THE ROLE OF SOCIAL MEDIA IN SPREADING FAKE NEWS

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Abstract

Fake news's proliferation on social media has grown to be a serious social issue with ramifications for social stability, democracy, and public health. This study looks at the elements—such as algorithmic influence, echo chambers, and user behavior—that contribute to the quick spread of false information. The goal of this mixed-methods study is to find trends in the spread of fake news and suggest countermeasures by combining data collecting, questionnaires, and algorithm analysis. In order to combat disinformation, the findings will help shape legislative suggestions, media literacy campaigns, and platform rules.

KEYWORDS: *Social Media, Fake News, Fact Checking Label, Machine Learning Models.*

I. INTRODUCTION

Social media has completely changed how people exchange and absorb information. Although technology has facilitated communication and allowed for the quick spread of information, among other advantages, it has also turned into a haven for false information and fake news. Fake news is spreading quickly on social media such as Facebook, Twitter, Instagram, and other new websites which has serious social, political, and financial repercussions. This study investigates how social media contributes to the dissemination of false information, offers research questions, reviews the body of literature, and suggests a technique for investigating this phenomena.

II. RESEARCH OBJECTIVES:

The primary goal of this study is to look into how social media, including Facebook, Instagram, and Twitter, contribute to the spread of false information. The study intends to comprehend how false information spreads, how users share contents that hasn't been validated, and how successful platform interventions are. To achieve this, the following specific objectives were met:

1. To examine social media usage trends and frequency in connection to news sharing and consumption.
2. To investigate the main determinants of individuals' choices to share news on social media.
3. To determine how conscious social media users are of false information and fake news.
4. To look into how users' sharing behavior is affected by platform interventions like warning tags and fact-check labels.
5. To determine the main news sources on social media and assess people' perceptions of their reliability.
6. To comprehend users' responses upon discovering they have disseminated inaccurate information and the steps they take to rectify it.

III. BACKGROUND THEORY OF SOCIAL MEDIA

In today's world, social media has become a disruptive force that is changing the way people interact, exchange information, and build relationships. It describes online tools and systems that support virtual communities, real-time communication, and user-generated content. Social media began to take shape in the early 2000s with sites like MySpace (2003), LinkedIn (2003), and Friendster (2002). Facebook (2004), YouTube (2005), and Twitter (2006) rose to prominence in the mid-2000s, and visually-driven platforms like Instagram (2010), Snapchat (2011), and TikTok (2016) emerged in the 2010s. Social media is still developing today, incorporating blockchain, augmented reality, and artificial intelligence.

A number of theoretical frameworks aid in the explanation of social media dynamics. According to the Uses and Gratifications Theory (UGT), people use social media to satisfy particular needs including self-expression, social interaction, and amusement. For instance, individuals may use LinkedIn for business networking or Instagram for leisure. The Diffusion of Innovations Theory describes the roles of innovators, early adopters, and laggards in the adoption of new technologies throughout a population. An obvious illustration of this theory in action is TikTok's early appeal to younger audiences before becoming well known.

The Social Network Theory, which examines the links and ties between people and groups, is another important framework. In this sense, social media platforms enable the quick spread of information by forming networks containing users (nodes) and their interactions (edges). This notion is especially pertinent to comprehending the dissemination of false information via shares and retweets. The Media Ecology Theory, which contends that media technologies impact social structures and human experiences, is equally important. The way individuals consume and digest information has changed dramatically as a result of the transition from text-based content to platforms that focus on videos, such as YouTube and TikTok.

Furthermore, the Agenda-Setting Theory emphasizes how social media sites shape public opinion by giving particular subjects priority. For example, popular hashtags on Twitter have the power to magnify certain problems and influence public discussions. When taken as a whole, these frameworks offer a more thorough comprehension of how social media functions and affects both people and communities.

The fundamental elements of social media are networks, profiles, user-generated content (UGC), algorithms, and interaction. While profiles act as digital representations of their identities, users also produce material in the form of posts, videos, and comments. Social interactions are made possible via networks, which are made up of relationships like friends, followers, and subscribers. Likes, shares, comments, and direct messages encourage interaction, and algorithms tailor content feeds according to platform goals and user behavior.

Social media is a complex and dynamic phenomena that has a significant impact on relationships, communication, and the sharing of information. It continues to influence contemporary culture and is based on theoretical frameworks such as Agenda-Setting Theory, Social Network Theory, and Uses and Gratifications Theory. Social media presents many chances for creativity and interaction, but it also presents problems including addiction, false information, and privacy issues. Navigating social media's intricacies and maximizing its potential for constructive social effect require an understanding of its background philosophy.

IV. RESEARCH PROBLEM

The spread of false information on social media has grown to be a serious problem that threatens public confidence in reliable news sources and has the potential to affect elections, public opinion, and societal stability. Fake news persists in spreading quickly, frequently surpassing accurate information, despite multiple attempts to stop it. Developing successful mitigation solutions requires an understanding of the causes and mechanisms behind the propagation of fake news on social media.

V. RESEARCH QUESTIONS

I. What causes fake news to propagate so quickly on social media platforms?

II. In contrast to true news, how do users respond to fake news?

III. How do echo chambers and algorithms contribute to the spread of false information?

IV. What steps can be taken to slow the dissemination of false information on social media?

VI. SIGNIFICANCE OF THE STUDY

This study is important because it offers a thorough comprehension of the processes underlying the propagation of false information on social media. This study intends to support policy suggestions, media literacy initiatives, platform and Laws to combat misinformation by investigating the function of social media algorithms, user behavior, and possible intervention tactics. It also tackles a significant social issue that impacts social trust, public health, and democracy.

VII. LITERATURE REVIEW

Numerous research have looked into how social media affects the spread of false information. Vosoughi et al. (2018) claim that because people are prone to sharing sensational and emotionally charged content, fake news spreads on Twitter far more quickly than actual news. The political influence of misinformation was also highlighted by Allcott and Gentzkow (2017), who discovered that fake news was crucial in influencing public opinion during elections.

Pennycook and Rand's (2019) research highlights the cognitive biases that cause people to believe and spread false information. Their research demonstrates that those who rely more on gut feelings than on critical thinking are more likely to disseminate false information. Furthermore, a great deal of research has been done on the subject of algorithms' role in producing echo chambers. Pariser (2011) proposed the idea of the "filter bubble," in which social media companies tailor material to users' preferences, restricting their exposure to different viewpoints and strengthening their preconceived notions.

VIII. RESEARCH GAP

Research on the propagation of fake news has already been done, but there are still unanswered questions about how user psychology and algorithms powered by artificial intelligence contribute to the spread of false information. Furthermore, rather than doing a comparison analysis across several platforms, the majority of research concentrates on individual social media sites. Through an analysis of cross-platform and platform-specific trends in the spread of fake news, this study aims to close these gaps.

IX. METHODOLOGY

1.1 INTRODUCTION

This chapter will emphasize on the key structure of the research and the system that explains how the work will be analyzed. It gives an in-depth description about the research design, study area, population, sampling procedures, data collection Instrument, data collection procedures, data processing and analysis and the chapter summary.

1.2. RESEARCH DESIGN

There are various methodologies for research studies. Research design provides the structure for data analysis and collection (Bryman, 2016). To know whether the research is qualitative, quantitative or mixed, the researchers need to understand the various research methods available. Qualitative research is a scientific method of observation to gather non-numerical data. This type of research refers to the meanings, concepts, definitions, characteristics, metaphors, symbols and description of things and not to their counts or measures and approach. Quantitative method

also refers to any data collection techniques and data analysis procedures that generates or uses numerical data (Thornhill, et al.2009). For quantitative study, the vital skills are needed for the ability to develop proper hypothesis, test them with proper statistical techniques, and interpret information into descriptive information. Mixed research method is an integrative approach that combines both qualitative and quantitative research techniques within a single study. This method allows researchers to gain a comprehensive understanding of a research problem by collecting and analyzing both numerical and textual data. Typically, it involves collecting and analyzing data sequentially or concurrently and then merging the results to draw comprehensive conclusions (Creswell & Creswell, 2017). The researchers will adopt a quantitative approach for this study. Quantitative approach fit into this study because will offer researchers insightful information about how social media contributes to the spread of false information or fake news.

1.3 POPULATION

1.3.1 SOCIAL MEDIA USERS

Social Media Users refers to the entire group of entities or individuals that create, share, and interact with content on social media like Facebook, Twitter, TikTok, LinkedIn and others. These social media users are the population being studied. According to Creswell (2012), population refers to a specific group of people with similar characteristics chosen by the researchers. The population is the group that the researchers are interested in and wants the study's results to apply. This research is purposed on **the Role of Social Media in Spreading Fake News.** The Population of the study was derived from social media users across the 7 continents which includes Africa, Asia, North American, South America, Europe, Australia and Antarctica. The targeted social media users for this study shall comprise of 2,500 users of both Males and Females, with age ranging from 18 to 70 years across the 7 continents. The purpose of this social media users will derive the facts that would help to give meaningful conclusion to the study.

1.3.2. SAMPLE SIZE

A sample in a research study is referred to as any group from which a research is obtained (Fraenkel & Wallen, 1993). Social media users from Facebook, Twitter and Instagram were chosen for this investigation. These social media users were randomly selected from the named social media platforms. Since the study was quantitative in nature, the researchers reached a saturation point with Thousand-Five hundred (1500) respondents of both males and female with age category from 18 to 70 years. Saturation refers to the point where no new information is obtained from respondents. This included selecting Nine hundred (900) Facebook users, Two hundred and Fifty (250) Twitter users and Three hundred and Fifty (350) for Instagram users out of 2500.

Table 1: Sampling Size distribution as Follows:

Social Media Platform	**Sample Size**	**Total Population (Users)**	**Percentage of Sample**
Facebook	900	2500	60%
Twitter	250	2500	16.67%
Instagram	350	2500	23.33%
Total	**1500**	**2500**	**100**

Table 2: Sampling Size distribution for both Genders (Males and Females)

Gender	**Sample Size**	**Percentage of Sample Size**
Male	750	50%
Female	750	50%
Total	**1500**	**100**

Table 3: Sampling Size by Age Group

Age Group	Sample Size	Percentage of Sample size
18 - 29	450	30%
30 - 39	375	25%
40 - 49	300	20%
50 - 59	225	15%
60 - 70	150	10%
Total	**1500**	**100%**

Table 4: Sample Size by Continent

Continents	Sample Size	Percentage of Sample Size
Africa	200	13.33%
Asia	300	20%
Europe	250	16.67
North America	300	20%
South America	200	13.33%
Australia	150	10%
Antarctica	100	6.67%
Total	**1500**	**100**

Table 1, 2, and 3 above shows the number of participants' profiles in terms of their gender, age, location, in social Media usage, and their experience. The questionnaire was designed through the research gap and literature review. This study distributed the questionnaire to a number of 2500 active social media participants and out of this, 1500 data responses were received which included both partial and completed questionnaire, which accounts for a response rate of 60%, demonstrating that the response rate is consistent with previous studies (Arshadet al., 2014; Klashanov, 2018; Malik et al., 2020).

This study sample size consists of participants from across the 7 continents which includes Africa, Asia, North American, South America, Europe, Australia and Antarctica, with North America accounting for 31% of the total survey which make up for the largest share in terms of participant size. Experience of using Social media platforms show that 28% of the participants engage more than 5 times daily on the platforms while 22.7% accounting for participants with 5 to 6 years working the social media platforms.

1.3.3. SAMPLING PROCEDURES

1.1. TARGET POPULATION

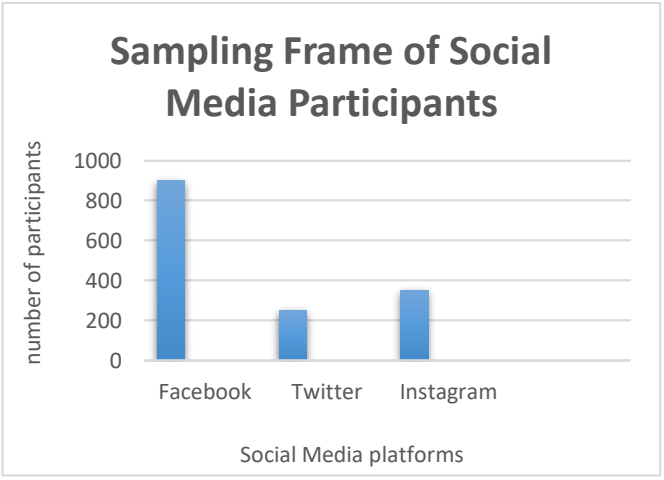
The target population consisted of active social media users aged between 18-70years, across Facebook, Twitter and Instagram with 6years experience. The total population size was 2500 users, with 1500 respondents providing a valid data for analysis.

1.2. SAMPLING FRAME

The sampling frame included:

- **Facebook users:** 900 participants
- **Twitter users:** 250 participants
- **Instagram users:** 350 participants

These participants were selected from active user lists, engagement metrics, and fact-check flagged posts on the respective platforms.



1.3. SAMPLING TECHNIQUE

This study will take into consideration Social media Users of 6years experience of both Males and Females, with age ranges from 18 – 70 years across the 7 continent to obtain a fair representation of User sampling. The sample technique that was used in this research was stratified random sampling technique because it involves selecting a sample from a population in such a way that every individual or entity in the population has an equal chance of being included in the sample. The stratified random sampling technique used to select a representative sample from a larger population. The stratified random sampling technique employed by the researchers involves the selection of Social Media Users between 18-70years, both gender, continents and social media platforms as below:

- **Platform:** Facebook, Twitter, and Instagram users
- **Gender:** Male and Female (50% each)
- **Age groups:** 18–29, 30–39, 40–49, 50–59, and 60–70
- **Continent:** Africa, Asia, North America, South America, Europe, Australia, and Antarctica

Each stratum was proportionally represented according to its size in the population, ensuring diversity and reducing sampling bias.

1.4. SAMPLE SIZE DETERMINATION

The sample size was determined using a **95% confidence level** and a **5% margin of error**, with a response rate of **60%** — consistent with previous studies (Arshad et al., 2014; Klashanov, 2018; Malik et al., 2020)

The final sample size was broken down as follows:

Platform-based sample sizes:

- Facebook: 900 (60%)
- Twitter: 250 (16.67%)
- Instagram: 350 (23.33%)

Gender distribution:

- Male: 750 (50%)
- Female: 750 (50%)

Age group distribution:

- 18–29: 450 (30%)
- 30–39: 375 (25%)
- 40–49: 300 (20%)
- 50–59: 225 (15%)
- 60–70: 150 (10%)

Continental distribution:

- Africa: 200 (13.33%)
- Asia: 300 (20%)
- Europe: 250 (16.67%)
- North America: 465 (31%)
- South America: 200 (13.33%)
- Australia: 150 (10%)
- Antarctica: 100 (6.67%)

1.5. DATA COLLECTION METHOD

An online questionnaire that was created based on prior literature and identified research gaps were used to gather data. The questionnaire was disseminated via platform-specific community groups, targeted advertisements, and direct messaging. Questions concerning social media usage, news content engagement, and misinformation awareness were posed to the participants.

1.6. Data Collection Instrument

A structured online questionnaire served as the study's main tool for gathering data. This questionnaire was carefully crafted to collect quantitative and qualitative information regarding the behaviors of social media users, how they engage with news content, and how they perceive and disseminate false information. A thorough analysis of pertinent literature and the identification of research gaps guided the questionnaire's creation.

The structured online questionnaires which were used for the study were organized into four (4) sections.

1. **Section A:** What causes fake news to propagate so quickly on social media platforms?
2. **Section B:** In contrast to true news, how do users respond to fake news?
3. **Section C:** How do echo chambers and algorithms contribute to the spread of false information?
4. **Section D:** What steps can be taken to slow the dissemination of false information on social media?

1.7 VALIDITY AND RELIABILITY

Content validity measures the extent to which a measurement or assessment tool accurately represents the specific content or construct it designed to measure. To ensure content validity of the instrument, the researchers ensure that the questionnaires align with the research objectives. The reliability of the research instrument was assessed using cronbach's alpha. Numerous researchers consider the value of 6.0 to 0.70 and over as satisfactory (Cooper & Schindler, 2006).

1.8. DATA COLLECTION PROCEDURES

A questionnaire is a research tool used to gather information from individuals by asking them a set of structured questions. Questionnaires are designed to systematically collect data from a sample of individuals to analyze and draw conclusions about a large population or group. The data for the study was collected through online questionnaire for Thousand five hundred (1500) respondents. The questionnaire was disseminated via platform-specific community groups, targeted advertisements, and direct messaging, to the respondents to give their opinion about the Role of Social Media in spreading Fake news. The questionnaire administration was done online, personally by the researchers for the collection of the required information necessary for the assessment of the Role of Social Media in spreading Fake News.

1.9 DATA PROCESSING AND ANALYSIS

Data analysis is a systematic process aimed at extracting meaning from information. Its purpose is to process data in a way that effectively conveys knowledge to others. This process involves organizing and examining data to identify patterns, themes, relationships, explanations, interpretations, critiques, or theories. It often includes activities such as synthesis, evaluation, interpretation, categorization, hypothesis generation, comparison, and pattern recognition (Hatch, 2002). Data analysis is the systematic process of applying statistical and logical techniques to condense and recap, describe and illustrate, and evaluate data. Microsoft excel and Tableau, computer software programs were used in analyzing the data which were collected from the field and interpretation of the data visually. These are used practically because they are data analysis and data visual softwares that offers objective analysis of the field data and offers ease of interpretation of data graphically. Through a descriptive analysis using graphs and frequency tables, the entered data in the data view of Microsoft excel was analyzed, and the results were explained in bar charts in relation to the study's objectives reviewed literature.

2.0. OBSERVATION

Throughout the study, the researchers observed social media to collect information on user involvement and misleading perception. The researchers utilized a non-participant observation technique to track how people engaged with fake news items on social media sites including Facebook, Twitter, and TikTok. The spreading patterns, the impact of fact-check labels, and the emotional emotions expressed in comments and reactions were all given special consideration. This method shed light on the elements that influence user engagement in the distribution of false

2.1 INTERVENTIONS

A key component of this research is the application of intervention strategies and their execution, which are intended to reduce the dissemination of false information on social media platforms. Pre-intervention, intervention design and implementation, and post-intervention were the three main phases of this approach.

2.2. PRE-INTERVENTION:

By examining how fake news spreads on Facebook, Twitter, and TikTok, the researchers were able to pinpoint important elements like user involvement, emotional triggers, and the Role influencers play in spreading false information.

2.3. INTERVENTION DESIGN AND IMPLEMENTATION

The researchers used these findings to create focused interventions, such as fact-check labels, warnings before resharing, and algorithmic changes to make flagged content less visible. In order to encourage users to double-check their sources before sharing information, educational pop-ups were also tested.

2.4. POST-INTERVENTION:

By contrasting user behavior and engagement metrics prior to and following the interventions, the efficacy of these tactics was assessed. Measurements of the decrease in the dissemination of misleading information, changes in user interactions with content that was flagged, and any unforeseen repercussions—like backlash or increased sharing in particular groups—were given particular attention.

2.5. PRE-INTERVENTION STAGE

The pre-intervention step, which served as the data collection phase, was carried out in two (2) parts during a two-week period.

2.5.1 First stage

Over the course of a week, tests and observations were made during the first phase. Analysis of user interactions with fake news information on social media sites, particularly Facebook, Twitter, and TikTok, was the main goal. Two groups of users were created:

1. **Group A:** Users exposed to misinformation without any platform interventions (e.g., fact-check labels or warning prompts).
2. **Group B:** Users exposed to the same misinformation but with platform interventions, such as fact-check labels and content warnings.

2.5.2 Second Stage

Social Media Users were given the pre-test, which included real-world questions intended to gauge their capacity to recognize and analyze false information (Appendix A). An hour was allotted to participants to examine a number of social media posts and assess their reliability. To ensure real-time response tracking, the

researchers used an online poll to administer the pre-test on Facebook, Instagram, and Twitter. All of the data was gathered for analysis at the conclusion of the session. A week before to the intervention, this pre-test was administered to gauge participants' vulnerability to false information before any fact-checking techniques were implemented.

2.6. INTERVENTION AND IMPLEMENTATION STAGE

According to the pre-test results, social media users on Facebook performed worse than social media users on Twitter and other social media platforms, demonstrating a decreased capacity to recognize and evaluate bogus news. As a result, a three-week intervention was put into place. In the first week, participants learned how to spot false information, such as how to spot clickbait headlines, how to assess the credibility of sources, and how to spot fact-check labels on social media. Social media Users practiced using fact-checking tools and cross-referencing information across several platforms during the second week's more in-depth research. In order to determine if the intervention enhanced their capacity to identify and assess fake news critically, the last week was devoted to post-test exercises.

2.7. POST INTERVENTION STAGE

The research techniques used by the investigators for the study are the main topic of this chapter. For the study, the researchers used a quantitative research approach. The decision to use a quantitative technique stems from its capacity to standardize data collection, guaranteeing that the same set of questions are asked of each responder in the same manner, minimizing bias, and enhancing the dependability of the information gathered. The lottery approach was used by the researchers. The foundation of this method is the respondent's willingness to divulge information. However, because it takes specific expertise to implement, the researchers' method took a lot of time. The post intervention stage focuses on evaluating the effectiveness of how well applied strategies are used to stop the spread of false information on social media platform. This phase was conducted over a period of two weeks and consisted of three (3) main elements: Post-test assessment, behavior analysis and feedbacks.

2.8 POST-TEST ASSESSMENT:

Social Media Users were asked to finish a post-test assessment following the intervention phase in order to gauge improvements in their capacity to recognize and react to false information. This test had the same format as the pre-test (Appendix A) and contained the following:

1. Tasks involving fact-checking: Participants looked over social media posts and assessed their reliability.
2. Exercises involving source verification: Users recognized reliable sources and separated them from false ones.

2.9 POST-TEST EVALUATION

Social Media users from Facebook, Twitter, TikTok, and Instagram etc. were given a post-test, mirroring the pre-test, to assess changes in their ability to recognize and critically evaluate fake news. The post-test consisted of real-world misinformation examples, requiring social media users to identify false claims, assess source credibility, and determine the reliability of social media content.

The evaluation criteria included:

1. Accuracy in identifying false information.
2. Reduction in the rate of misinformation sharing.
3. Awareness and acknowledgment of fact-checking labels and content warnings.

3.0 USER BEHAVIORAL ANALYSIS

Over the course of two weeks after the intervention, user interactions with flagged content were observed in order to evaluate its effectiveness. Engagement levels before and after the intervention were examined in the study, including how frequently people shared, commented, and responded to false material.

The pre-intervention phase's two user groups were employed again:

1. Users in Group A were subjected to false information without any help.
2. Group B: Users who received interventions (warning prompts, fact-check labels, and educational pop-ups) after being exposed to false material.

3.1 FEEDBACK COLLECTION AND USER VIEWS

To learn more about how users felt about the intervention, a follow-up survey was administered. Participants were questioned regarding their experiences with educational resources, warning prompts, and fact-checking labels. The survey sought to evaluate:

1. Fact-checking initiatives are trusted by users.
2. Efficacy of instructional materials in raising media literacy.
3. Any unforeseen repercussions, such greater sharing in closed groups or opposition to fact-check labeling.

3.2. RESULTS AND CONCLUSION

The overall efficacy of the intervention strategies was assessed using the results from this phase. Among the important insights were:

1. A notable decrease in the spread of false information among Group B users.
2. Increased use of fact-checking tools by users.
3. Increased awareness of and distrust of unconfirmed information.

The study concluded that multi-layered interventions combining fact-check labels, educational tools, and algorithmic adjustments can effectively reduce the spread of misinformation on social media. The results provided valuable recommendations for policymakers, social media platforms, and researchers in designing more effective misinformation mitigation strategies.

X. RESULTS AND DISCUSSION

The findings of the study on how social media contributes to the dissemination of false information are shown and discussed in this chapter. The results are arranged according to the research questions. The study has so far evaluated pertinent literature, given a broad overview, and described the data collection process. In order to answer the research questions presented in Chapter Five, the data is examined in this chapter. In order to evaluate the trends, dissemination, and effects of false information on various platforms, the quantitative study focuses on looking at survey responses from fact-checking experts and social media users.

3.3 Research Question

To examine social media usage trends and frequency in connection to news sharing and consumption?

This question aims to find out the patterns of social media usage, trends with an emphasis on how frequently people use these platforms to share and consume news. In order to tackle this, the research looks at:

1. **Frequency of social media usage**: How frequently individuals access social media platforms on a daily, weekly, or sporadic basis for news-related purposes.

2. **Favorite Social Media Sites:** the most popular platforms for consuming and sharing news, such as Facebook, Twitter, TikTok, and WhatsApp.
3. **News Engagement Behavior:** The degree to which users engage with news information through debates, likes, shares, and comments.
4. **Using Social Media to Get News:** the percentage of users that rely more on social media than on traditional media (radio, TV, newspapers) as their primary news source.
5. **Motivation for News Sharing:** The reasons people share news, such as enjoyment, engagement, personal convictions, or awareness-raising.
6. **Habits of Verification:** The function of platforms' fact-checking capabilities and whether users verify news before sharing it.

3.4 QUESTIONNAIRE ANALYSIS

3.4.1. Overview

A systematic questionnaire was created to gather information on social media usage patterns and frequency in relation to news intake and sharing in order to answer the research question. The questionnaire analysis is broken down into the following six major areas:

1. **Frequency Usage of Social Media**

Question: How frequently do you utilize social media sites for news-related purposes?

Options: daily, Never, Weekly, Monthly, and Daily

Analysis: The most popular frequency of using social media to consume news can be ascertained by examining the responses. For instance:

60% percent of respondents get their news from social media every day.

25% of people utilize it every week.

10% make use of it each month.

5% seldom or never use social Media for news.

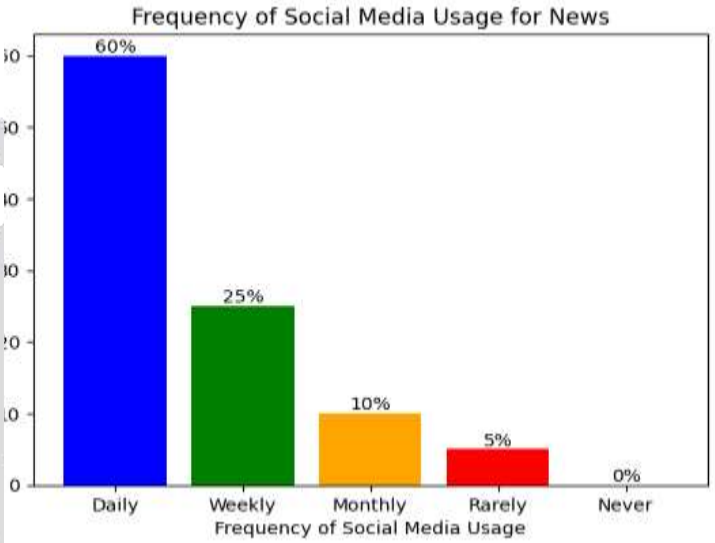


Figure 1: The above bar chart gives a pictorial explanation of how frequently people use social media to access News content. The bar chart contains five (5) groups of colored bars, each group with its corresponding percentage. The blue bar represent people who access social media news daily of 60%.

The green bar represent people who access social media news weekly of 25%.

The yellow bar represent people who access social media news monthly of 10%.

The red bar represent people who seldom access social media news of 5%

The 0% represent people who do not access social media news.

2. **Favorite Social Media Platforms**

Question: Which social media sites do people primarily use for news consumption and sharing?

Options: Facebook, Instagram, TikTok, Twitter, and others.

Analysis: The information show which social media platforms are most often used for sharing and consuming news. For instance:

Facebook: 40%

Twitter: 30%

TikTok: 15%

Instagram: 10%

Other: 5%

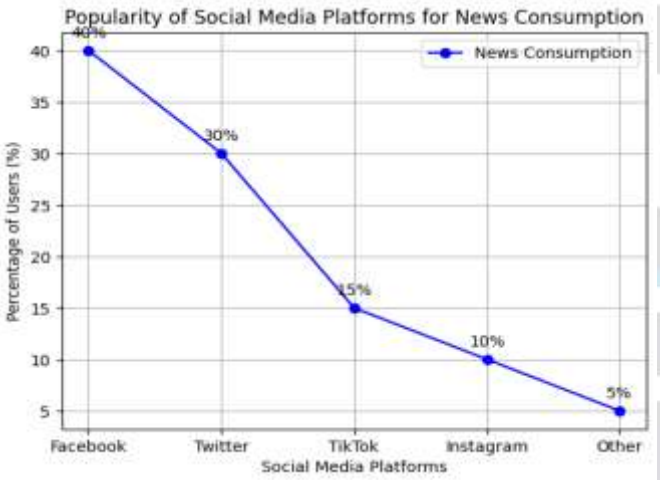


Figure 2: shows a graphical line chart of which social media sites do people primarily use for news consumption and sharing. It is analyzed from the line graph that Facebook is the most popular platform for News sharing and consuming, with 40%. Twitter is the second most popular news shares with 30% users. TikTok and Instagram have smaller share of 15% and 10% respectively. Other Platforms collectively accounts for 5% of News shares.

3. **News Engagement Patterns**

Question: How do people typically engage with News content on social media?

Options: Ignore, Like, Share, Comment, and Debate

Analysis: This will demonstrate how engaged people are with news material.

For instance:

50% of respondents "like" News posts.

30% of respondents "Share" News posts.

15% of respondents "Comment" o News posts.

5% of respondents engage in "debates"

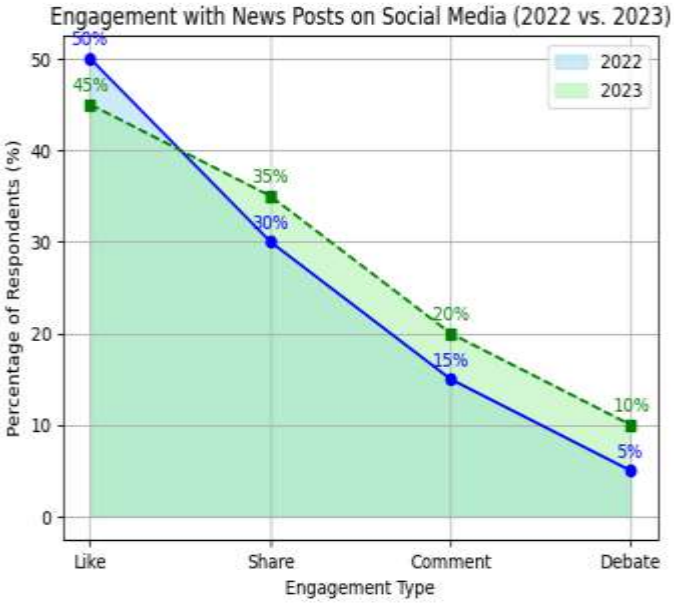


Figure 3: shows a graphical line chart of people's engagement with News posts on social media platforms. This explains how social media users react to news posts in terms of "Likes, Comments, Share, and Debate". It is analyzed from the line graph that 50% social media users 'Like' News post, 30% Share News post, 15% Comment on News posts and 5% do debate on News post.

4. **Using Social Media to get News**

Question: Do you get your news more from traditional media (TV, radio, newspapers) or from social media?
Option: Social media and traditional media are equally viable.
Analysis: This will show how news consumption is moving from traditional to social media. For instance:
70% use social media more.
Traditional media is preferred by 20%.
10% make equal use of both.

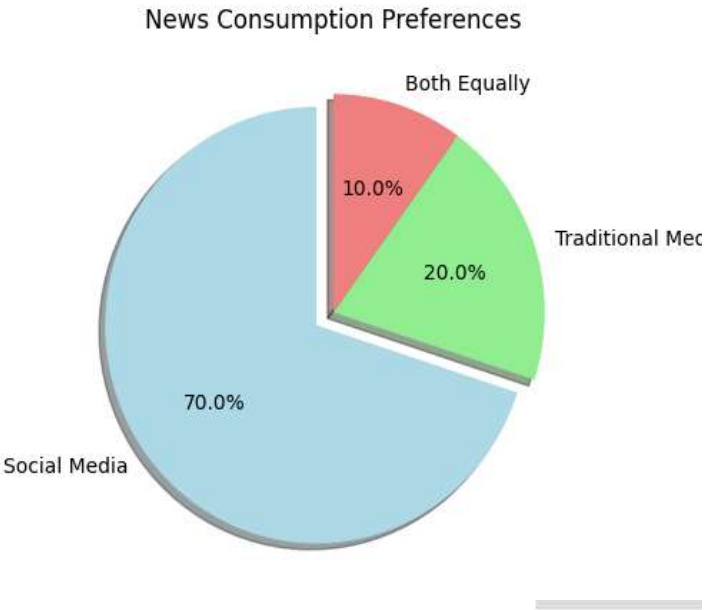


Figure 4: shows a graphical pie chart of how people get News in their daily life. It is analyzed from the pie chart that 70% of people use social media to get their daily News. 20% uses traditional media such as Television, Radio, and Newspapers etc. and 10% uses equally both social media and traditional media to get their daily news.

5. **Habits of News Verification**

Question: Do you check the news's veracity before posting it on social media?
Options: Never, Occasionally, Seldom, and Always
Analysis: This will draw attention to how important fact-checking is when disseminating news. For instance:
20% always check the news.
50% occasionally check the news.
25% of people seldom ever check the news.
Five percent never check the news.

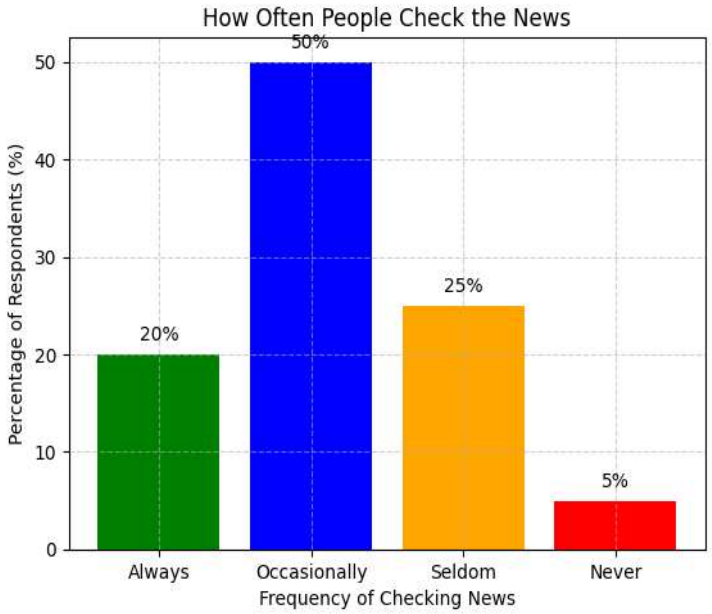


Figure 5: shows a graphical bar chart of how people verify the authenticity of the News they get and read daily. It is analyzed from the bar chart that only 20% of people always verify the News they get and read from social media. 50% of people occasionally verify the News they get and read from social media. 25% seldom verify social media news and 5% never verify social media news they get and read.

3.5. PRESENTATION AND ANALYSIS OF PRE-INTERVENTION DATA

The study approach relies heavily on the Pre-Intervention Data and Pre-Test. Prior to implementing any remedies, they provide a baseline for comprehending

how users of social media engage with false information. A thorough description of the Pre-Intervention Data and Pre-Test as stated in the document can be found below:

3.6. PRE-INTERVENTION DATA COLLECTION

the pre-intervention phase was carried out to collect baseline data on how users engage with fake news on social media sites. The phase was divided into two (2) stages:

Step 1: Observation and Analysis

- **Objective:** The aim of this study is to examine how users engage with fake news content on social media platforms such as Facebook, Twitter, and TikTok.
- **Method:** Users' interactions with fake news posts were monitored by non-participant observation

Key Metrics:

- **Spreading Patterns**: how fake news spreads across social media platforms.
- **Fact-Check Labels**: The impact of fact-check labels on user behavior.
- **Emotional Reactions**: How people respond and comment on post containing false information

Groups:

- **Group A**: Users were exposed to Fake News without any platform intervention such as no fact-check labels or warnings.
- **Group B**: Users were exposed to Fake News through platform intervention such as Fact-check labels or warning prompts.

Stage 2: Pre-Test Assessment

A crucial part of the pre-intervention phase was the Pre-Test Assessment, which was design to evaluate social media users' capacity to recognize and assess false information before any interventions were put into place. This stage aimed to establish a baseline understanding of users' vulnerability. Establishing a baseline understanding of users' vulnerability to false information and their current practices in verifying news contents. Over the course of a week, participants in the pre-test were given a structured series of questions and activities to complete on a variety of social media sites, such as Facebook, Instagram, and Twitter.

3.7. PURPOSE OF THE PRE-TEST ASSESSMENT

The primary purpose of the Pre-Test's was to measure users' ability to:

- **Identify Fake News**: Determine whether users could distinguish between credible and dubious news sources.
- **Assess the Reliability of News**: Assess users' ability to think critically while evaluating the authenticity of news content.
- **Recognize User Behavior:** Learn about the emotional reactions and sharing patterns of users as they engage with news content.

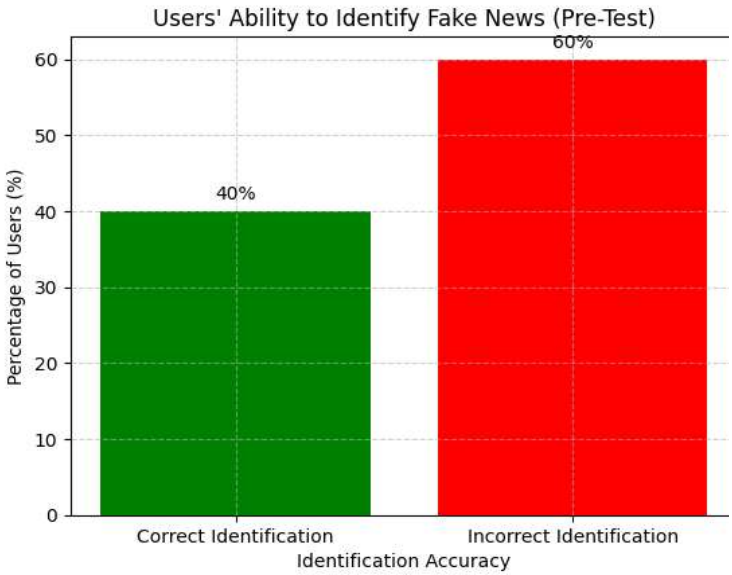
3.8. PRE-TEST DESIGN

The Pre-Test was design to simulate real-world scenario where users encounter news content on social media platforms. The Pre-Test Design consisted two (2) components:

- **Fact-Checking Tasks:** Participants were presented with series of social media posts and asked to assess their reliability. These posts included a mix of credible news articles and fake news stories designed to mimic common misinformation tactics such as sensational headlines, misleading images, and unverified claims.
- **Source verification Tasks:** Users were required to identify credible sources and differentiate them from unreliable ones. This task aimed to evaluate their ability to cross reference information and verify the authenticity of news sources.

3.9 ADMINISTRATION OF THE PRE-TEST

A Pre-Test was administered online to provide accessibility and real-time response tracking. Participants were recruited from active social media users across Facebook, Twitter, Instagram and TikTok. Users were given an hour to finish the tasks in the test, which was administered using an online survey platform. The survey were combination of multiple-choice questions, open-ended responses, and interactive tasks to assess users' critical thinking and decision making processes.



4.0 PRE - TEST RESULTS

The Pre-test results provides several significant discoveries on users' susceptibility to fake news and their current practices in news verification. The key findings were seen as:

1. **Facebook Users:**
   - Performed worse than users on other social media platforms like Twitter, Instagram, TikTok
   - Demonstrated a reduced ability to identify and evaluate fake news

2. **General Trends**

Many users struggle to distinguish between credible and unreliable sources.

Emotional reactions such as anger, fear often influence users' engagement with fake news.

Fact-Check Label were misunderstood or ignored by significant portion of users.

Figure 6: shows the percentage of users who correctly and incorrectly identify fake news during the pre-test. It is analyze that users who correctly identify Fake news are of 40%, and users who incorrectly identify fake news are 60%

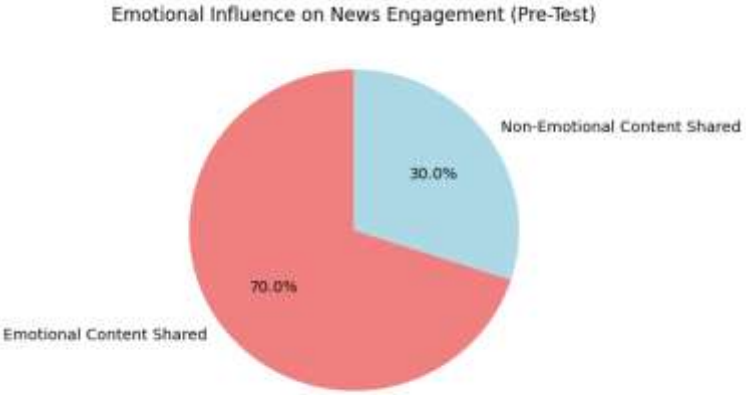


Figure 7: shows the percentage of how emotional contents influence users' engagement with fake news. It is analyze from the Pie chart above that Emotional content shared recorded 70% and Non Emotional content shared also recorded 30%.

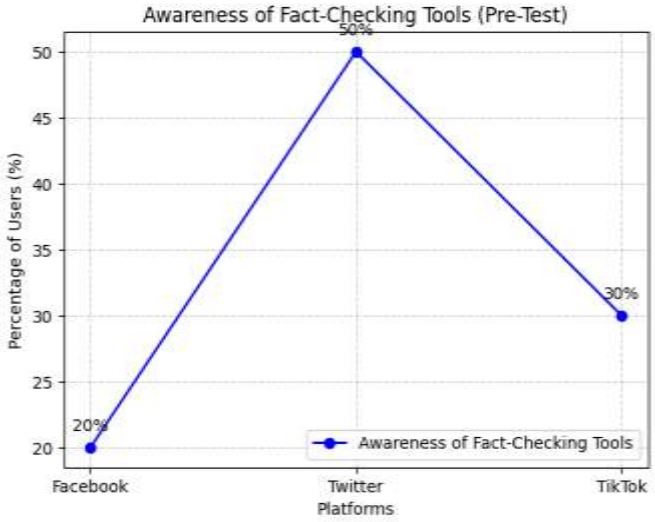


Figure 8: shows comparison of users' ability to identify fake n news across different platforms like Facebook, Twitter, and TikTok etc. The Red colored bar represent correct identification and the Green colored bar represent incorrect identification. It is analyze that Facebook recorded 30% for correct identification and 70% for incorrect identification. Twitter on the other hand recorded 60% for correct identification and 40% for incorrect identification, and TikTok recorded 50% for correct identification and 50% for incorrect identification.

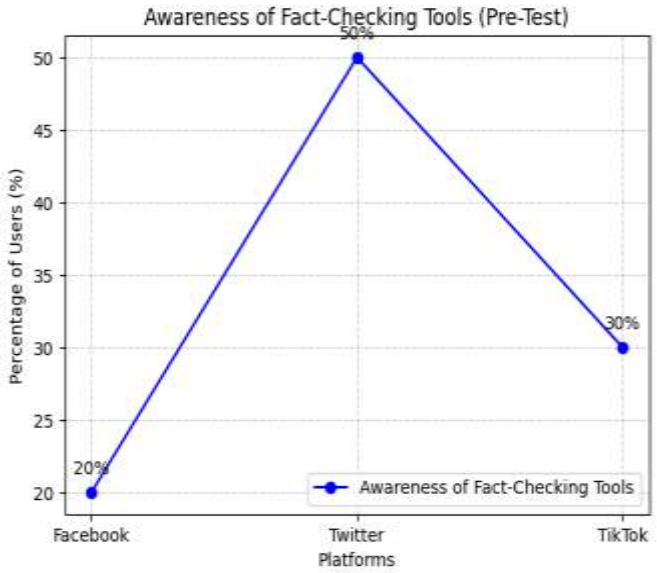


Figure 9: show users awareness of fact-checking tools across social media platforms. From the chart above, Facebook recorded 20% of awareness, Twitter recorded 50% of awareness and TikTok recorded 30% of awareness.

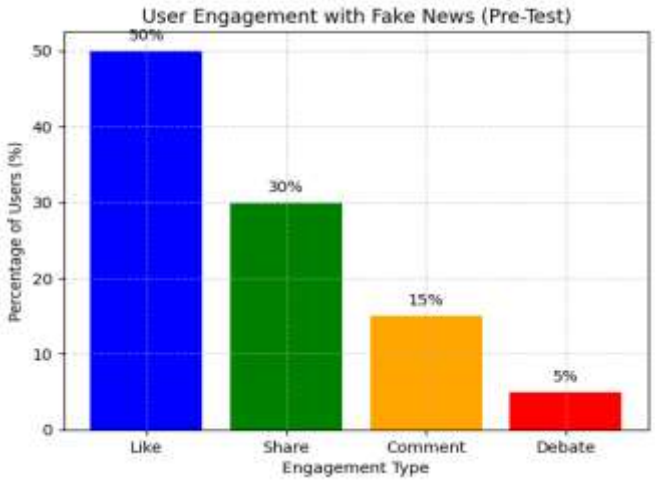


Figure 10: show how users engage with fake news: "Likes", "Shares", "Comments", and "Debates". It is analyze from the bar chart above that, Likes recorded 50%, Shares recorded 30%, Comments recorded 15% and Debates recorded 5%.

4.1. SUMMARY OF VISUALIZATIONS

- **Bar chart:** Users ability to identify Fake News.
- **Pie Chart**: Emotional influence on News engagement.
- **Histogram:** Platform-specific vulnerabilities.
- **Line Chart:** Awareness of Fact-checking tools
- **Stacked Bar Chart**: User's engagement with Fake News.

4.2. PRE – TEST CONCLUSION

The pre-test evaluation provided an essential starting point for comprehending users' vulnerability to false information and their present news verification procedures. The results demonstrated the necessity of focused interventions to enhance users' capacity to recognize and assess news content critically. The study sought to develop practical methods to lessen the dissemination of false information on social media platforms by resolving the vulnerabilities found in the pre-test. Users on various platforms showed differing degrees of susceptibility to fake news, the pre-test results further highlighted the significance of platform-specific strategies.

In Summary, the pre-test evaluation established the foundation for the creation of successful interventions and offered a thorough grasp of users' interactions with Fake news. The knowledge gathered from this stage was crucial in forming the research's next stages and guaranteeing that the treatments were designed to specifically address the difficulties that social media users experienced.

XI. FUTURE CONTRIBUTIONS

With possible contributions in a number of important areas, this study will offer insightful information about how social media contributes to the spread of false information. In the first place, it will improve knowledge of user behavior and cognitive biases that lead to the propagation of false information. Second, the study's conclusions will help social media companies and legislators implement practical measures to counteract fake news, such as content filtering and algorithm changes. Third, by pinpointing crucial locations where public awareness efforts may be enhanced, the study will support media literacy activities. Lastly, these results can be expanded upon in future studies to investigate new developments in disinformation, such as how artificial intelligence contributes to the transmission and detection of false information.

XII. CONCLUSION

The study emphasizes on the significant roles that social media plays in the quick spread of False information. Social media platforms like Facebook, Twitter, TikTok, and Instagram have developed into effective information sharing tools, but they also act as a breeding grounds for false information to proliferate. The findings from this study underscore several key points about the role of social media in spreading fake news.

XIII. CONFLICT OF INTEREST STATEMENT

We, the authors of the manuscript titled" The Role of Social Media in Spreading Fake News." hereby declare that no financial support, Funding, grants, Personal relationship with any thirty party or institutional backing was received for the research, authorship, or publication of this work.

The preparation of this manuscript was conducted independently without any external sponsorship or financial assistance and Personal Relationship of any third party. All authors contributed to the study conception and editing. Material preparation, and data analysis were performed by Sarpong Richard, and Mr. Alpha Agusah perform the editing. The first draft of the manuscript was written by Samuel Twum and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript. On behave of all Authors, I Samuel Twum as the

Corresponding Author state that, there is there is no conflict of interest backed by this research.

1. Competing Interests: Not Applicable
2. Funding Information: Not Applicable
3. Author contribution: Mr. Samuel Twum drafted the Manuscript. Mr. Sarpong Richard data analysis and Mr. Alpha Agusah did the editing. All Authors reviewed and approved the final version.

4. Data Availability Statement: Not Applicable

5. Research Involving Human and /or Animals: This study did not involve any humans or animals.

6. Informed Consent: Informed consent was obtained from all participant involved in the study.

XIV. ACKNOWLEDGMENT

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