Analysis of Diffusion of Misinformation on Twitter: Effects of Fake News among Youth of Pakistan

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ABSTRACT

Aim of the Study: This research study investigates the profound effect of fake news on Twitter among the youth of Pakistan, specifically focusing on the psychological effects, diffusion mechanisms, and the role of Artificial Intelligence (AI) in misinformation dissemination.

Methodology: Through rigorous data collection and analysis, including the utilization of SPSS for correlation and linear regression tests, this study delves into the intricate relationships between fake news, psychological impact, prevalence of misinformation, and AI usage on Twitter. Data is collected from 200 respondents using purposive and convenient sampling techniques from district Narowal.

Findings: The research findings validate and accept all hypotheses proposed, demonstrating significant positive correlations between fake news on twitter and psychological effects, as well as misinformation prevalence. Linear regression models reveal that fake news on Twitter significantly contributes to psychological effect and misinformation prevalence among youth.

Conclusion: The study underscores the complex interplay between twitter, misinformation, and psychological responses, shedding light on the urgent need for targeted interventions to promote media literacy, critical thinking, and responsible information consumption.

Keyword: Fake News, Misinformation, Psychological Effects, Youth, Twitter, Artificial Intelligence.

Introduction

Mass media, considered a fourth pillar of society, performs its responsibilities by offering a wealth of information, pleasure, and education to the public. It is generally accepted as a crucial and effective means of affecting society and serves as a vital route of communication (Ahmed, 2010). Undoubtedly, various forms of mass media, such as radio, newspapers, magazines, and television, hold significant and powerful effects that catch people's attention. Nowadays, individuals largely utilize new media, watch television, and read newspapers to stay aware of global events (Ahmed, 2010).

Both social media and standard media are utilized by people in different ways. While normal media sources help people to receive information, they lack the direct means of connection with these sources. For example, when someone sees a television news show, they can listen to the newscasters' reports, but they are unable to provide instant comments or directly connect with politicians. The lack of possible feedback through standard media limits lawmakers' ability to interact with their voters (Livingstone, S. 2017).

In comparison, social media users can connect with like-minded individuals, swap information, and share ideas. Social media gives individuals the power to communicate information, encouraging creativity and allowing even "ordinary citizens" to join in political conversations on a bigger scale beyond face-to-face exchanges (Dhiman, B. 2023).

Websites that connect people online allow users to talk, share information, and post different types of content like blogs, short posts, joint websites, and tools for sharing pictures and videos (Abdu, 2017). Digital media is important for political dialogue (Hameed,A 2019). Social media sites like Facebook and Twitter are especially popular among young people, helping them stay updated about politics and giving them new ways to get active (Arun and Srinagesh 2020a; Dashtipour et al. 2016; Lo et al. 2017). The rise of new media platforms has greatly changed the way people receive and watch news. Traditional media viewers have experienced a global decline, while digital media platforms have gained broad usage. Notably, the past decade has witnessed a remarkable rise in the acceptance of texting apps and online media for news reading. This trend can be traced, in part, to the widespread use and success of smartphones (Mostafa 2021).

Background of the Study

Fake news, which refers to false or incorrect information presented as real news, is made and spread through various digital platforms, such as social media. This phenomenon has gotten great interest in recent years due to its possible effect on public image and opinion formation. The dissemination of fake news has become a major worry, with governments and experts recognizing its impact on public opinion. For instance, during tragedy fallout in Palu City, Indonesia in September 2018, fake news spread on social media platforms. The fast growth of social media platforms, especially Twitter, has changed the way people interact and receive information. While these platforms have given numerous benefits, they have also become a growing ground for the spread of misinformation and fake news. This phenomenon has drawn significant interest from researchers, lawmakers, and the general public due to its ability to influence public opinion, shape political debate, and even impact election results. In Pakistan, a country with a young and growing tech-savvy population, the effects of misinformation on Twitter are especially worrisome. The youth of Pakistan, who represent a large part of the country's population, are increasingly looking to social media sites like Twitter for news and information. According to a report performed by the Pakistan Telecommunication Authority (PTA) in 2021, approximately 76% of internet users in Pakistan are aged between 15 and 34 years, making them a vital group for knowing the impact of misinformation on social media (Wang et al. 2015, 2020).

Fake news, especially when spread through social media platforms, can have a significant effect on youth. Studies have shown that youth are particularly vulnerable to the impact of fake news on social media. The steady exposure to fake news on social media can change their views and opinions, leading to possible mistakes or misinformation. Social media subjects them to a higher risk of meeting and spreading misinformation, as these platforms often lack the strict fact-checking processes applied by traditional news sources (Lazer et al., 2018).

Fake News

Fake news is defined as "false information mimicking news media content in form but not in intent" and as "the dissemination of false information intending to cause harm" (Wardle &Derakhshan, 2017). It's characterized by misleading headlines and a lack of retractions or corrections.Fake news, a deliberate

misinformation type, significantly impacts public opinion and faith in journalism (Van Dijck, J. 2013). Twitter is a significant channel for fake news, with false news spreading faster than real news, especially political news. Fake news is defined as "false information mimicking news media content in form but not in intent"

Social Media and Youth: A Dynamic Relationship

The rise of social media platforms has changed the way people connect, engage, and receive information. For the youth, who have grown up in the digital age, social media has become an essential part of their daily lives, changing their personalities, relationships, and worldviews (Pew Research Center, 2018).

Understanding the basic processes causing the spread of fake news on platforms like Twitter is important as the frequency of lies continues to rise. Social media algorithms play a significant part, as they often highlight content that produces high interest, regardless of its truth. This priority can lead to the spread of sensationalist and false information, as users are more likely to share content that elicits strong emotional reactions (Siddique, 2020).

Fake News, Youth, and Twitter

The fast rise of social media platforms, especially Twitter, has changed the way information is shared and received worldwide, making it easier to share ideas and knowledge. However, these platforms have also become growing grounds for the spread of lies, widely referred to as "fake news" (Lazer et al., 2018). In Pakistan, the youth population, which forms a large amount of the country's demographics, is particularly sensitive to the effects of fake news due to their high involvement with social media (Siddique, 2020).

Social media, especially Twitter, has changed how we share and get knowledge abroad. These platforms help us share knowledge and ideas, but they also help spread wrong information, or "fake news". The growth of fake news on Twitter is a big worry because it can change what people think, shape politics, and affect how people make decisions (Allcott & Gentzkow, 2017). Young people in Pakistan, who make up a big part of the population and use social media a lot, are especially at risk from fake news (Awan, 2017).

There are many reasons why fake information is spread on Twitter like people being affected by their feelings, and views, and power users called 'super-spreaders' (Del Vicario et al., 2016; Vosoughi et al., 2018). We need to know about these reasons so we can stop lies from hurting young people in Pakistan. It's also important to look at how these untrue claims can effect young people, like making them lose faith in important things, causing people to fight, and possibly even causing real harm (Rajni, 2019).

Fake News and Artificial Intelligence

The rise of Artificial Intelligence has had a profound impact on various aspects of society, including the creation and dissemination of fake news through social media sites like Twitter. Numerous studies have investigated the use of AI in generating and spreading false information on social media platforms. For example, researchers have explored the use of natural language processing and AI models to identify fake news on Twitter (Chazan, R. 2006).

A combination of natural language processing and AI models to detect fake news on Twitter (Arora et al., 2022). The study used algorithms to analyze the linguistic patterns and structural characteristics of tweets in order to differentiate between real and fake news. Ray et al., (2018) found that AI models performed well in identifying fake news on Twitter, with an accuracy rate of over 90%. Shu et al., (2018) focused on the role of automated accounts, or bots, in spreading fake news on Twitter. By analyzing a data set of over 14 million tweets, the researchers found that bots were responsible for spreading a significant amount of fake news during political events such as elections.

Problem Statement

The prevalence of fake news and misinformation on Twitter poses a significant challenge to Pakistani youth. Limited research has explored its specific impact, including increased anxiety, confusion, and polarization of beliefs. Additionally, little is known about the coping mechanisms employed by Pakistani youth to counter these effects. Therefore, further research is needed to understand the consequences of fake news, analyze its diffusion patterns on Twitter, and explore potential coping strategies to mitigate negative psychological impacts.

Objectives of the Study

- To investigate the psychological impact (confusion, polarization of political beliefs and opinions, Dissonance) of fake news among youth.

- To identify the reasons why young people in Pakistan believe and share Fake news on Twitter.

- To measure the effect of Artificial intelligence on Twitter among youth.

Research Questions

Q#1: How does fake news create psychological impacts (confusion, Polarization of beliefs and opinions, and Dissonance) on youth through Twitter?

Q#2: What factors contribute to the belief in and sharing of fake news on Twitter among youth?

Q#3: How Artificial Intelligence is used to create fake news or spread on Twitter among youth?

Rationale of the Study

In recent years, social media platforms, particularly Twitter, have become powerful tools for sharing news and opinions. However, they have also witnessed the rapid spread of misinformation and fake news. Understanding the impact of fake news on vulnerable populations, such as the youth, is crucial. Pakistan, with its tech-savvy youth, presents an interesting case study. This research aims to analyze the impact of fake news on young Twitter users in Pakistan and bridge the knowledge gap. The study will focus on the youth as a vulnerable population, the impact on attitudes and behaviors, the role of social media in Pakistan, policy implications, and global implications. By shedding light on this issue, the study aims to empower the youth with critical media literacy skills and address the challenge of fake news.

Significance of the Study

This study on the spread of misinformation on Twitter, specifically among the youth of Pakistan, will offer valuable insights. Marketing managers can use these insights to develop targeted strategies against fake news, promoting accurate information. The study's findings will encourage creativity and innovation in tackling misinformation, contributing to the development of new tools and techniques for maintaining online information integrity. By analyzing data on misinformation prevalence and impact, marketing managers can make informed decisions on resource allocation. Collaboration among stakeholders, including government agencies, social media platforms, and marketing professionals, will be highlighted as crucial in combating fake news. Meticulous attention to detail in analyzing factors contributing to misinformation spread will enable the development of targeted interventions. Finally, the study emphasizes the adaptability of marketing strategies to the ever-changing social media landscape and challenges of misinformation, enabling effective combat and promotion of accurate information.

Literature Review

This literature review aims to explore the existing body of research surrounding the diffusion of misinformation on Twitter among the youth population in Pakistan and its associated effects. By examining studies that delve into the prevalence, psychological impact, factors influencing belief and sharing, as well as the role of artificial intelligence, this review seeks to provide a comprehensive

understanding of the complex dynamics and consequences of fake news on Pakistani youth in the context of Twitter. Through this examination, valuable insights can be gained to develop effective strategies and interventions that mitigate the adverse effects of misinformation and foster a more informed and resilient youth population.

Prevalence and Diffusion of Fake News among Youth on Twitter

Different studies have revealed that Twitter, like other social media platforms, provides a fertile setting for the propagation of disinformation. Fatima, S. (2021, February) proved that misleading news posted on Twitter reaches more people than real news. They stated that false news on Twitter spreads swiftly among young people owing to their inclination to depend significantly on social media as their major source of news and information.

Tandoc (2021) investigated the transmission of digital disinformation on Twitter, finding that social bots substantially contribute to the diffusion of low-credibility articles. By taking advantage of Hoaxy, an open platform from Indiana University, They gathered data on shared articles and determined that bots magnify such information in the early spreading stages before being viral. They also target people with large followers via responses and mentions, with effective low-credibility sources strongly backed by social bots. They found that restricting social bots might be an effective technique for minimizing the spread of internet disinformation.

Sharma, et al. (2019) evaluated high school students' capacity to judge false news and news, relating it to social media use and information-seeking abilities. Their study stresses digital literacy and civic involvement for future civilizations. A questionnaire was presented to 716 students, judging the reliability of 10 titles (5 news, 5 false news), information sources, and social media use. Results revealed students found news more believable than false news, with variations in sex and area. Credibility is connected with rigorous information treatment, whereas trust in false news correlated with less meticulous treatment and social media as a news source. They observed a general lack of interest in news, with 27% routinely ignoring it.

Tandoc (2021) employed Twitter analytics to examine disinformation dynamics on social media platforms. They observed that tweet sentiment and polarity substantially impact the legitimacy of shared material. They underline the relevance of network science in understanding disinformation propagation and identify many cases, such as rumors, digital vigilantes, and false flags. The authors argue that governments might utilize these findings to manage disinformation by targeting drivers and creating control mechanisms. However, regulating disinformation remains a problem for both politicians and social media companies.

Khan (2022) explores the influence of false news on humans, both in the past and during the COVID-19 epidemic. The study stresses the propagation of false news via digital channels and its ability to impact human behavior. It underlines the hazards of misinformation during health emergencies and stresses the significance of adopting urgent efforts to counteract health-related disinformation. The study also emphasizes the importance of human behavior and the particular aspects of current digital ecosystems in increasing the issue of misinformation in society.

Geeng et al. (2021) examines the topic of false news spreading fast on social media and the difficulty in judging online information authenticity. They polled undergraduate students to identify and assess samples of false and true news items and studied their related information practices. The findings demonstrated links between the correct detection of false news and various critical assessment habits and tactics. The research underscores the relevance of information-seeking habits, such as verifying sources and utilizing fact-checking sites, in properly analyzing online news items.

Psychological Effect of Fake News on Youth

Wang et al., (2021) study the effect of lies on Twitter users' behavior, analyzing whether users changed their behavior after exposure. Their study compares the behavior of affected users before and after exposure, especially studying tweet volume and opinion. The researchers gathered data through crawling fact-checked Facebook posts, used language distance analysis to establish differences between exposed and baseline users, applied statistical analysis to compare behavior changes, and studied two user groups of high potential effect. Their results show that exposed users greatly increased their tweeting frequency, while mood stayed unchanged. Additionally, the study shows that user behavior changes were consistent regardless of friend count.

Factors Influencing Belief and Sharing of Fake News among Young People

Pierri (2019) discuss the problem of online misinformation and its societal effect, stressing the need to understand information flow patterns and the role of social media platforms in sharing false information. They stress the importance of data-driven models for studying misinformation spread and finding successful counter-strategies. They study the statistical profile of cascades linked to science news, conspiracy stories, and trolling, applying power-law distributions to model cascade size and highest degree. They show that digital misinformation poses a significant threat to society, helped by social media platforms, as users tend to pick and share content related to specific storylines while ignoring the rest. They say that data-driven models can be an effective tool for studying misinformation spread and creating methods to fight it.

Dhiman (2023) concluded that sentiment analysis of tweets from famous users and their audiences can show whether the audience holds a positive or negative attitude toward the stated views. The mood of the crowd can serve as a true sign or measure of fame. Their study shows that the attitude of the audience towards famous people is dynamic and affected by offline events. It also stresses the strong connections between Twitter and physical events. They suggest the study of mood change using the impact algorithm but accept drawbacks such as the small sample size, the difficulties of Twitter, and the need for more extensive data for further analysis.

Hypotheses of the Study

H#1: Psychological effect (confusion, Polarization of beliefs and opinions, and dissonance) is increasing due to fake news on Twitter among youth.

H#2: There is a strong content-sharing mechanism about fake news on Twitter among youth.

H#3: There is a usage of Artificial intelligence for creating fake news on Twitter among youth.

Research Methodology

This chapter discusses the research approach, data collection methods, sample, sampling technique, and data analysis techniques used in the study on the diffusion of misinformation on Twitter and its effect on youth in Pakistan. The chapter aims to provide an in-depth understanding of the methodology employed to examine the impact of fake news on Twitter among Pakistani youth, focusing on attitudes, beliefs, and behaviors related to misinformation dissemination and consumption. By exploring these aspects, the chapter enhances the transparency and rigor of the research, ensuring reliable and meaningful findings.

Research Approach

For this study, a quantitative research approach is adopted. Quantitative research involves the collection and analysis of numerical data to obtain statistical results and draw objective conclusions. The research will employ a quantitative research design to collect and analyze data related to the diffusion of misinformation on Twitter among youth in Pakistan.

Data Collection

To collect data for this research on the analysis of the diffusion of misinformation on Twitter and its effect on youth in Pakistan, a structured questionnaire will be designed. The questionnaire will focus on understanding the influence of fake news on Twitter among Pakistani youth and its implications. The questionnaire will assess several aspects, including the prevalence and diffusion of fake news, the perceived credibility of fake news sources, the impact of fake news on attitudes and beliefs, and the behavioral responses to encountering fake news.

Population

Creswell (2014) defined "population" refers to the entire group of individuals who share a common characteristic or attribute and are the focus of the study. In this study, the population refers to university students who are enrolled in the chosen academic institution. Both male and female students are included to ensure a diverse representation of perspectives and experiences.

Sample

Leedy and Ormrod (2015) argued that a "sample" refers to a subset of individuals selected from a larger population to participate in the study. Researcher plan to include around 200 students in our sample. Researchers choose "University of Narowal" as sampling frame.

Sample Size

The sample size for this study is around 200 students. The "University of Narowal" was selected as the sampling frame due to its accessibility and a substantial population of eligible students.

Sampling Technique

In this study, we use simple random sampling to collect data for research purposes. Purposive and convenient sampling technique is used to select participants.

Findings

This chapter presents the key findings obtained from our survey of 200 participants, focusing on the diffusion of misinformation on Twitter and its impact on the youth of Pakistan. As social media platforms continue to play a pivotal role in news dissemination, the consequences of misinformation have become a pressing concern.
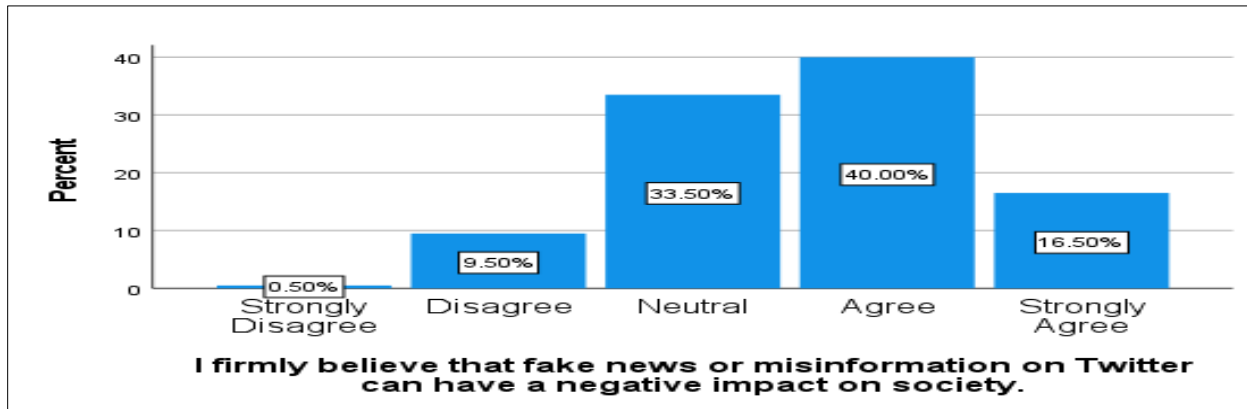
Figure 1:
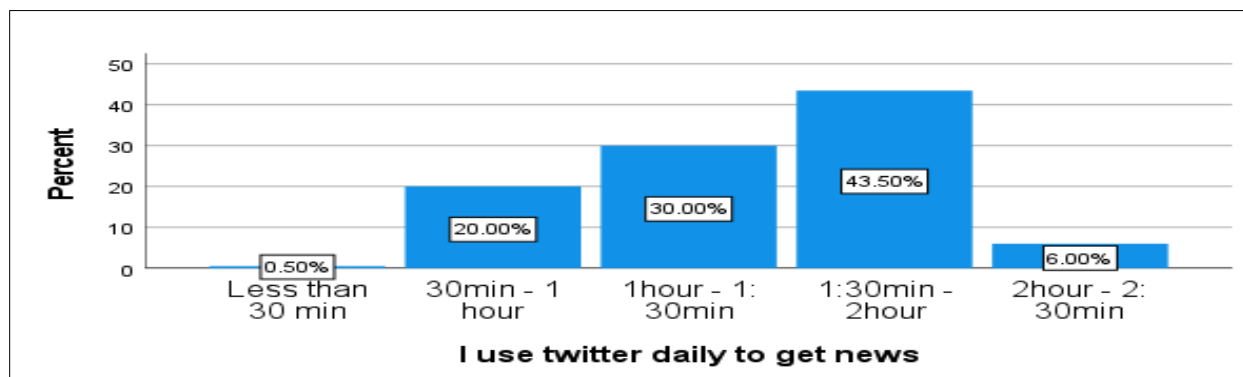
According to the figure 5.4 data collected from 200 respondents, the frequency of using Twitter daily to get news varies. Around 0.5% of respondents reported using Twitter for less than 30 minutes, while 20.0% indicated spending between 30 minutes to 1 hour. A significant portion, 30.0%, reported using

Twitter for 1 hour to 1 hour and 30 minutes, and 43.5% for 1 hour and 30 minutes to 2 hours. Only 6.0% of respondents reported spending 2 hours to 2 hours and 30 minutes on Twitter for news purposes.

Figure 2:

According to figure 5.5 it is evident that there is a recognition of the negative impact of fake news or misinformation on Twitter in society. Among the respondents, 16.5% strongly agreed, 40.0% agreed, 33.5% remained neutral, 9.5% disagreed, and 0.5% strongly disagreed with this statement. These findings highlight the concerns among the youth of Pakistan about the potential harm caused by fake news on Twitter, with a notable percentage strongly agreeing with the statement.
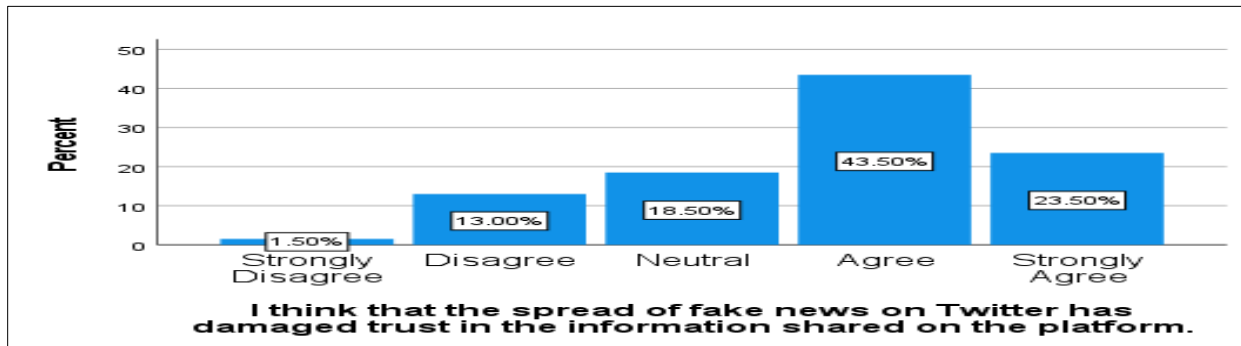
Figure 3:

Figure 5.6 shows that the data collected from 200 respondents, it is evident that the spread of fake news on Twitter has indeed damaged trust in the information shared on the platform. Among the respondents, 23.5% strongly agreed, and 43.5% agreed with this statement, indicating a combined 67% of respondents acknowledged the damage to trust caused by fake news. Additionally, 18.5% remained neutral, 13% disagreed, and 1.5% strongly disagreed.
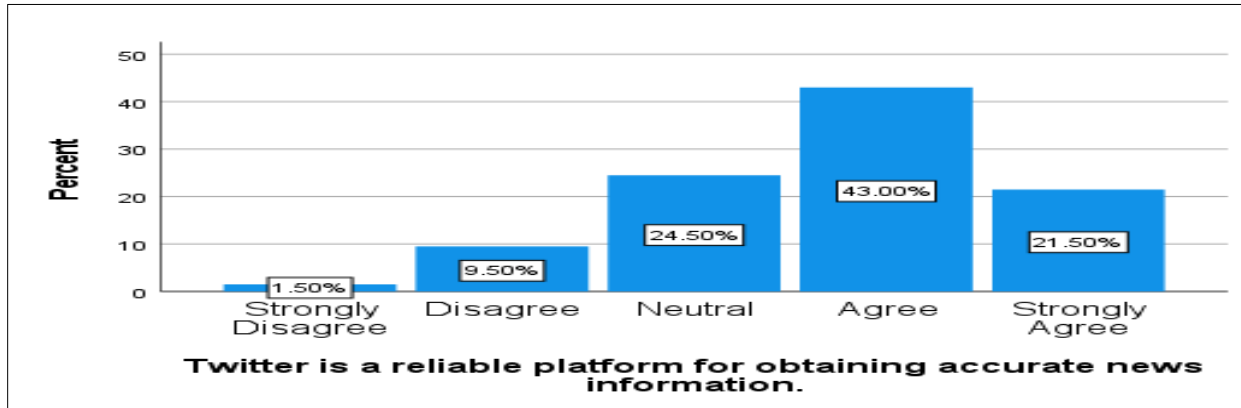
Figure 4:

Figure 5.7 shows that the data collected from 200 respondents, there is a mixed perception about Twitter's reliability as a platform for obtaining accurate news information. While 21.5% strongly agree and 43% agree that Twitter is a reliable source for accurate news, a significant proportion, 34.5%, either disagree, are neutral, or strongly disagree with this statement. Specifically, 9.5% disagree, 24.5% remain neutral, and 1.5% strongly disagree. These findings indicate a lack of consensus among the youth of Pakistan regarding Twitter's reliability for accurate news information, with a substantial portion expressing doubts or concerns.
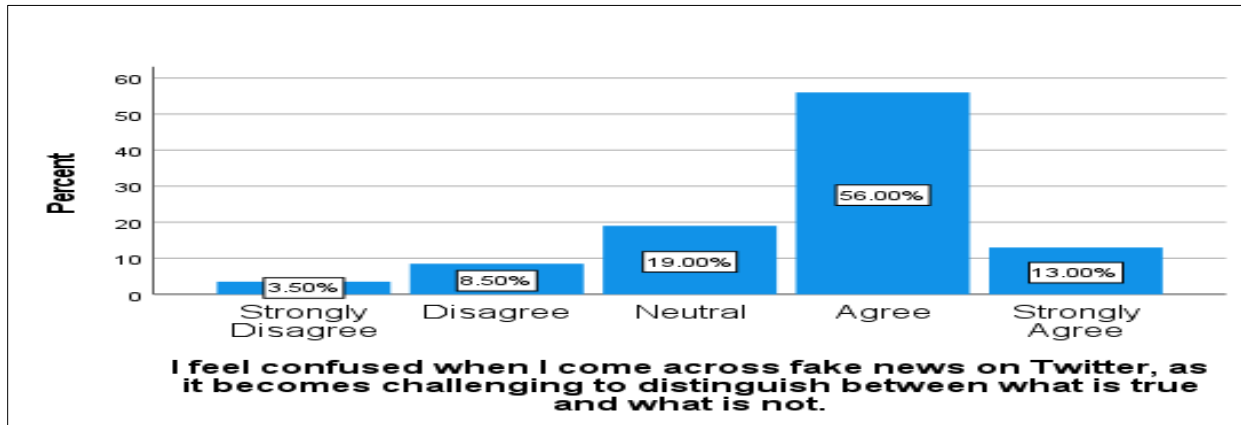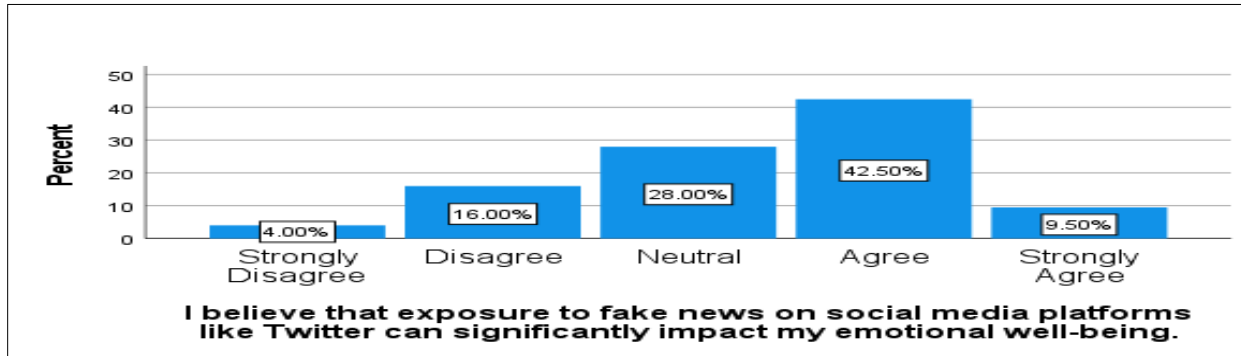
Figure 5:

Figure 5.8 shows that the data collected from 200 respondents, encountering fake news on Twitter leads to confusion among the majority of the youth in Pakistan. Specifically, 13.0% strongly agree, and 56.0% agree that they feel confused when they come across fake news on Twitter. Additionally, 19.0% remain neutral, 8.5% disagree, and 3.5% strongly disagree. These findings highlight the significant impact of fake news on Twitter, with a substantial proportion expressing agreement or strong agreement on feeling confused when faced with misinformation.

Figure 6:

Bar chart titled "I believe that exposure to fake news on social media platforms like Twitter can significantly impact my emotional well-being." Percent on y-axis. Strongly Disagree 4.00%, Disagree 16.00%, Neutral 28.00%, Agree 42.50%, Strongly Agree 9.50%.

According to figure 5.9 the data collected from 200 respondents, exposure to fake news on social media platforms, including Twitter, appears to have a significant impact on the emotional well-being of the youth in Pakistan. Among the respondents, 9.5% strongly agree, and 42.5% agree that exposure to fake news can significantly impact their emotional well-being. Additionally, 28.0% remain neutral, 16.0% disagree, and 4.0% strongly disagree. These findings highlight the considerable concern among the youth regarding the emotional toll of encountering fake news on social media.

Figure 7:

Bar chart titled "I find it challenging to distinguish between real and fake news, which negatively affects my critical thinking abilities." Percent on y-axis. Strongly Disagree 3.50%, Disagree 7.50%, Neutral 24.50%, Agree 45.50%, Strongly Agree 19.00%.
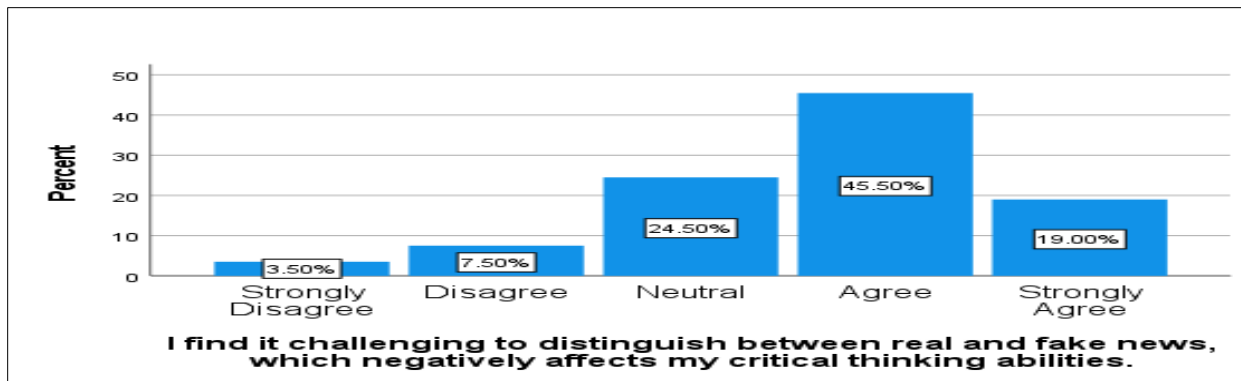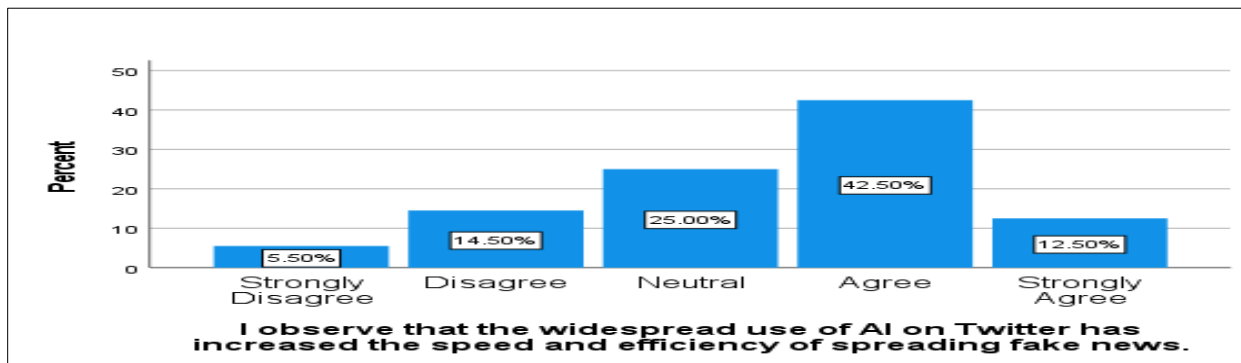
Figure 5.10 indicated that the respondents, 19.0% strongly agree, and 45.5% agree that they struggle to differentiate between real and fake news, affecting their critical thinking skills. Additionally, 24.5% remain neutral, 7.5% disagree, and 3.5% strongly disagree. These findings highlight the substantial impact of encountering misinformation on Twitter, hindering the youth's ability to critically analyze information and make informed judgments.

Figure 8:

Bar chart titled "I observe that the widespread use of AI on Twitter has increased the speed and efficiency of spreading fake news." Percent on y-axis. Strongly Disagree 5.50%, Disagree 14.50%, Neutral 25.00%, Agree 42.50%, Strongly Agree 12.50%.

According to Figure 5.17 shows that the data collected from 200 respondents, there is an observation among the youth of Pakistan that the widespread use of AI on Twitter has indeed increased the speed and efficiency of spreading fake news. Among the respondents, 12.5% strongly agree, and 42.5% agree with this observation, indicating that a significant proportion perceives the role of AI in facilitating the rapid dissemination of fake news on the platform. Additionally, 25.0% remain neutral, 14.5% disagree, and 5.5% strongly disagree. These findings highlight the perceived association between AI and the efficiency of spreading fake news on Twitter, with a substantial portion expressing agreement or strong agreement.

Conclusion

In conclusion, this research focused on investigating the effects of fake news on Twitter within the youth demographic of Pakistan. Through a quantitative research approach involving a structured questionnaire, data analysis, and statistical techniques, the study unveiled significant insights into the relationship between fake news and psychological impact, content-sharing behavior, and the role of Artificial Intelligence (AI) in misinformation creation. The findings clearly demonstrated that the prevalence of fake news on Twitter is associated with heightened psychological effects among the youth, including confusion, polarization of political beliefs and opinions, and dissonance. The study also revealed a robust content-sharing mechanism for fake news, indicating a considerable propensity among young individuals in Pakistan to believe and share such misinformation. Additionally, the research recognized the utilization of AI for generating fake news to a certain extent. The regression analyses further substantiated these relationships, revealing varying degrees of explained variance in psychological effects, misinformation, and AI usage for creating fake news. These results collectively contribute to a deeper understanding of the complex dynamics surrounding the diffusion of fake news on Twitter among Pakistani youth. While the study provides valuable insights, it is important to acknowledge its limitations and potential areas for future research. Nonetheless, the research significantly adds to the body of knowledge concerning the effects of fake news on social media, offering implications for both academic inquiry and potential strategies for addressing the challenges posed by misinformation in the digital age.

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