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Impact of social media-driven misinformation on project sustainability and public perception in mega projects

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Abstract

The proliferation of social media has transformed the dissemination of information. Still, it has also facilitated the spread of misinformation, significantly influencing public perception and the sustainability of large-scale projects. This study examines the impact of social media-driven misinformation on project sustainability and public perception in Nigeria, with a focus on large-scale infrastructure projects. It explores how misinformation affects stakeholder trust, policy implementation, and project continuity. A qualitative research approach was adopted, focusing on the Abuja Municipal Area Council (AMAC) in the Federal Capital Territory (FCT), Nigeria. Purposive sampling was used to select 15 key stakeholders, including construction executives, government regulatory officials, and professional association members. Data were collected through semi-structured interviews and were analysed thematically. Findings indicate that misinformation weakens stakeholder confidence, disrupts project timelines, and complicates regulatory enforcement. Key institutions, including the National Orientation Agency (NOA), the Nigerian Communications Commission (NCC), and the Infrastructure Concession Regulatory Commission (ICRC), play crucial roles in addressing these challenges. The study highlights the need for stronger media literacy programmes, proactive public engagement strategies, and improved regulatory oversight. This research contributes to understanding the link between misinformation and governance in project management, reinforcing the importance of accurate information in ensuring the success and sustainability of mega projects.

Keywords: Social media; Misinformation; Public perception; Mega projects; Project sustainability; Digital communication

1. Introduction

The advent of social media has significantly transformed the global information landscape, altering how news and public discourse are shaped. Platforms such as Twitter (now X), Facebook, Instagram, and YouTube have emerged as dominant channels for real-time communication, enabling engagement across diverse societal, economic, and political issues. While these platforms enhance connectivity and facilitate the dissemination of knowledge, they also contribute to the rapid spread of misinformation, defined as false or misleading information shared without verification (Vosoughi, Roy, & Aral, 2018). The proliferation of misinformation has raised concerns in various sectors, including politics, health, and crisis communication. However, its impact on project management, particularly regarding mega-projects, remains an underexplored yet critical area of study.

Megaprojects, large-scale infrastructure, energy, and urban development initiatives that require significant investment and yield long-term socio-economic implications, are particularly susceptible to misinformation (Flyvbjerg, 2017).

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These projects, often exceeding costs of £1 billion, involve multiple stakeholders, including governments, private investors, environmental groups, and local communities. Their complexity and high public visibility make them prime targets for misinformation, which can shape public opinion, influence policy decisions, and disrupt project timelines.

Misinformation surrounding mega-projects often centres on financial transparency, environmental impact, and feasibility. For instance, large infrastructure projects such as the Dakota Access Pipeline in the United States, the HS2 High-Speed Rail Project in the United Kingdom, and the Lagos-Calabar Railway Project in Nigeria have faced significant opposition due to misleading narratives circulated on social media (Kalu & Osuagwu, 2022). These narratives have contributed to public distrust, legal disputes, and project delays, underscoring the far-reaching implications of misinformation in the project management context.

The challenge is further exacerbated by the echo chamber effect in social media, wherein algorithm-driven content consumption reinforces pre-existing biases and amplifies misinformation (Tiwana et al., 2010). In developed economies, misinformation has influenced public perception and policymaking, as seen in the opposition to the HS2 project in the UK, where exaggerated claims regarding costs and environmental impact have shaped debates and delayed implementation (Flyvbjerg, 2017). Similarly, the Belt and Road Initiative (BRI) has been the subject of misinformation, with unverified claims about debt dependency affecting global perceptions of China's infrastructure investments (Zhao, 2021).

In Nigeria, social media-driven misinformation has significantly impacted mega-projects. The Lagos-Calabar Railway Project and the Mambilla Hydroelectric Power Project have faced setbacks due to widespread public scepticism fueled by false claims regarding environmental risks, funding irregularities, and project mismanagement (Akinyemi & Olanrewaju, 2023). These challenges underscore the pressing need for effective communication strategies to counter misinformation and foster stakeholder engagement.

Unlike traditional media, where content is curated and regulated, social media platforms operate on user-generated content with minimal oversight, making them fertile ground for misinformation (Eskerod et al., 2015). The consequences of misinformation in mega-projects are profound, leading to increased public opposition, regulatory constraints, and financial losses. Understanding how misinformation spreads and influences public perception is essential for mitigating its effects and ensuring the successful execution of large-scale infrastructure projects.

This study examines the impact of social media-driven misinformation on the sustainability of mega-projects. By analysing case studies from different regions, the research aims to provide insights into how misinformation affects project execution and propose strategic communication approaches to enhance public trust and project viability.

Objective of the Study

The primary objective of this study is to examine the impact of social media-driven misinformation on the sustainability of mega projects and public perception. Specifically, the study aims to:

- Investigate the prevalence and nature of misinformation disseminated through social media platforms concerning mega projects.
- Examine how social media-driven misinformation influences public attitudes, trust, and acceptance of mega projects.
- Explore how misinformation impacts the financial, environmental, and social sustainability of mega projects.
- Recommend effective communication and policy strategies to counter misinformation and enhance public trust in mega projects.

1.1. Conceptual Clarification

1.1.1. Concept of Social Media-Driven Misinformation

Social media-driven misinformation refers to the dissemination of false, misleading, or inaccurate information across digital platforms, including Twitter (now X), Facebook, YouTube, and Instagram, whether intentionally or unintentionally. It is distinct from disinformation, which involves the intentional dissemination of deceptive content (Wardle & Derakhshan, 2017). Research by Vosoughi, Roy, and Aral (2018) highlights that misinformation propagates more rapidly than factual content due to its novelty and emotional appeal, facilitated by algorithmic amplification and cognitive biases within digital echo chambers (Tandoc, Lim, & Ling, 2018). In mega projects, misinformation can significantly alter public perception by distorting facts related to project objectives, financial transparency, and environmental consequences. Misrepresented cost estimates, exaggerated ecological risks, or false claims about project

beneficiaries can fuel public opposition, leading to delays, regulatory obstacles, or even project cancellations (Flew, 2021). Given the role of social media in shaping public discourse, misinformation can erode trust in project stakeholders, impacting decision-making processes and governance structures.

Furthermore, misinformation can disrupt stakeholder engagement by creating polarised debates, thus obstructing constructive dialogue and consensus-building (Bennett & Livingston, 2020). The interplay between misinformation and project sustainability is particularly critical, as misrepresenting project benefits or risks may lead to resistance from communities, regulatory bodies, and funding agencies (Howell & West, 2022). Consequently, understanding how social media-driven misinformation spreads and affects public perception is essential for designing effective communication strategies that enhance transparency and stakeholder trust in mega projects. This underscores the need for rigorous fact-checking, proactive crisis communication, and media literacy initiatives to mitigate the adverse impacts of misinformation on project sustainability and public confidence in large-scale infrastructure developments.

1.2. The Role of Misinformation in Project Sustainability

Project sustainability refers to a project's ability to maintain its economic viability, social acceptability, and environmental integrity throughout its lifecycle (Silvius & Schipper, 2019). Mega projects, which often involve large-scale infrastructure and significant public investments, require long-term stakeholder support, responsible resource management, and minimal ecological disruption to achieve sustainability (Flyvbjerg, 2017). Misinformation has become a significant threat to project sustainability, distorting public perception and influencing decision-making processes. When false or misleading information spreads, it can erode trust, provoke resistance and create political and financial uncertainties. Public distrust and opposition often arise when communities believe a project will result in environmental degradation or displacement, even if such claims lack a factual basis. Regulatory and political pressure may also increase as governments respond to public outcry fueled by misinformation.

Furthermore, misinformation heightens financial risks, prompting investors and funding agencies to reassess their commitments (Davies et al., 2020). Notable examples include the HS2 Rail Project in the UK, which faced delays due to exaggerated claims of excessive environmental damage, and the Dakota Access Pipeline in the United States, where viral misinformation about water contamination led to protests and the suspension of the project (Jenkins, 2018). Similarly, Nigeria's Lagos-Calabar Railway Project experienced setbacks due to social media-driven scepticism regarding transparency and funding mechanisms (Kalu & Osuagwu, 2022). These cases highlight the need for proactive communication strategies, effective stakeholder engagement, and fact-based discourse to mitigate misinformation and ensure the sustainability of mega projects.

1.3. Public Perception and Mega Projects Challenge

Public perception refers to the collective attitudes, beliefs, and opinions of individuals and communities regarding an issue, policy, or project (Eagly & Chaiken, 1993). Social media plays a crucial role in shaping public perception in the digital era, facilitating rapid information exchange, selective exposure, and opinion reinforcement (McCombs & Shaw, 1972). The agenda-setting and framing effects of digital media influence public discourse and can either legitimise or delegitimise mega projects (Entman, 1993). Negative public perception fueled by misinformation often leads to social resistance, political pressures, and financial disinvestment, ultimately affecting project viability. For instance, the HS2 High-Speed Rail Project in the UK encountered strong opposition partly due to misinformation regarding its environmental impact and financial sustainability (Eskerod et al., 2015).

Mega projects involving large-scale infrastructure, energy, and urban development initiatives frequently attract public scrutiny due to their high costs, environmental implications, and potential social disruptions (Flyvbjerg, 2017). Stakeholders, including policymakers, environmental groups, and local communities, often rely on social media to voice their concerns, making these projects susceptible to misinformation. False narratives may include exaggerated claims about environmental destruction, allegations of corruption, and manipulated media content misrepresenting project progress. For example, during Nigeria's Lagos-Calabar Railway Project, misleading reports falsely suggested project abandonment due to financial mismanagement, leading to public distrust and necessitating government intervention (Kalu & Osuagwu, 2022). Similarly, misinformation surrounding the Grand Ethiopian Renaissance Dam (GERD) exacerbated diplomatic tensions between Ethiopia, Egypt, and Sudan (Salem, 2021). These cases underscore the need for transparent communication strategies to counter misinformation and promote informed public engagement in mega projects.

1.4. Defining a Project Communication Strategy

A robust project communication strategy is essential for managing public discourse and countering misinformation in mega projects. Kalu and Osuagwu (2022) emphasise that a practical communication framework should incorporate social media monitoring, real-time fact-checking, and transparent stakeholder engagement to mitigate the spread of false information and enhance public trust. Misinformation has a significant impact on project sustainability by distorting facts, influencing public opposition, and eroding stakeholder confidence (Flyvbjerg, 2017; Howell & West, 2022). Social media-driven misinformation fosters resistance to projects, making it difficult for decision-makers to implement necessary policies. Scholars argue that project communication strategies should align with mass communication principles to ensure transparency and credibility (Bennett & Livingston, 2020). Digital platforms are crucial in shaping public perception, necessitating adaptive communication approaches integrating crisis communication theories and framing techniques (Entman, 1993; McCombs & Shaw, 1972). Research indicates that misinformation thrives in digital echo chambers, reinforcing biases and escalating public resistance to projects (Vosoughi, Roy, & Aral, 2018). These closed information environments contribute to the rapid spread of misleading narratives, making it difficult for accurate information to reach the public. Implementing structured communication measures, including timely updates and stakeholder education, is crucial for countering misinformation (Silvius & Schipper, 2019). A well-defined project communication strategy fosters informed public engagement and safeguards project sustainability by ensuring transparency and accountability.

1.5. Empirical Studies Review

Abiodun (2024) conducted a study titled "The Impact of Fake News and Misinformation on Political Communication and Civic Engagement in Nigeria," published in the *International Journal of Communication and Public Relations.* The primary objective of this study was to examine the impact of fake news and misinformation on political communication and civic engagement in Nigeria. The study adopted a desk research methodology, utilising secondary data from existing literature, online journals, and libraries. The findings revealed that fake news and misinformation significantly disrupt political communication and civic engagement by fueling political polarisation, undermining public trust in institutions, and promoting conspiracy theories. In addition, misinformation was found to be a tool for political manipulation and inciting violence, further eroding informed decision-making among the electorate. The study contributed to knowledge by emphasising the need for media literacy programs, fact-checking initiatives, and legal frameworks to combat the spread of false information. However, a significant gap in Abiodun's research is its exclusive focus on political communication, without addressing the broader implications of misinformation on infrastructure development and project sustainability. The current study extends the discourse by investigating how misinformation affects the long-term viability of mega projects and the public's perception of their execution. This research contributes to knowledge by highlighting the economic, social, and infrastructural consequences of misinformation in large-scale projects and offers policy recommendations for mitigating its negative impacts.

Masikki et al. (2023) conducted a study titled *"Impact of Social Media on Public Perception of Civil Engineering Projects,"* published in *Jurnal Minfo Polgan.* This study examined the impact of widespread social media platforms, including Facebook, Twitter, and Instagram, on public understanding and reactions toward civil engineering projects. Using a qualitative literature review method, the study analysed existing scholarly works from 2004 to 2023 to synthesise insights on how social media shapes public perception. The findings highlighted that social media plays a pivotal role in influencing public engagement, shaping opinions, and determining the level of support or opposition to civil engineering projects. It emphasised that digital platforms serve as a double-edged sword, both fostering awareness and enabling misinformation to spread, which can lead to misunderstandings, resistance, or support based on incomplete or biased information.

While Masikki et al. (2023) provided valuable insights into the role of social media in public perception, a significant gap remains in understanding the specific impact of misinformation on large-scale infrastructure projects. Their study did not focus on how false or misleading information affects project sustainability, stakeholder trust, and long-term decision-making in mega projects. The current research aims to fill this gap by examining how misinformation affects public trust, delays project implementation, and contributes to cost overruns and policy failures. This study extends the discourse by offering a deeper analysis of the role of misinformation in shaping negative or distorted narratives surrounding infrastructure projects. The findings will contribute to knowledge by providing evidence-based recommendations on strategies for mitigating the harmful effects of misinformation, thus supporting more informed public discourse and sustainable project execution.

Daemi, Chugh, and Kanagarajoo (2020) conducted a systematic narrative literature review on the role of social media in project management, published in the *International Journal of Information Systems and Project Management.* The study examined the benefits, applications, barriers, and risks of social media use in project management. The research

found that while social media enhances communication, knowledge sharing, collaboration, and policymaking, its adoption in project management remains limited due to data privacy, productivity loss, and reputational risks. The study highlighted that the primary obstacle to widespread social media integration in project management is the absence of a structured adoption strategy. The authors proposed a model for social media adoption, emphasising the need for strategic implementation to maximise its benefits while mitigating risks.

While Daemi et al.'s study explored the general use of social media in project management, it did not specifically address the impact of misinformation on large-scale projects. The current research fills this gap by examining how misinformation disseminated through social media affects public trust, stakeholder decision-making, and project sustainability. Unlike the previous studies focused on the strategic adoption of social media, this research examines the challenges posed by false or misleading information, which can lead to project delays, cost escalations, and public opposition.

Ninan and Yadav (2023) studied the role of social media discourses in shaping public perception across different phases of a megaproject's lifecycle. Using the case of the Nagpur metro rail project in India, the study employed qualitative content analysis of social media discussions over a five-year period to explore how public discourse evolves from the pre-construction phase to the operational stage. The findings emphasised the significance of key areas, including improving customer experience, sustainability, cost-effectiveness, and community integration. The research also highlighted the necessity of effective communication strategies to address public concerns and maintain a positive perception throughout a project's development. The study provided a framework for leveraging social media for community engagement in megaproject management.

While Ninan and Yadav (2023) examined how social media can enhance public engagement and project perception, their study did not explicitly address the adverse impact of misinformation. The current research bridges this gap by examining how misinformation circulating on social media can negatively impact project sustainability and public trust. Unlike the previous study, which explored constructive social media engagement, this current research investigates the disruptive influence of false narratives, misinterpretations, and public scepticism on large-scale infrastructure projects. By identifying misinformation patterns and proposing mitigation strategies, this study contributes to knowledge by offering insights into managing digital misinformation, thereby ensuring more informed public discourse and sustainable project execution.

2. Theoretical Framework: Framing Theory

Framing theory, introduced by Erving Goffman in 1974 through his work, *Frame Analysis: An Essay on the Organisation of Experience*, explores how individuals and media selectively structure and present information to shape perceptions. Goffman proposed that frames act as cognitive structures that guide interpretation, and Entman (1993) later refined the theory by defining framing as the process of selecting aspects of perceived reality to make them more salient. Emerging from media and communication studies, framing theory has been widely used to understand how narratives influence public perception. Scholars such as Scheufele (1999) expanded on Goffman's work by identifying two key framing processes: media and individual frames, which have been applied in political communication, public relations, and misinformation research. Misinformation on social media has a significant impact on the public's perception of mega projects, as false narratives regarding financial corruption, environmental risks, or inefficiency can lead to public resistance and project delays. Understanding how misinformation is framed is crucial in mitigating its effects on project sustainability. This review examines how framing theory applies to misinformation surrounding mega projects, exploring how social media frames shape public attitudes and influence project outcomes. Studies indicate that misinformation spreads rapidly due to emotional and selective framing (Tandoc et al., 2018; Vosoughi et al., 2018). Flyvbjerg (2017) highlights that public perception of mega projects is often framed negatively, reinforcing opposition. Scheufele (1999) distinguished between frame-building (media influence on public framing) and frame-setting (audience interpretation), both of which are crucial in misinformation dynamics. A conceptual framework integrating framing theory with misinformation studies identifies three core elements: framing agents (including media and influencers), frame structures (dominant themes such as corruption and inefficiency), and public response (support or resistance). However, existing research lacks analysis of platform-specific misinformation framing and effective counter-framing strategies. Framing theory provides a critical lens for analysing the impact of misinformation on mega projects, and future research should explore mitigation strategies, such as fact-checking mechanisms and policy interventions.

2.1. Agenda-Setting Theory

Agenda-setting theory, developed by McCombs and Shaw (1972), examines how the media influence public perception by determining which issues receive attention. The theory posits that while the media may not dictate opinions, it significantly influences what people consider important by highlighting specific topics over others. Initially conceptualised in their study on the 1968 U.S. presidential election, McCombs and Shaw (1972) demonstrated that media coverage shapes the salience of political issues in voters' minds. Over time, the theory has expanded to include second-level agenda-setting, which examines how media framing influences audience perceptions (McCombs et al., 1997).

The rise of digital media has transformed the dynamics of agenda setting, particularly in relation to misinformation. Social media platforms, driven by algorithmic content curation, have decentralised traditional media's agenda-setting role, allowing misinformation to spread rapidly (Vosoughi, Roy, & Aral, 2018). In the context of mega projects, misinformation can distort public perception, causing unwarranted scepticism or exaggerated support based on inaccurate information. False narratives about environmental risks, corruption, or inefficiency can gain traction, influencing public opinion and ultimately affecting project sustainability.

This review connects Agenda-Setting Theory to the impact of social media-driven misinformation on mega projects by examining how digital platforms prioritise certain narratives. Research indicates that misinformation spreads faster than factual information due to its emotional appeal and the use of user engagement algorithms (Vosoughi et al., 2018). For example, Kim, Kim, and Zhou (2019) found that agenda-setting effects are intensified on social media, where selective exposure and echo chambers reinforce biased perspectives. In addition, Guo and Vargo (2020) argue that user-generated content has introduced a new layer to the agenda-setting process, where misinformation competes with verified news for public attention.

A conceptual framework integrating Agenda-Setting Theory with misinformation research highlights three key elements: issue salience (the prominence of misinformation about mega projects), attribute framing (how false narratives shape perceptions), and audience reception (public acceptance or rejection of misinformation). However, a research gap remains in understanding how counter-messaging and fact-checking influence agenda-setting processes in the digital age. Future studies should investigate strategies to mitigate the effects of misinformation through improved media literacy, regulatory policies, and proactive agenda management by credible sources.

2.2. Two-Step Flow Theory

Paul Lazarsfeld, Bernard Berelson, and Hazel Gaudet introduced the Two-Step Flow Theory in their seminal work *The People's Choice* (1944), which examined voter decision-making during the 1940 U.S. presidential election. The theory challenged the direct influence model of mass media, arguing that information flows in two distinct stages: from the media to opinion leaders and then from these opinion leaders to the broader public (Katz & Lazarsfeld, 1955). This concept revolutionised the understanding of media effects by highlighting the mediating role of social influencers in shaping public opinion.

The relevance of the Two-Step Flow Theory has increased in the digital age, particularly in the context of social media-driven misinformation. Unlike traditional media, where professional journalists and editors act as gatekeepers, social media platforms empower individuals with influence, such as bloggers, influencers, and activists, to act as contemporary opinion leaders. These figures curate and disseminate information that their audiences consume and internalise (Dubois & Gaffney, 2014). Given the rapid spread of misinformation on social media, the Two-Step Flow Theory provides a valuable lens for understanding how false narratives about mega projects gain traction and shape public perception.

Misinformation regarding mega projects, such as exaggerated environmental risks, allegations of corruption, or unrealistic benefits, is often disseminated by opinion leaders who frame the narratives to suit their interests. Research indicates that people trust information from personal networks and influential figures more than they do from traditional media sources (Messing & Westwood, 2014). This selective exposure contributes to the formation of echo chambers, where misinformation circulates unchecked and influences public discourse (Tandoc, Lim, & Ling, 2018).

A conceptual framework applying the Two-Step Flow Theory to this research consists of three key elements: (1) identifying digital opinion leaders who shape narratives on mega projects, (2) understanding how misinformation spreads through social media networks, and (3) assessing the impact of misinformation on public perception and project sustainability. While the theory explains the transmission of information, research gaps exist in strategies for countering misinformation within these two-step communication flows. Future studies should investigate methods to empower credible opinion leaders to counter misinformation and evaluate the effectiveness of fact-checking initiatives.

3. Methodology

This study employed a qualitative research design, utilising semi-structured interviews to investigate the impact of social media-driven misinformation on project sustainability and public perception in mega projects. A qualitative approach was chosen for its effectiveness in capturing in-depth insights from key stakeholders in project management, policy-making, and regulation within the construction sector (Creswell & Poth, 2018). The study was conducted in the Federal Capital Territory (FCT), Nigeria, specifically in the Abuja Municipal Area Council (AMAC), which is home to numerous significant construction firms and government regulatory institutions. This research design facilitated an exploration of the effects of misinformation on project sustainability and provided a comprehensive understanding of stakeholder perspectives.

3.1. Population and Sampling Technique

The target population consisted of professionals and stakeholders involved in mega projects, including construction company executives, government regulatory officials, and members of professional associations. A purposive sampling technique was used to select 15 participants based on their expertise and direct involvement in construction and urban development projects. This approach aligns with qualitative research best practices, which emphasise selecting knowledgeable individuals to provide meaningful insights (Palinkas et al., 2015). Participants were categorised as follows:

- Five (5) representatives from leading construction companies (coded as CC-01 to CC-05).
- Five (5) officials from the Federal Ministry of Works and Urban Development & Federal Capital Development Authority (FCDA) (coded as GOV-01 to GOV-06).
- Five (5) members from professional associations such as the Council for the Regulation of Engineering in Nigeria (COREN) and the Nigerian Institute of Town Planners (NITP) (coded as PA-01 to PA-04).

This purposive selection ensured the inclusion of stakeholders with hands-on experience in mega projects, enabling a diverse and detailed understanding of the impact of misinformation on project sustainability.

3.2. Data Collection

Data was collected using semi-structured interviews, which allowed for flexible yet focused discussions on four key themes:

- Prevalence and nature of misinformation about mega projects on social media.
- Influence of social media-driven misinformation on public attitudes, trust, and acceptance of mega projects.
- Impact of misinformation on mega projects' financial, environmental, and social sustainability.
- Effective communication and policy strategies for countering misinformation and enhancing public trust in mega projects.

The interviews, which lasted between 30 and 40 minutes, were conducted over four weeks via in-person meetings, Zoom calls, and phone interviews to accommodate the participants' schedules. All interviews were audio-recorded with participant consent and transcribed verbatim to ensure data accuracy (Braun & Clarke, 2021).

3.3. Data Analysis

Thematic analysis was used to analyse the collected data, following Braun and Clarke's (2021) six-step framework:

- **Familiarisation with data** – Review transcribed interviews for accuracy.
- **Generating initial codes** – Identifying key themes and patterns.
- **Searching for themes** – Grouping recurring ideas related to misinformation in mega projects.
- **Reviewing themes** – Refining themes for coherence.
- **Defining and naming themes** – Clearly define and contextualise themes.
- **Writing up findings** – Synthesising data about the research objectives.

NVivo software was employed for systematic coding and categorisation, ensuring the reliable identification of misinformation patterns and their impact on project sustainability (Nowell et al., 2017).

3.4. Ethical Considerations

The study adhered to the following ethical principles:

- **Informed Consent:** Participants were informed about the study's purpose, and their written or verbal consent was obtained prior to participation.
- **Confidentiality and Anonymity:** Participant identities were anonymised using coded identifiers (e.g., CC-01 for construction executives, GOV-02 for government officials, PA-03 for professional association members).
- **Data Protection:** All recorded interviews and transcripts were securely stored in a password-protected database, with audio recordings deleted after transcription to prevent unauthorised access.
- **Ethical Approval:** The study received approval from the Academic Ethics Committee of Nasarawa State University, Keffi, ensuring compliance with professional research guidelines.

4. Data presentation and analysis

This section presents the findings from in-depth interviews conducted with key stakeholders to examine the impact of social media-driven misinformation on the sustainability of mega projects and public perception.

Misinformation has become a widespread challenge in discussions surrounding large-scale infrastructure projects. Several respondents pointed out the frequency and forms of misinformation spread on social media, emphasising how false claims shape public perception.

CC-01 explained how misinformation starts even before a project begins:

"Misinformation is everywhere! Even before we start a project, people have already spread rumours that it will collapse or that the contractor is inexperienced. Social media makes it worse. Even when we explain to people, they refuse to believe us." (CC-*01, Male, 45, BSc Civil Engineering, Project Manager*)

Similarly, GOV-01 highlighted how social media amplifies distrust in government projects:

"The moment the government announces a big project, people assume it is another way for officials to embezzle money. They do not wait for facts before making conclusions. If you try to explain, they say you are covering up." (GOV-01, Male, 52, MSc Public Administration, Senior Government Official)

PA-01 shared an instance where misinformation led to public panic:

"There was a case where people spread news on social media that a newly built bridge had developed cracks. People started panicking without knowing that what they saw was just the expansion joint. Before we could correct the misinformation, fear had already spread." (PA-01, Female, 38, PhD Structural Engineering, Member, Professional Association)

These responses illustrate how common misinformation can easily distort public perception of mega projects, even before official facts are presented.

The study also examined how misinformation affects public attitudes, trust, and acceptance of mega projects. Respondents consistently noted that misinformation fuels public scepticism, making it difficult for people to trust or support significant infrastructure developments.

CC-02 expressed frustration over how misinformation affects public trust:

"People do not trust government projects anymore. They believe whatever they see on Twitter or Facebook. I have seen situations where communities protested against a project simply because someone on social media claimed that funds had been stolen. Even when we try to explain, they do not listen." (CC-02, Male, 50, MBA Construction Management, Managing Director of a Construction Firm)

GOV-03 pointed out how misinformation undermines government communication efforts:

"Even when the government provides accurate information, people do not believe it. They assume it is a lie or part of a cover-up. They prefer to listen to influencers, even when what they say has no factual basis." (GOV-03, Female, 47, BSc Economics, Policy Analyst)

PA-02 emphasised the role of social media influencers in shaping public opinion:

"The problem is that people believe those with large social media followings more than experts. A professional engineer can provide facts, but no one listens. However, if an influencer claims a project is unsafe, the public immediately believes them." (PA-02, Male, 40, MSc Civil Engineering, Consultant)

The responses highlight that misinformation significantly contributes to public distrust in mega projects, with social media influencers often playing a substantial role in shaping public opinion.

Another key issue examined in this study is how misinformation affects the sustainability of mega projects in terms of finances, environmental policies, and social acceptance. Respondents shared insights into how misinformation influences investor confidence, ecological concerns, and community support.

CC-03 explained the financial consequences:

"Misinformation affects funding significantly. Investors become hesitant when rumours spread that a project is a scam. I have seen cases where investors withdrew their funds because of misinformation on Twitter." (CC03, Male, 48, MBA Infrastructure Development, Director of Operations)

Similarly, GOV-05 described how misinformation affects environmental sustainability:

"Even when a project follows all environmental regulations, social media can make it look like we are destroying the environment. This can lead to protests and project delays." (GOV-05, Male, 55, PhD Urban Planning, Senior Policy Advisor)

PA-03 reflected on the social impact of misinformation, especially in community engagements:

"I have seen communities reject projects that would have benefited them simply because they believed there was a hidden agenda. Misinformation can make people think the government wants to take their land, even when that is not true." (PA-03 Female, 42, MSc Environmental Science, Urban Development Consultant)

These responses demonstrate that misinformation poses serious threats to mega projects, affecting their financial viability, environmental compliance, and community acceptance.

Since misinformation significantly impacts mega projects, respondents suggested various strategies to counter false narratives and build public trust.

CC-04 stressed the need for transparency:

"Transparency is key. If we provide accurate information early, there will be no room for misinformation to spread." (CC-04, Male, 39, BSc Mass Communication, Public Relations Manager for a Construction Firm)

GOV-02 emphasised the importance of proactive engagement on social media:

"The government needs to be active on social media and have a dedicated team to counter false information quickly. If we allow misinformation to spread without response, people will believe it before the truth emerges." (GOV-02, Female, 45, MSc Media and Governance, Director of Public Communication)

PA-04 advocated for more involvement of professionals in public communication:

"Engineers, planners, and financial experts should speak more on these issues. The responsibility should not be left to the government alone because public trust in government is low." (PA-04, Male, 50, PhD Public Policy, Member, National Engineering Association)

CC-05 recommended engaging trusted community leaders and influencers:

"Community leaders and influencers play a crucial role. If people hear from someone they trust, they will believe it more than when the government speaks." (CC-05, Male, 43, BSc Marketing, Head of Communications in a Construction Firm)

These findings suggest that a multi-level communication strategy involving transparency, active social media engagement, and professional involvement is crucial in countering misinformation and restoring public trust in mega projects.

The findings of this study reveal that social media-driven misinformation has a significant influence on public perception, trust, and the sustainability of mega projects. The responses from stakeholders highlight the widespread nature of misinformation and its adverse effects on project execution. However, the responses suggest that strategic communication, stakeholder engagement, and proactive media interventions can help mitigate these challenges.

A key insight from this discussion is that misinformation thrives in the absence of reliable information. Therefore, government and private sector stakeholders must adopt a more transparent and responsive approach to public communication, ensuring that factual and verifiable information is readily available to counter false narratives before they escalate.

5. Discussion of Findings

The study found that misinformation significantly influences public perception of mega projects in Nigeria, often leading to scepticism, opposition, and delays. This aligns with the findings of Masikki et al. (2023), who demonstrated that social media platforms play a crucial role in shaping public opinion on civil engineering projects. However, while their study highlighted the general impact of social media, the current research extends this by specifically analysing how misinformation distorts public understanding and fuels distrust. The framing of misinformation, often portraying mega projects as corrupt, environmentally hazardous, or financially wasteful, reinforces public resistance, as Flyvbjerg (2017) noted in his study on negative framing in project management. This supports the application of framing theory in understanding how misleading narratives structure public attitudes and influence project acceptance.

Other findings revealed that misinformation contributes to project sustainability challenges by creating an environment of uncertainty and distrust, which in turn affects stakeholder engagement and the long-term viability of the project. This result complements Ninan and Yadav (2023), who emphasised the role of social media discourse in shaping public perception across different phases of a mega project. However, unlike their study, which focused on positive engagement, this research highlights the detrimental effects of misinformation, demonstrating how distorted narratives hinder community support and disrupt project execution. The agenda-setting theory further explains this phenomenon, as social media algorithms amplify misinformation, prioritising sensational and misleading content over factual project updates (Vosoughi et al., 2018). This calls for strategic counter-framing and fact-checking initiatives to mitigate the impact of misinformation on project sustainability.

The research further established that misinformation leads to economic and policy setbacks, including increased project costs, delays, and policy reversals. These findings build upon Abiodun's (2024) work, which identified misinformation as a tool for political manipulation, fostering public distrust and policy instability. The current study broadens this perspective by showing how misinformation affects infrastructure development, not just political communication. False narratives about budget mismanagement, contractor inefficiency, and environmental risks often pressure policymakers into suspending or altering project plans, reinforcing the agenda-setting role of social media in shaping government actions (McCombs & Shaw, 1972). Consequently, robust regulatory frameworks and proactive communication strategies are crucial for mitigating the economic repercussions of misinformation on mega projects.

A critical finding of this research is the urgent need for improved digital literacy and more substantial policy interventions to combat the spread of misinformation about mega projects. This finding aligns with Daemi et al. (2020), who emphasised that while social media enhances project communication, its effectiveness is limited by the risks of misinformation and inadequate strategic adoption. The present study reinforces this by demonstrating how misinformation disrupts stakeholder decision-making and public trust. Framing theory suggests that misinformation spreads due to emotionally charged and sensational narratives, making it essential to implement counter-framing techniques that promote fact-based discussions (Scheufele, 1999). Establishing independent fact-checking organisations and digital literacy campaigns will help equip the public with the skills to identify and challenge misinformation, ultimately fostering a more informed discourse on project sustainability.

The findings of this study highlight the profound impact of social media-driven misinformation on the sustainability of mega projects and public perception in Nigeria. Integrating insights from previous studies and theoretical frameworks,

this research highlights the importance of strategic communication, policy enforcement, and digital literacy initiatives in mitigating the adverse effects of misinformation. Future studies should investigate platform-specific patterns of misinformation and evaluate the effectiveness of counter-framing strategies in enhancing public understanding and promoting project sustainability.

6. Conclusion

This study has critically examined the impact of social media-driven misinformation on the sustainability of mega projects and public perception in Nigeria. The findings reveal that unchecked misinformation can severely erode public trust, hinder project execution, and result in financial losses. The proliferation of misleading narratives, particularly on social media, distorts facts, influences public opinion, and creates unwarranted resistance against crucial infrastructural developments. The sustainability and success of national infrastructure projects demand a multi-stakeholder approach to combating misinformation. As Nigeria continues its path toward infrastructural growth and development, stakeholders must adopt transparency, accountability, and robust measures to counter misinformation. Failure to address this issue decisively will not only hinder project execution but also erode public confidence in the country's developmental agenda. The time for action is now.

Recommendation

Based on the findings of this study, the following recommendations are proposed to mitigate the impact of social media-driven misinformation on project sustainability and public perception in Nigeria's mega projects:

- Strengthening Regulatory Frameworks: The Nigerian Communications Commission (NCC) and the National Information Technology Development Agency (NITDA) should collaborate with policymakers to enforce stricter regulations on digital misinformation. Clear penalties should be imposed on individuals and groups who spread false narratives about mega projects.
- Public Awareness and Digital Literacy Programmes: The Federal Ministry of Information and Culture, in partnership with the National Orientation Agency (NOA) and civil society organisations, should implement nationwide media literacy campaigns. These programmes should educate the public on verifying sources and identifying misinformation before sharing project-related content online.
- Fact-Checking Initiatives: To systematically verify information about mega projects and counter misinformation, an independent body, such as a national fact-checking agency, must be established under the supervision of the Nigerian Press Council (NPC) and in collaboration with organisations like Dubawa and Africa Check.
- Enhancing Transparency in Project Communication: Government agencies, including the Bureau of Public Enterprises (BPE) and the Infrastructure Concession Regulatory Commission (ICRC), should ensure that information about mega projects is accessible, timely, and accurate. This will foster trust and minimise the spread of false information.
- Engagement with Social Media Platforms: The Federal Government, through the National Broadcasting Commission (NBC) and the Ministry of Communications, Innovation, and Digital Economy, should engage directly with social media platforms such as Facebook, X (formerly Twitter), and Instagram to develop policies for flagging and reducing the spread of misinformation related to public projects.
- Strengthening Legal Actions Against Misinformation: The Economic and Financial Crimes Commission (EFCC) and the Department of State Services (DSS) should investigate and prosecute individuals or groups that deliberately spread misinformation to sabotage the success of national mega projects, ensuring that legal deterrents are in place.
- Strategic Crisis Communication Management: The Public Relations Departments of relevant ministries and agencies should establish crisis communication strategies that proactively address misinformation. Real-time updates and official responses on social media platforms will help counter misinformation before it gains traction.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

This study was conducted in strict compliance with internationally recognised ethical standards for research involving human participants. Before the commencement of fieldwork, formal ethical approval was obtained from the Department of Mass Communication Research Ethics Committee, Faculty of Social Sciences, Nasarawa State University, Keffi, Nigeria.

All participants were fully informed of the study's aims, scope, methodological approach, and their respective roles in the research process. The principle of voluntary participation was emphasised through a structured informed consent procedure. Respondents were advised of their right to decline participation or withdraw from the study at any stage without prejudice or consequence.

Informed consent was obtained from each participant, and strict measures were taken to ensure the anonymity, confidentiality, and security of all data collected. No personally identifiable information was recorded or stored, and all research data were processed by data protection regulations and ethical governance standards.

The study design was framed to protect the dignity, autonomy, and privacy of all respondents, and was executed in alignment with the ethical principles enshrined in the *Declaration of Helsinki*. Both authors affirm their full responsibility for upholding the moral integrity of the research process and confirm that the research complied with all applicable institutional and national guidelines for responsible conduct of research.

Statement of informed consent

According to established ethical research protocols, informed consent was obtained from all participants before their involvement in the study. Each participant received a comprehensive explanation of the study's objectives, thematic scope, research methodology, and their anticipated role in the process. The voluntary nature of participation was clearly emphasised, and participants were duly informed of their right to withdraw from the study at any stage, without the need to justify and without fear of reprisal or disadvantage.

Participants were assured that the information they provided would be treated with the highest degree of confidentiality and used solely for academic and research purposes. No personally identifiable data were solicited, recorded, or stored during the research process. Anonymity was guaranteed, and responses were coded in a manner that ensured the complete protection of participant identity.

The consent process adhered strictly to institutional ethical guidelines and was implemented in a manner consistent with international standards for human subjects research, including the ethical principles articulated in the *Declaration of Helsinki*. By voluntarily providing their consent, either orally or in writing, participants demonstrated their complete understanding of the research terms and their informed agreement to participate in the study.

The authors affirm their commitment to ethical scholarship and accept full responsibility for the transparency and integrity of the consent procedures employed in the conduct of this research.

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