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THE BARRIERS TO EFFECTIVE INFORMATION DISSEMINATION BY MASS MEDIA: ASSESSING THE MITIGATING STRATEGIES USING MODERN TECHNOLOGIES IN THE 21ST CENTURY

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ABSTRACT

This study examined the barriers to effective information dissemination by mass media, assessing the mitigating strategies using modern technologies in the 21st century. In an era dominated by rapid technological advancements, the mass media remain a critical force in shaping public perception, influencing policy, and fostering societal progress. In the context of carrying out the research, the following subheads were explored: the concept of effective information dissemination, the concept of mass media and the concept of modern technologies. The study mentioned censorship/government restrictions, digital divide/limited access to technology, and commercialization/media bias as the types of barriers to effective information dissemination by mass media. The different types of mass media as mentioned in the study include, among others, print media, broadcast media and digital media. The study further mentioned the types of modern technologies to include artificial intelligence (AI) and machine learning, blockchain technology and the Internet of Things (IoT). The study further mentioned artificial intelligence (AI)/machine learning, blockchain technology and big data/analytics as some of the modern technologies used in mitigating information dissemination barriers in media space. The study concluded that despite its critical role in shaping public perception and influencing policy, mass media faces significant barriers to effective information dissemination. One of the recommendations made was that mass media organisations should integrate artificial intelligence (AI)-driven fact-checking tools, blockchain verification systems, and algorithmic content moderation to combat misinformation and disinformation.

KEYWORDS: Information, Mass Media, Modern Technologies and 21st Century

INTRODUCTION

In an era dominated by rapid technological advancements, the mass media remain a critical force in shaping public perception, influencing policy, and fostering societal progress. However, despite its widespread reach, the effectiveness of information dissemination is often hindered by various barriers, including misinformation, censorship, digital divides, and institutional biases (Ologunebi and Taiwo, 2025). The ability of mass media to fulfil its fundamental role in educating, informing, and entertaining is constantly challenged by these obstacles, necessitating the adoption of innovative strategies to enhance efficiency and credibility. This study explores the key barriers affecting mass media communication and evaluates how modern technologies are being leveraged to mitigate these limitations.

A major impediment to effective information dissemination is the proliferation of misinformation and disinformation, which distort public understanding of critical issues. The rise of social media platforms, while facilitating real-time communication, has also accelerated the spread of false narratives and propaganda (Osimen & Adeyefa, 2024). Traditional media outlets, once regarded as the gold standard for credible reporting, now compete with unregulated digital sources, many of which prioritise engagement over accuracy. Consequently, strategies such as artificial intelligence-driven fact-checking, blockchain verification systems, and algorithmic content moderation have emerged as potential solutions to counteract misleading information and restore public trust in the media (Shinde, Patil, Kotecha, Potdar, Selvachandran and Abraham, 2024).

Another significant challenge is media censorship, which varies across political and cultural landscapes. In authoritarian regimes, government control over mass communication channels restricts the free flow of information, limiting public access to unbiased reporting (Dal and Nisbet, 2022). Even in democratic societies, corporate and political influences can shape media narratives, leading to partial or skewed coverage of events. To counteract these limitations, digital encryption technologies, decentralised networks, and independent online platforms have provided alternative avenues for journalists and citizens to share information securely and without undue interference (Wilding, Fray, Molitorisz & McKewon, 2018).

The digital divide presents yet another substantial hurdle, particularly in developing regions where internet connectivity and media infrastructure remain inadequate. Unequal access to information exacerbates societal disparities, leaving marginalised communities without essential news and knowledge (Baraka, 2024). Addressing this issue requires innovative solutions such as satellite-based internet services, mobile journalism, and community-driven digital literacy programmes that empower individuals with the tools needed to engage with media effectively. These technological interventions ensure that information dissemination is not only widespread but also inclusive.

Furthermore, the commercialisation of media has introduced financial constraints that impact content quality and accessibility. Many media organisations rely on advertising revenue, leading to sensationalist reporting designed to attract viewership rather than provide factual, in-depth analysis (Udeze and Uzuegbunam, 2013). Subscription-based models, crowdfunding

initiatives, and AI-driven content personalisation have emerged as alternative revenue streams that prioritise journalistic integrity over profit-driven motives. These strategies allow media houses to maintain independence while delivering well-researched, unbiased, and informative content to the public.

CONCEPT OF EFFECTIVE INFORMATION DISSEMINATION

Effective information dissemination involves tailoring the message and channel to the specific needs of the audience and evaluating the effectiveness of the process. According to Eze (2020), effective information dissemination is the transmission of relevant messages in the form of data, ideas, opinions, gestures and attitude from a sender to a receiver showing or stating the facts and objectives of the information.

Steve-Beke (2019) mentioned that effective information dissemination ensures the accomplishment of the predetermined goals and objectives. Information dissemination refers to the process of distributing knowledge, news, or data to a target audience through various communication channels. Effective information dissemination ensures that the intended message reaches the right people in a clear, timely, and impactful manner. This concept is crucial in various sectors, including education, healthcare, government, business, and media.

CONCEPT OF MASS MEDIA

Mass media refers to the technologies and channels used to communicate information to a large, often diverse, audience simultaneously, encompassing platforms like television, radio, newspapers, magazines, and the internet. Mass media means technology that is intended to reach a mass audience. Mass media, modes (or, less commonly, a single mode) of mass communication whereby information, opinion, advocacy, propaganda, advertising, artwork, entertainment, and other forms of expression are conveyed to a very large audience (Duignan, 2025).

According to Ife (2022) mass media means technology that is intended to reach a mass audience. It is the primary means of communication used to reach the vast majority of the general public. Mass media refers to a system of technology such as radio, TV, newspaper, etc. that is generally used as the primary means of communication to reach the majority of the mass people, i.e. general public. Mass media is the means that people bring to their utility in order to communicate with people. It's a medium which provides information. When we watch the news or our favorite TV show on our TVs and listen to our favorite RJs on the radio, it is all possible because of the existence of mass media.

CONCEPT OF MODERN TECHNOLOGIES

Modern technology refers to the convergence of computing and networking, empowering users with decentralised control over advanced equipment and knowledge essential for its use.

Modern technologies refer to the latest advancements in science and engineering that enhance human capabilities, improve efficiency, and transform various industries. These include innovations such as artificial intelligence (AI), robotics, biotechnology, nanotechnology, and the Internet of Things (IoT), which enable automation, data-driven decision-making, and seamless connectivity. According to Vărzaru & Bocean (2024), modern technologies have revolutionised fields like healthcare, communication, education, and transportation, making tasks faster, more accurate, and more accessible. However, they also bring challenges such as cybersecurity risks, job displacement due to automation, and ethical concerns regarding data privacy and AI decision-making. Despite these challenges, modern technologies continue to shape the future, offering solutions for global issues like climate change, healthcare accessibility, and space exploration.

Modern technologies have revolutionised every aspect of human life, shaping industries, communication, healthcare, and education. The rise of artificial intelligence (AI), robotics, and the Internet of Things (IoT) has led to unprecedented advancements in automation and efficiency. AI-powered systems now perform complex tasks such as medical diagnoses, financial predictions, and even creative writing, reducing human effort and enhancing productivity. Similarly, IoT devices connect everyday objects to the internet, allowing for real-time monitoring and smart decision-making, from home automation to industrial management. Furthermore, the development of 5G networks has significantly improved internet speed and connectivity, enabling smoother data transfer, remote work, and seamless virtual interactions across the globe.

TYPES OF BARRIERS TO EFFECTIVE INFORMATION DISSEMINATION BY MASS MEDIA

Misinformation and Disinformation: False or misleading information spreads rapidly, particularly through digital and social media platforms. This undermines public trust in credible news sources and distorts public perception of important issues.

- **Censorship and Government Restrictions:** Many governments impose strict regulations, press restrictions, and even internet shutdowns, limiting the free flow of unbiased information. Journalists in restrictive environments often face threats, harassment, or legal consequences for reporting sensitive issues.
- **Digital Divide and Limited Access to Technology:** In many developing regions, poor internet infrastructure and low digital literacy prevent equal access to information. People in rural and marginalised communities often lack the technological resources needed to engage with mass media effectively.
- **Commercialisation and Media Bias:** The increasing commercialisation of media means that many outlets prioritise revenue generation over factual reporting. Political and corporate influences shape narratives, leading to biased reporting that misinforms or manipulates public opinion.

- **Language and Cultural Barriers:** Differences in language and cultural perspectives create challenges in information dissemination. Many global news stories are not accessible to diverse linguistic groups, and cultural biases may affect how news is presented and interpreted.
- **Information Overload and Audience Fatigue:** The overwhelming amount of news and media content makes it difficult for audiences to differentiate between credible sources and misleading information. Constant exposure to excessive media can also lead to disengagement or selective attention to certain narratives.
- **Security Threats and Cyber Attacks:** Journalists and media organisations are increasingly targeted by hacking, surveillance, and cyber threats. These attacks compromise data security, manipulate information, and sometimes suppress critical news coverage.
- **Infrastructure and Logistical Challenges:** Poor communication networks, frequent power outages, and natural disasters disrupt media operations. These challenges can delay news reporting and hinder access to real-time, reliable information, particularly in crisis situations.

TYPES OF MASS MEDIA

Mass media refers to various communication platforms that disseminate information to a large audience. These platforms play a crucial role in shaping public opinion, spreading news, and providing entertainment. Mass media can be categorized into several types based on the medium used for communication.

Print Media: Print media is one of the oldest forms of mass communication and includes newspapers, magazines, brochures, journals, and books. It provides in-depth news analysis, investigative journalism, and educational content. Despite digital advancements, print media remains relevant, especially in regions with limited internet access.

Broadcast Media: Broadcast media uses electronic channels to deliver information to the public through audio and visual formats. It includes:

- **Radio** – A widely used audio-based medium that provides news, music, talk shows, and entertainment, often accessible even in remote areas.

- **Television** – Combines audio and visual elements to deliver news, entertainment, educational programs, and advertisements to a broad audience.

Digital Media: Digital media refers to content distributed through internet-based platforms, making it the fastest-growing form of mass media. It includes:

- **Social Media** – Platforms such as Facebook, Twitter, Instagram, and YouTube enable instant information sharing, user interaction, and live streaming.

- **News Websites and Blogs** – Online news portals and blogs provide real-time updates, opinion pieces, and multimedia content.

- **Podcasts and Streaming Services** – Audio and video content available on platforms like Spotify, Netflix, and YouTube cater to diverse audiences with on-demand accessibility.

Outdoor Media: Outdoor media includes advertisements and information displayed in public spaces. Examples include billboards, posters, banners, transit ads (on buses, taxis, and trains), and digital screens in public places. These mediums effectively reach large audiences in urban areas.

Film and Cinema: Movies and documentaries serve as powerful mass communication tools, influencing culture, educating audiences, and addressing social issues. Film media, whether through traditional cinemas or digital streaming platforms, has a lasting impact on public perception and storytelling.

TYPES OF MODERN TECHNOLOGIES

Modern technologies have revolutionised various industries, including communication, healthcare, education, business, and mass media. These technologies enhance efficiency, connectivity, and accessibility, transforming how people interact with information and each other. Below are some key types of modern technologies:

- **Artificial Intelligence (AI) and Machine Learning:** AI enables machines to perform tasks that require human intelligence, such as speech recognition, decision-making, and data analysis. Machine learning, a subset of AI, allows systems to learn and improve from experience without explicit programming. These technologies power automation, recommendation systems, and predictive analytics.
- **Blockchain Technology:** Blockchain is a decentralised and secure digital ledger used to record transactions transparently. It enhances data security, prevents fraud, and enables digital currency transactions. Beyond cryptocurrency, blockchain is applied in supply chain management, digital identity verification, and secure communication.
- **Internet of Things (IoT):** IoT connects physical devices—such as smart appliances, vehicles, and industrial machines—to the internet, allowing them to collect and exchange data. This technology improves automation, real-time monitoring, and efficiency in various sectors, including healthcare, agriculture, and smart cities.
- **Big Data and Analytics:** Big data refers to vast amounts of structured and unstructured data that require advanced analytical tools to process. Businesses and organisations use big data analytics to make informed decisions, predict trends, and personalise user experiences. It is widely used in finance, marketing, healthcare, and governance.
- **Cloud Computing:** Cloud computing allows users to store, manage, and process data on remote servers instead of local devices. It enhances data accessibility, scalability, and

collaboration, supporting businesses, education, and media industries with services like Software as a Service (SaaS) and Infrastructure as a Service (IaaS).

- **5G and High-Speed Internet:** The fifth-generation (5G) wireless technology offers ultra-fast internet speeds, lower latency, and improved network reliability. It supports innovations like autonomous vehicles, remote surgery, and seamless real-time communication. High-speed internet enables efficient content streaming, online gaming, and digital collaboration.
- **Augmented Reality (AR) and Virtual Reality (VR):** AR overlays digital content onto the real world, while VR creates immersive, computer-generated environments. These technologies are used in gaming, training simulations, education, and interactive media, enhancing user engagement and experience.
- **Cybersecurity Technologies:** With increasing cyber threats, modern cybersecurity tools, such as firewalls, encryption, multi-factor authentication, and AI-driven threat detection, protect digital systems from hacking, data breaches, and malware attacks. Cybersecurity is essential for protecting personal, corporate, and governmental digital assets.
- **Biotechnology and Genetic Engineering:** Advances in biotechnology include CRISPR gene editing, personalised medicine, and biopharmaceuticals. These technologies improve disease treatment, agricultural productivity, and environmental sustainability.
- **Robotics and Automation:** Robotics integrates AI and mechanical engineering to develop machines capable of performing complex tasks. Automation in industries, from manufacturing to customer service, increases productivity and reduces human workload.

MODERN TECHNOLOGIES USED IN MITIGATING INFORMATION DISSEMINATION BARRIERS IN MEDIA SPACE

- The evolution of technology has significantly improved the efficiency and credibility of mass media by addressing challenges such as misinformation, censorship, digital divides, and accessibility issues. Modern technologies play a crucial role in mitigating these barriers, ensuring the smooth and reliable dissemination of information. Below are some key technologies used in overcoming these challenges:
- **Artificial Intelligence (AI) and Machine Learning:** AI-powered tools help in fact-checking, content moderation, and detecting misinformation. Machine learning algorithms analyze news patterns, identify fake news, and recommend reliable sources. AI-driven chatbots also enhance audience engagement by providing instant news updates and answering queries.
- **Blockchain Technology:** Blockchain enhances transparency and trust in media by securing digital content, verifying the authenticity of news sources, and preventing unauthorized modifications. Decentralized blockchain networks ensure that information remains tamper-proof, reducing the spread of false news.
- **Big Data and Analytics:** Big data helps media organizations analyze audience behavior, trends, and engagement, allowing for personalized content delivery. Data analytics also

assist in tracking misinformation patterns and optimizing news distribution strategies for better outreach.

- **Cloud Computing:** Cloud-based platforms facilitate remote access, storage, and sharing of media content. Journalists can securely store and retrieve reports, ensuring real-time collaboration and seamless information dissemination across various locations.
- **5G and High-Speed Internet:** The introduction of 5G technology has significantly improved internet speeds, enabling high-quality live streaming, real-time news updates, and efficient online communication. This advancement ensures that information reaches audiences instantly and without disruptions.
- **Social Media Algorithms and Content Moderation Tools:** Social media platforms use AI-driven algorithms to filter out misinformation, detect harmful content, and prioritize credible news sources. Fact-checking initiatives and automated moderation tools help control the spread of fake news and propaganda.
- **Internet of Things (IoT):** IoT-enabled smart devices collect real-time data, enhancing investigative journalism and media reporting. IoT technologies support automated content gathering, live event monitoring, and efficient information sharing.
- **Augmented Reality (AR) and Virtual Reality (VR):** AR and VR technologies provide immersive experiences for audiences by enhancing storytelling in news reporting, documentaries, and educational content. These technologies help present complex information in an engaging and interactive manner.
- **Digital Encryption and Cybersecurity Tools:** To counter media censorship and protect journalists, digital encryption tools enable secure communication and data sharing. Virtual Private Networks (VPNs) and encrypted messaging services help bypass government-imposed restrictions on information dissemination.
- **Mobile Journalism and Citizen Reporting Platforms:** Smartphones, mobile apps, and crowdsourced reporting platforms empower individuals to document and share news in real time. These technologies ensure that information is disseminated quickly, even in areas where traditional media coverage is limited.

CONCLUSION

Despite its critical role in shaping public perception and influencing policy, mass media faces significant barriers to effective information dissemination. Challenges such as misinformation, censorship, the digital divide, and commercialisation threaten credibility and accessibility. However, modern technologies—including AI-driven fact-checking, blockchain verification, decentralised networks, and alternative revenue models—offer promising solutions. By adopting innovative strategies, mass media can enhance efficiency, ensure inclusivity, and maintain journalistic integrity. The ability to adapt to technological advancements will ultimately determine its effectiveness in fulfilling its democratic responsibility and fostering an informed society in the 21st century.

RECOMMENDATIONS

- Mass media organisations should integrate artificial intelligence (AI)-driven fact-checking tools, blockchain verification systems, and algorithmic content moderation to combat misinformation and disinformation.
- Governments and private organisations should invest in expanding internet accessibility, particularly in underserved regions. Initiatives such as satellite-based internet, mobile journalism, and digital literacy programs can help bridge the digital divide, ensuring equitable access to reliable information for all communities.
- Media organisations should explore alternative revenue models such as subscription-based platforms, crowdfunding, and AI-driven content personalisation to reduce reliance on advertising-driven sensationalism.

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