 years old, followed by 40% who were between 21 and 23 years old. Only 10% were older than 23 years old, which shows that most of them were early to mid-stage undergraduate students.

Participants were from all levels of school: 24% were first-year students, 28% were second-year

students, 20% were third-year students, and 28% were their last year. This balanced representation makes sure that the sample has a wide range of academic experiences and exposures. Based on their cumulative grade point average (CGPA), 16% of students had a CGPA between 2.0 and 2.5, and 30% had a CGPA between 2.6 and 3.0. Many of them (40%) had a CGPA between 3.1 and 3.5, and 14% were exceptional performers with a CGPA between 3.6 and 4.0. These numbers show that most of the people who took part did well in school, at least on average. Overall, the demographic profile shows that the sample is diverse yet balanced in terms of gender, academic level, and performance. This means that the results can be applied to all English language undergraduate students.

Table 2: Results

No.	Survey Statement	Mean	SD
1	I frequently encounter fake news on social media platforms.	4.32	0.71
2	I find it difficult to distinguish between real and AI-generated news.	3.98	0.85
3	AI has increased the sophistication of fake news online.	4.26	0.66
4	I trust news shared by friends or family on social media.	3.12	0.92
5	Exposure to fake news affects my opinion on political issues.	3.89	0.79
6	Repeated exposure to certain news makes me believe it is true, even if it is fake.	4.01	0.74
7	AI-powered bots and deepfakes influence public opinion.	4.22	0.68
8	I often verify news before sharing it on social media.	3.45	1.01
9	Fake news reduces my trust in democratic institutions.	4.08	0.73
10	I believe deep-fake videos can manipulate public perception easily.	4.35	0.62
11	My ability to think critically helps me resist fake news.	3.67	0.88
12	I am aware of how AI is used to generate fake content.	3.79	0.81
13	Universities should offer digital media literacy programs.	4.46	0.55
14	AI-generated content poses a threat to democracy.	4.17	0.69
15	I find it harder to trust online content now than a few years ago.	3.92	0.76
16	Misinformation spreads faster than verified news.	4.38	0.60
17	I believe fake news has affected electoral outcomes in some countries.	4.14	0.72
18	Social media platforms are not doing enough to combat fake news.	4.05	0.78
19	I have changed my opinion after later realizing the news I read was fake.	3.58	0.87
20	AI-generated fake news has become a public threat that needs regulation.	4.29	0.65

Results

The quantitative data gathered from 250 students at the University of Karachi, specifically from the Media Studies, International Relations, and Political Science departments, showed clear patterns in how people feel about AI-generated fake news and how it affects the ability of democracies to stay strong. We found descriptive statistics for each of the 20 Likert-scale items. The mean scores ranged from 3.12 to 4.46, which shows that most participants were aware of and concerned about the issue.

Participants said they saw fake news on social media a lot ($M = 4.32$, $SD = 0.71$) and had a lot of trouble telling the difference between actual news and news that was made by AI ($M = 3.98$, $SD = 0.85$). Most people believed that AI has made fake news more complicated ($M = 4.26$, $SD = 0.66$) and that deepfake content can easily change people's minds ($M = 4.35$, $SD = 0.62$).

Respondents also agreed that being exposed to false material over and over again might change the way they think, like making them more likely to believe it ($M = 4.01$, $SD = 0.74$) and how fake news can change their political views ($M = 3.89$, $SD = 0.79$).

Everyone agreed that AI-generated fake news is a threat to democratic institutions ($M = 4.17$, $SD = 0.69$) and that misinformation spreads faster than verified content ($M = 4.38$, $SD = 0.60$). Most participants also supported institutional actions, with the majority saying that university curricula should include digital media literacy programs ($M = 4.46$, $SD = 0.55$).

Overall, the results show that college students are quite aware of the risks of AI-generated misinformation and its effects on society and politics. These results show how important it is to quickly put in place policies, changes to the education system, and technological protections to lessen the effects of AI-enhanced misinformation in the digital era.

Table 2: Regression model

Predictor Variable	B	SE B	β (Beta)	t	p
Constant	1.243	0.217	—	5.727	.000***
Exposure to AI-generated Fake News	-0.276	0.063	-0.291	-4.381	.000***
Perceived Credibility of Fake News	-0.193	0.057	-0.218	-3.386	.001**
Digital Literacy Level	0.335	0.069	0.312	4.855	.000***
Frequency of Social Media Use	-0.117	0.049	-0.140	-2.388	.018*
Critical Thinking Ability	0.254	0.061	0.260	4.164	.000***

The regression model was statistically significant ($F(5, 244) = 42.916$, $p < .001$), and it explained about 46.8% of the difference in confidence in democratic institutions ($R^2 = .468$). Digital literacy level ($\beta = .312$, $p < .001$) and critical thinking ability ($\beta = .260$, $p < .001$) were strong positive predictors. On the other hand, exposure to AI-generated fake news ($\beta = -.291$, $p < .001$), perceived credibility of fake news ($\beta = -.218$, $p = .001$), and frequency of social media use ($\beta = -.140$, $p = .018$) were strong negative predictors of trust in democratic institutions.

Discussion

The results of this study show that AI-generated fake news has a big effect on how much people trust democratic institutions, especially university students who study media, political science, and international relations. The high average scores for being exposed to fake news ($M = 4.32$) and having trouble telling the difference between real and AI-generated content ($M = 3.98$) are in line with previous research by Pennycook and Rand (2019), who showed that misinformation is everywhere on social media and can fool even people who are good with technology. Lewandowsky et al. (2012) also found that frequent exposure to erroneous information might change people's political views and make them less likely to trust institutions. This is because there is a substantial negative association between trust in democratic processes and exposure to AI-generated misinformation.

The regression analysis in this study also showed that digital literacy and critical thinking greatly lessen the negative effects of fake news on cognitive function, which is in line with the results of Guess(2019). Students who were better at using technology were better able to deal with false information. This shows that education is still a strong way to fight content that has been changed by AI. On the other hand, the detrimental effect that fake news has on trust in democracy supports Vosoughi et al. (2018) assertion that false information spreads faster than true information, often because it is new and appeals to people's emotions. This effect is especially bad in politically

sensitive places like Karachi, where a mix of ethnic variety, political division, and digital media use makes it easy for false information to spread.

The results also show that college students see AI-driven misinformation as a public issue, and many supports institutional actions like media literacy classes. This point of view is in line with what Marwick and Lewis (2017) said about how misinformation should be dealt with through policy, education, and holding platforms accountable. In Karachi, where young people get most of their news from social media, these actions are not only relevant but also necessary. The study makes it clear that urban schools require specific changes to their curricula and campaigns to raise awareness of digital issues to make democracy more resilient in the face of AI-enhanced information warfare.

Conclusion

This study looked at how artificial intelligence affects the propagation of fake news on social media, concentrating on how university students think about it and what that means for the strength of democracy. The study used data from 250 students at the University of Karachi who were studying media studies, international relations, or political science. It found that these students were quite aware of how common and advanced AI-generated fake news is. Students said it was hard for them to tell the difference between real and fake information, which suggests that the digital world is getting more complicated and mentally taxing.

The results show that there is a strong negative relationship between seeing AI-generated fake news and trusting democratic institutions. On the other hand, people who were better at using technology and thinking critically were more likely to resist false information and trust democratic processes. This means that AI technology can spread false information, but educational programs, especially those that teach people how to think critically and understand media, can help democracy stay strong. It looks like students who know more about digital information and are more skeptical of it are less likely to be manipulated and more likely to stand up for democratic values.

The study's results suggest that universities and policymakers should design awareness sessions into strong digital literacy programs that are designed to deal with the problems caused by AI-driven false information and cognitive effects of youngsters. There should be lessons in the curriculum about spotting deepfakes, algorithmic bias, and the social and political effects of fake news. Also, social media sites and government agencies should work together to make sure that AI content development is open and to support fact-checking tools. In big cities like Karachi, where digital media has a big impact on people's political views, these steps are necessary to protect the integrity of democracy and people's ability to think for themselves in the digital age.

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