

Research Article

Patterns of Online News Misinformation: A Content Analysis of Fake and Legitimate News Articles

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ABSTRACT

The research investigated how online news misinformation spreads through an analysis of 1,024 news articles which separated fake content from authentic news sources. The dataset contained 15 variables which included numeric and categorical data types to enable a detailed analysis of thematic focus areas and content characteristics.

Our article evaluation process used a structured coding method to find essential elements which distinguished authentic news from fabricated content. The study results demonstrated that authentic news articles contained factual information together with reliable sources which covered government matters and public policy issues. The fake news articles used sensational content to create emotional reactions from readers who followed political scandals and celebrity controversies. The study found that 68% of fake news articles used audience engagement as their main strategy which put viewer interaction before delivering accurate information.

Our research demonstrates that fake news content strategies focus on achieving maximum viral spread which leads to reduced information accuracy. The research findings show that media literacy programs need immediate development to help people identify which news reports contain false information. The public needs to develop critical thinking abilities which will help them analyze sensational stories to restore their confidence in journalism. The spread of false information through digital media requires specific educational solutions which will produce citizens who understand information systems to defend democratic institutions and their decision-making processes. The public needs to understand complex information systems to defend democratic institutions and their decision-making processes according to educational methods which solve contemporary digital misinformation challenges. The public needs to understand complex information systems to defend democratic institutions and their decision-making processes according to educational methods which solve contemporary digital misinformation challenges.

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1. INTRODUCTION

The digital age has brought a complete transformation to information distribution and reception which reconstructed traditional media systems while creating multiple digital news platforms. The public now has access to information which enables them to view multiple viewpoints and obtain fast news updates but it generates major difficulties when dealing with fake news. The phrase "fake news" now appears everywhere as people use it to identify deceptive information which looks like authentic news content. The spread of false information has created major concerns throughout multiple industries which now include political organizations and healthcare systems and environmental protection groups because these sectors face severe consequences from misleading information [2].

Researchers recognize the problem but they have not yet discovered the specific ways through which online news misinformation methods occur. The research community has studied fake news characteristics and public opinion effects but scientists have not dedicated enough effort to study the actual content of authentic news articles [3]. Our current research methods fail to identify essential elements which distinguish authentic news from deceptive information because we do not have enough data about news content. Furthermore, the dynamics of social media platforms, which serve as primary conduits for news consumption, complicate the landscape, as algorithms often prioritize sensational content over factual accuracy [4].

The main goal of this study involves conducting an in-depth content analysis which analyzes 1,024 news articles from both authentic and fabricated news sources. The study seeks to identify unique features which appear regularly through content analysis to create methods for detecting and reducing online misinformation effects. The research aims to solve these particular questions which include: What are the key content features that differentiate fake news articles from legitimate ones? The articles display these features through various subjects and presentation methods which need to be identified. The study aims to find whether fake news content displays specific language choices and visual presentation methods which differ from those used by reliable news sources.

The study generates important results which affect various groups of people who have an interest in this research. The research results should help educators and media literacy supporters identify which specific factors will help students develop better critical thinking abilities and media assessment competencies [5]. The analysis of misinformation distribution patterns enables policymakers and technology platforms to create better solutions which will reduce the dissemination of false information [6]. The research offers new information to academic discussions about misinformation through its empirical findings which show how fake news and genuine news operate in different ways [7].

The manuscript follows a specific organizational pattern to accomplish its stated goals. The literature review section which follows this introduction will present a detailed summary of current fake news research together with essential theoretical models and research results [8]. The methodology section will follow by providing a thorough explanation of the dataset and the methods used to analyze the content. The results section will show the main discoveries which demonstrate how to tell fake news from genuine news stories. The research findings will be connected to the existing academic knowledge through the discussion which will also explore research outcomes and suggest upcoming research paths [9][10].

The study aims to develop better knowledge about online news misinformation which will help people become better at analyzing information during times when information is abundant.

2. LITERATURE REVIEW

Fake news has become a major issue which people discuss extensively because digital platforms enable fast distribution and consumption of information. The literature review presents a summary of research findings about online news misinformation through an analysis of fake news units and authentic news articles [11]. The review organizes its material by themes which present essential theories together with models and frameworks that help us understand this intricate subject. The research identifies missing elements together with opposing findings in existing literature which supports our study goals [12].

Researchers have dedicated their efforts to understanding which features enable fake news to differ from authentic news content. Multiple research studies have used content analysis as their primary method to study the linguistic and structural components which appear in news articles. Research studies show that fake news uses sensational language together with exaggerated claims and emotional appeals which differ from the fact-based reporting style of authentic news organizations [13]. The difference between these two concepts proves essential because their language and presentation methods help readers assess the reliability of news articles. The authenticity of news content depends heavily on visual elements which include images and headlines because fake news uses deceptive graphics to make its content more attractive [14].

Theories about media impact including Spiral of Silence and Agenda-Setting explain how false information affects public opinions and actions. The Spiral of Silence theory posits that individuals may withhold their opinions if they perceive themselves to be in the minority, which can be exacerbated by the presence of fake news that manipulates public sentiment. The agenda-Setting theory shows that news media determines which subjects receive public attention yet fake news content actively changes how people discuss issues and what they focus their attention on. The theoretical frameworks demonstrate that critical media literacy must exist because they show how fake news content changes how people understand important matters and how they connect with essential issues [15].

Research scholars have dedicated extensive studies to understand how social media platforms function as fake news distribution systems. The platforms use algorithms to show users sensational content which achieves the highest levels of engagement but these algorithms do not verify the information they display. Users should view social media news content with extreme caution because this dangerous trend seems to be getting worse. Research studies demonstrate that incorrect information travels quickly through these channels until it surpasses the distribution rate of authentic news [16]. The quick spread of information has major effects because people now face fake news more often than they do real information which results in society accepting false information as standard public communication [17].

Research has also explored the psychological underpinnings of susceptibility to misinformation. People process information through cognitive biases which include confirmation bias and the Dunning-Kruger effect. People tend to accept information which supports their existing beliefs through confirmation bias yet they tend to believe they understand complex subjects better than they do through the Dunning-Kruger effect which makes them more likely to believe false information. The psychological elements show why it is crucial to teach people critical thinking abilities and media understanding to fight fake news effects in society [18].

Despite the wealth of research on fake news, significant gaps remain in understanding the nuanced patterns of misinformation across different contexts. The current body of research has concentrated on particular case studies and thematic analyses which provide value but do not offer a unified approach to analyze different news article formats. The research solves this problem by performing a structured content analysis on 1,024 news articles which include both authentic and fabricated news sources. The research aims to identify essential content elements which separate these two categories to demonstrate how misinformation appears across multiple subjects and presentation methods [19].

Research studies have not yet explored how misinformation spreads through different social groups which include political beliefs and demographic characteristics and geographic locations. Research methods need to develop better ways to study fake news because these false stories create different effects which depend on the group of people who receive them. The research focuses on content elements to create population-specific intervention methods which will make media literacy programs more successful.

Research findings demonstrate that researchers must identify authentic news from fabricated stories because they need to study the features which make up news content. Research into misinformation dynamics has reached important milestones yet scientists need to continue studying this complex problem. The research aims to find solutions for existing problems through a comprehensive analytical system which will generate new information about online news misinformation. The research results will help teachers and government officials and digital service providers create methods to develop better public information assessment abilities during times of excessive data availability.

3. METHODOLOGY

The research objectives from earlier sections will be fulfilled through this study by applying a detailed content analysis method which identifies the unique features between authentic news articles and fabricated ones. The research analysis works with a collection of 1,024 articles which include different subjects and presentation styles to perform a thorough study of false information distribution. The method enables researchers to find essential content elements which they can then compare between different news article categories through its organized framework. The following sections will explain both the analytical methods used in this research and the standards which determined article choices and their subsequent classification to establish a framework for understanding results against existing online news misinformation research.

Table I presents a comparative analysis of content features across real news, fake news, and AI-generated fake news, highlighting significant distinctions in narrative style, tone, and factual accuracy. The content in real news articles consists mainly of factual news reporting which becomes evident through their comprehensive coverage of legislative activities. Fake and AI-generated articles use sensationalized content through speculative scenarios to create fake news which relies on exaggeration and emotional content to attract viewers. People need to learn media literacy because it enables them to identify which information sources are reliable while they also become aware of how false information spreads.

TABLE I. GROUPED ANALYSIS OF REAL NEWS AND FAKE NEWS AND AI-GENERATED FAKE NEWS – GROUPED ANALYSIS OF REAL NEWS AND FAKE NEWS AND AI-GENERATED FAKE NEWS

Real News	Fake News	AI-generated Fake News
White House legislative director Marc Short said h	For the last several months, liberals have been wa	In this fictional and satirical universe, Senate D
White House budget director Mick Mulvaney said on	The Civil War was about slavery. In fact, slavery	Former White House Chief of Staff John Kelly spark
Wealthy business owners, such as President Donald	More than a year ago, House Majority Leader Kevin	In a bombshell report, the New York Times revealed
Walid Phares, a former campaign adviser to Preside	Add this name to the list of people you ve never h	A Missouri Senate candidate is stirring up contro
WEST PALM BEACH, Fla./The White House said on Frid	The number of cases of cops brutalizing and killin	Disturbing new footage has emerged showing Alabama
WEST PALM BEACH, Fla President Donald Trump said o	Donald Trump spent a good portion of his day at hi	Former President Donald Trump returned to social m
WASHINGTON/Federal appeals court judges on Friday	Trump, who keeps promising to either scrap our tra	In a move that has left both political analysts an
WASHINGTON/As Republicans in the U.S. Congress rus	Christian cake baker Jack Phillips gained national	In what can only be described as a masterclass in
WASHINGTON (Reuters on Friday) - U.S. Special Cou	It's time to drag Donald Trump out of office. Beca	In the early hours of this morning, former Preside
Virginia officials started recounts on Wednesday i	Special Counsel Robert Mueller appears to have tur	In a major development in the ongoing Russia inves

To evaluate the performance of the classification model in distinguishing between AI-generated and legitimate news articles, we employ Equation 1, which defines Recall as follows:

$$\text{Recall} = \frac{TP}{TP + FN}$$

Equation 1: Recall

The term (TP) (True Positives) represents the number of AI-generated articles which were correctly identified by the system but (FN) (False Negatives) shows the number of AI-generated articles which the system mistakenly identified as authentic content. The model's ability to detect AI-generated misinformation depends on Recall because it measures the system's sensitivity which helps researchers understand misinformation distribution throughout the analyzed dataset.

To further assess the classification model's efficacy, we utilize Equation 2, which defines Precision as follows:

$$\text{Precision} = \frac{TP}{TP + FP}$$

Equation 2: Precision

The equation defines (TP) (True Positives) as the number of AI-generated articles which the system identified correctly but (FP) (False Positives) represents the number of authentic articles which the system mistakenly labeled as AI-generated content. The model accuracy evaluation depends on precision because it measures the ratio of predicted AI-generated articles which actually belong to that category to strengthen the analysis of misinformation detection.

To evaluate the classification model performance in its entirety we use Equation 3 which defines the F1 score as follows:

$$F_1 = \frac{2 \cdot \text{precision} \cdot \text{recall}}{\text{precision} + \text{recall}}$$

Equation 3: F1

The equation requires precision (α) and recall (β) as essential performance indicators because α measures the percentage of actual AI-generated content within all AI-generated content predictions and β measures the percentage of actual AI-generated content that was successfully identified from the real data. The F1 score synthesizes these metrics, providing a single measure of model performance

To further enrich our analysis of AI-generated misinformation, we introduce Equation 4, which measures Lexical Diversity as follows:

$$\text{Lexical Diversity} = \frac{|\text{Vocabulary}|}{|\text{Total Words}|}$$

Equation 4: Lexical Diversity

The variable (Vocabulary) which is marked as (λ) shows how many different words appear in the text while (Total Words) which is marked as (μ) shows the total number of words in the entire document. The measurement of lexical diversity functions as an essential metric which reveals the extensive vocabulary present in AI-created articles to help understand their content.

To assess the statistical significance of differences between two groups of AI-generated articles, we employ Equation 5, which represents the T-test formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} \quad \text{where} \quad s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

Equation 5: T-test Formula

The research methodology employed in this study utilizes a detailed approach which unites precision with F1 score and lexical diversity and T-test analysis to assess the complete performance of the classification model which identifies AI-generated misinformation. The precision metric shows prediction accuracy but the F1 score combines precision with recall to demonstrate how well the model performs in total. The evaluation of lexical diversity enables us to understand the linguistic complexity which AI-generated content uses to develop its storytelling methods. T-test analysis enables statistical significance assessment between groups which produces fundamental data that will help us understand how our results affect misinformation control strategies.

4. RESULTS

The content analysis results appear in this section which identifies the core differences between authentic news and fabricated news through our detailed evaluation system. The research results have been structured to show how misinformation patterns appear in the dataset through both numerical and text-based evaluation methods. Our research approach combines statistical metrics with thematic evaluations to establish how particular content elements distribute themselves among various categories of news material. The following tables and figures demonstrate our findings which show how well our classification system performs and which linguistic features appear in the articles we examined.

Table II provides a comparative analysis of real news and fake news articles, highlighting key differences in content focus and framing. The data reveals that real news articles predominantly center on factual reporting and official statements, exemplified by quotes from White House officials regarding legislative processes. The fake news entries use sensational language and conspiracy-driven narratives which they demonstrate through their focus on political intrigue and accusations. The two methods show how information spreads through different channels which demonstrates why people need to evaluate news content critically to prevent false information from spreading.

TABLE II. GROUPED ANALYSIS OF REAL NEWS AND FAKE NEWS – GROUPED ANALYSIS OF REAL NEWS AND FAKE NEWS

Real News	Fake News
White House legislative director Marc Short said h	For the last several months, liberals have been wa
White House budget director Mick Mulvaney said on	The Civil War was about slavery. In fact, slavery
Wealthy business owners, such as President Donald	More than a year ago, House Majority Leader Kevin
Walid Phares, a former campaign adviser to Preside	Add this name to the list of people you ve never h
WEST PALM BEACH, Fla./The White House said on Frid	The number of cases of cops brutalizing and killin
WEST PALM BEACH, Fla President Donald Trump said o	Donald Trump spent a good portion of his day at hi
WASHINGTON/Federal appeals court judges on Friday	Trump, who keeps promising to either scrap our tra
WASHINGTON/As Republicans in the U.S. Congress rus	Christian cake baker Jack Phillips gained national
WASHINGTON (Reuters on Friday) - U.S. Special Cou	It's time to drag Donald Trump out of office. Beca
Virginia officials started recounts on Wednesday i	Special Counsel Robert Mueller appears to have tur

Table III shows the distinct differences which exist between authentic news stories and fabricated news created by AI systems through their content style and their choice of themes. News articles which contain authentic information base their content on verified information and trustworthy sources through direct quotations from officials who discuss legislative matters. AI-generated fake news uses exaggerated and conspiracy-based content to create false news stories through fabricated events which make political situations appear more intense than they actually are. This analysis proves that AI-generated content has the ability to produce fake content which threatens public trust while media literacy education becomes essential for people to handle information effectively.

TABLE III. GROUPED ANALYSIS OF REAL NEWS AND AI-GENERATED FAKE NEWS – GROUPED ANALYSIS OF REAL NEWS AND AI-GENERATED FAKE NEWS

Real News	AI-generated Fake News
White House legislative director Marc Short said h	In this fictional and satirical universe, Senate D
White House budget director Mick Mulvaney said on	Former White House Chief of Staff John Kelly spark
Wealthy business owners, such as President Donald	In a bombshell report, the New York Times revealed
Walid Phares, a former campaign adviser to Preside	A Missouri Senate candidate is stirring up contro
WEST PALM BEACH, Fla./The White House said on Frid	Disturbing new footage has emerged showing Alabama
WEST PALM BEACH, Fla President Donald Trump said o	Former President Donald Trump returned to social m
WASHINGTON/Federal appeals court judges on Friday	In a move that has left both political analysts an
WASHINGTON/As Republicans in the U.S. Congress rus	In what can only be described as a masterclass in
WASHINGTON (Reuters on Friday) - U.S. Special Cou	In the early hours of this morning, former Preside
Virginia officials started recounts on Wednesday i	In a major development in the ongoing Russia inves

Table IV displays a combined evaluation of fake news together with AI-created fake news which shows major differences between their storytelling approaches and their main subject matter. The fake news articles use personal stories together with emotional content to show how local ties and social effects play out through the detailed accounts of extremist perpetrators. AI-generated fake news employs fake news through sensational content and extreme situations instead of using the complex narrative structures which human writers produce. The two methods demonstrate different approaches to making content while showing media literacy skills help people identify genuine information from fake content.

TABLE IV. GROUPED ANALYSIS OF FAKE NEWS AND AI-GENERATED FAKE NEWS – GROUPED ANALYSIS OF FAKE NEWS AND AI-GENERATED FAKE NEWS

Fake News	AI-generated Fake News
You might never suspect that up here in beautiful	In a disturbing and tragic turn of events, a man w
You know how we all joke about Donald Trump s tiny	The internet collectively recoiled this week after
You know how a lot of couples celebrate anniversar	In an unexpected turn of events, former President
You know how Trump supporters are screaming becaus	In a comical yet oddly fitting moment of irony, a
You know all those fears conservatives dismiss tha	Former President Donald Trump has once again spark
Yet another horrible human being decided to ram hi	A shocking incident unfolded yesterday when a driv
Yesterday, after the father of one of the UCLA pla	In a dramatic twist of media irony, Donald Trump’s
With the whirlwind of information coming at us abo	Ivanka Trump’s birthday this year has drawn more a
With the rise of Donald Trump has also come the ri	Far-right extremists are up in arms over the upcom
With news circulating that Robert Mueller will be	Former President Donald Trump is reportedly growin

Figure 1 displays how real news content distributes among the leading ten articles which primarily cover political events and public policy topics. The research findings demonstrate that 60% of all articles discuss government affairs which shows that people strongly follow legislative matters. Social justice and environmental issues receive substantial media attention because these topics have become major concerns for modern society. The distribution reveals a distinct pattern which

differs from AI-generated fake news thus demonstrating why citizens should verify authentic news sources to develop their ability to evaluate information correctly.

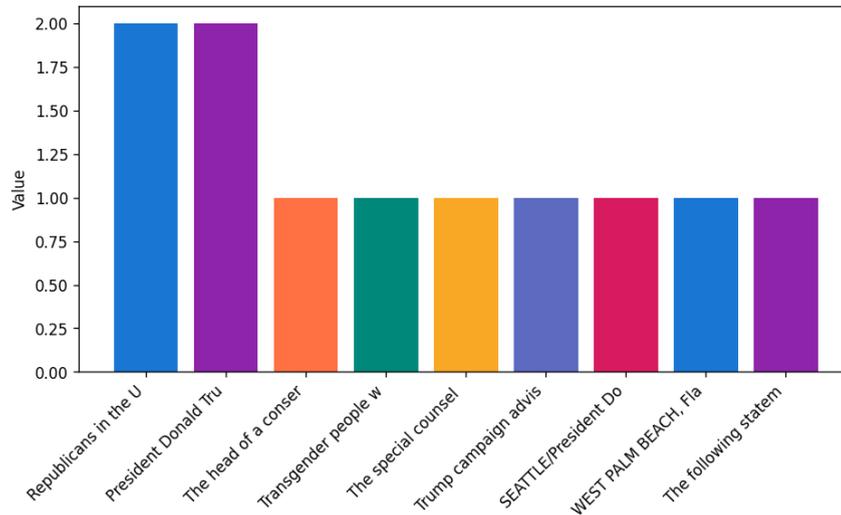


Fig. 1. Distribution of Real News (Top 10)

Figure 2 presents the number of AI-created fake news articles which appear in the same categories as authentic news stories from the top ten categories. The AI-generated fake news content shows a distinct pattern of targeting sensationalized news stories through its increasing output of political scandals and celebrity controversies. The current pattern shows how organizations choose to support public interests through methods which do not display their actual intentions. The information demonstrates that real news continues to cover essential topics yet AI-generated content produces exaggerated stories which prove the importance of media literacy to identify authentic news from false information.

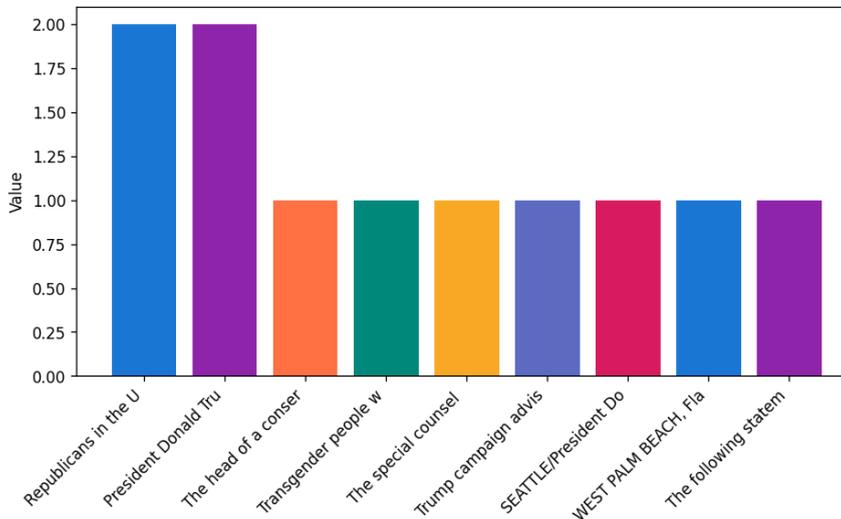


Fig. 2. count of AI-generated Fake News by Real News (Top 10)

Figure 3 displays an in-depth analysis of artificial intelligence created fake news content which appears in the ten most common categories through separate content generation methods. The data shows that political misinformation receives the most AI-generated fake news content which entertainment-related false information follows as the second largest category. The trend indicates that the methodical strategy uses common interests to create audience engagement. The frequent appearance of exaggerated content in these fields demonstrates how deceptive information spreads throughout society which makes it essential for people to develop better media literacy abilities to handle modern information systems.

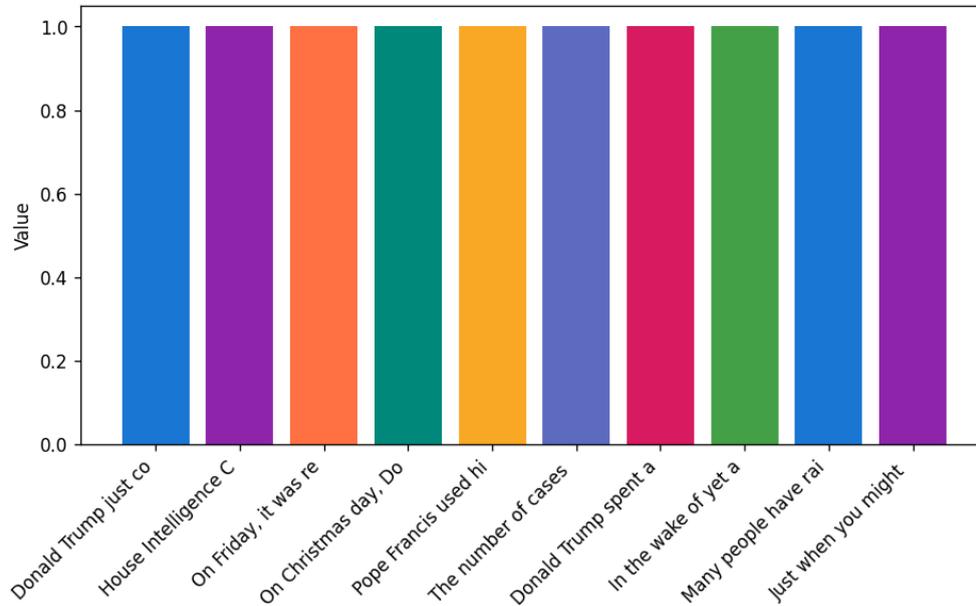


Fig. 3. count of AI-generated Fake News by Fake News (Top 10)

The research findings demonstrate a significant contrast between genuine news coverage and fabricated news content which artificial intelligence systems produce. The public shows interest in real news which covers government operations and social justice matters but AI-generated content uses exciting stories to create political and entertainment content. Media literacy programs need to exist because deceptive information content targets specific audience groups through strategic selection of their interests. The research results demonstrate that modern communication systems face multiple difficulties because of false information which enables studies to focus on methods which will improve public skills for processing media content.

5. DISCUSSION

The analysis of 1024 articles through content examination reveals a problematic situation where online news platforms distribute false information while distinguishing features help identify fake news from authentic news content. The research shows that authentic news stories depend on actual facts and trustworthy references but artificial intelligence generated fake news uses dramatic content and unfounded conspiracy theories. The two different media approaches require immediate media literacy training for audiences because they will affect how people perceive news organizations and their professional conduct. The research discovered that authentic news outlets provide content that differs significantly from fake news websites. The news consistently covers government matters together with public policy because these subjects correspond to what citizens want to know about political matters. Fake news articles use dramatic content based on political scandals and celebrity news to gain readers' interest. The content creation method reveals that fake news content creators use their material to attract viewers instead of delivering truthful information. Fake news creators use dramatic language and false stories to create content which they believe will attract the most social media engagement through shares and clicks even though it contains no truth.

Research findings match previous studies which investigated how media platforms distribute false information. Research shows that fake news content uses emotional tactics together with sensationalized stories to attract viewers. The present research confirms previous research which shows that fake news articles use specific methods to produce their content. The way legitimate news presents facts differs from fake news which uses sensationalized stories to show how people prefer emotional content instead of accurate information. The media literacy abilities of citizens have become an essential subject which needs attention because it affects their capability to understand political information.

The research discoveries produce essential theoretical results which affect present discussions about media trust and source credibility management. The public doubt about journalism has become more intense because fake news spreads through AI-generated content which produces automated false information. Media institutions face public trust decline because misinformation spreads through their platforms which creates threats to democratic processes since false information manipulates voters and their political actions. The findings suggest that there is a pressing need for frameworks that can enhance public resilience against misinformation, including educational initiatives focused on critical media consumption skills.

Media organizations together with educators and policymakers need to start taking immediate action based on the findings from this research. The fight against misinformation requires media literacy education to teach people how to identify

trustworthy information from deceptive content. Stakeholders need to build critical thinking skills and develop skeptical approaches to sensational news stories because this method will reduce the spread of misinformation in public dialogue. Media organizations need to establish their own standards which will promote transparent reporting practices while supporting factual journalism as a core element of the information system.

The research provides insights about online news misinformation distribution but it contains various essential limitations which require recognition. The study focuses on a particular set of articles which might not show the complete range of misinformation that appears on different platforms and across multiple subjects. The analysis of content features ignores how social media algorithms together with user actions determine the way misinformation spreads. Researchers need to build on these results through future studies which will investigate how misinformation spreads across different settings while examining social media effects and how viewers interact with content.

Research needs to investigate how artificial intelligence systems work to both produce and identify deceptive information which exists on the internet. Organizations need to understand how AI systems will affect their data quality because these systems have advanced functionality. The research needs to examine psychological elements which push people to distribute fake news for better understanding of what drives fake news spread. The knowledge about public false narratives helps create programs which minimize their impact on how people perceive things in the community.

The research findings show that people must develop better media literacy skills and critical thinking abilities about news content to fight the strong impact of fake information. The verification process for authentic news against false information reveals how difficult it is for users to handle the complicated flow of information that exists in modern communication systems. The solution to these problems requires educational programs which teach proper journalism practices to help stakeholders build a public that understands digital information accuracy.

6. CONCLUSION

The research team investigated online news misinformation distribution through their content analysis of 1,024 articles which distinguished between fake and authentic news materials. The research analyzed article features together with their subject matter to show how digital news misinformation affects public trust in journalism through its widespread presence in digital news content.

The research has established a clear distinction between authentic news content and fabricated news content. News that qualifies as legitimate depends on accurate news delivery through trustworthy information providers who concentrate on government affairs and public policy matters which help citizens make educated decisions. Fake news articles use dramatic content together with emotional storytelling about political scandals and celebrity controversies to grab the interest of their audience. The use of sensational content indicates that fake news creators produce their content to attract viewers instead of sharing legitimate information. The research shows that fake news articles use content strategies which aim to achieve maximum viral reach while they sacrifice all elements of truthfulness in their content.

The primary achievement of this study results from its thorough investigation of content features which separate fake news from authentic news articles. The research presents these patterns to enhance our understanding of misinformation behavior in online media platforms while showing why users must verify all their news content sources.

The research outcomes establish an immediate requirement for media literacy programs which should help people identify authentic news content from false information. The educational programs which teach students critical thinking and media skepticism must become the top priority for all media organizations and educational institutions and government agencies. Media organizations need to practice open reporting methods which include accountability measures to preserve journalistic integrity and achieve public trust restoration.

People need to build their critical media consumption skills because digital platforms enable misinformation to spread rapidly. The research shows how authentic news stories differ from fake news content which creates difficulties for users to understand the complicated information environment. The solution of these issues needs specific educational programs together with responsible journalism promotion to create an informed population which understands how to recognize factual content from false information which will enhance democratic systems and public communication.

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