

Impact of Social Media on Public Perception of Civil Engineering Projects

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ABSTRACT

Along with the development of technology and the internet, the use of social media has been rampant in various walks of life. Social media such as Facebook, Twitter, Instagram, and others have become important platforms for sharing information, including news about civil engineering projects. The increasing number of social media users has had a significant impact on the way people understand and respond to these projects. The purpose of this study is to examine the impact of social media on public perception of civil engineering projects. The method used is a qualitative literature review that focuses on an in-depth understanding of the topic in the time span from 2004 to 2023. The main objective of this method is to identify, analyse, and synthesise relevant scientific literature that has been published in various journals, conference papers, and other academic sources accessible through Google Scholar. The study results show that the impact of social media on public perception of civil engineering projects is a significant phenomenon in today's digital age. Social media influences the way the public perceives, participates and responds to these projects.

Keywords: Social Media, Public Perception, Civil Engineering Projects

INTRODUCTION

As technology and the internet continue to evolve, the use of social media has expanded equally across all segments of society (Dwivedi et al., 2021). Leading social media platforms such as Facebook, Twitter, Instagram, and many others have become indispensable tools for sharing various types of information, including the latest news and developments in the world of civil engineering projects. The surge in the number of social media users over time has had a very significant impact on the way the public understands, follows (Yohanna, 2020), and responds to these projects, reinforcing the important role social media plays in shaping the public narrative and awareness around the world of civil engineering and the infrastructure that forms the backbone of modern development.

Social media has opened the door for the public to access information about civil engineering projects. Projects, both large and small, now often have official social media accounts that allow them to share their progress and information with the public. In fact, the use of specialised hashtags or location-based searches make it easy for individuals to quickly identify and follow the progress of these projects on social media platforms (Ta'amneh & Al-Ghazo, 2021). This openness

of information allows the public to feel closer and more connected to the civil engineering world, allowing them to access up-to-date information and have a better understanding of the projects, which in turn can influence how they participate or respond to these projects, resulting in better public engagement in the civil engineering sector.

One of the negative consequences associated with the use of social media is the huge potential for the spread of false or inaccurate information (Desai et al., 2022). In today's information age, fake news or incorrect views can often be easily and quickly spread through various social-media platforms. In the context of civil engineering projects, the spread of false information can have serious repercussions (Adams et al., 2023). Inaccurate information about these projects can influence public perception, create uncertainty, and even trigger confusion among the public. This can complicate the process of making informed decisions and can impede project progress, given the importance of community support and understanding in dealing with infrastructure projects that often have long-term impacts on communities and the surrounding environment. Proactive measures and education are needed to overcome this challenge. The government, civil engineering organisations, and social media itself need to work together in identifying and addressing false information, as well as improving social media literacy among the public so that they can be more critical and wise in consuming the information they encounter on social media platforms.

The image and credibility of a civil engineering project does become very vulnerable to what is posted and shared on various social media platforms. Negative comments, complaints, or even controversies that surface in the social media world have the potential to damage the reputation of the project, despite the fact that the project may be running efficiently and according to plan. This phenomenon reflects how powerful the influence of social media is in shaping public opinion today. In fact, an unchecked negative response to a civil engineering project can create public doubt and mistrust that may have an impact on project funding, community support, or even required permits. To overcome these challenges, civil engineering projects should actively engage in online image management and communicate effectively with stakeholders (Butt et al., 2016). Engaging the public through social media platforms, explaining project progress transparently, and addressing issues quickly are some of the strategies that can help maintain project credibility in this dynamic social media era (Appel et al., 2020). In addition, understanding the dynamics of online communication and having a good crisis response plan in place is also crucial for projects to address challenges that arise in the social media world more effectively.

Social media has great potential as a tool to encourage public participation in decision-making processes related to civil engineering projects. Social media platforms can be interactive platforms where the public can participate in online discussion forums, complete surveys, and even interact directly with the project team (Voorveld et al., 2018). This can create a close two-way communication channel between the project and the community, enabling a more in-depth exchange of ideas, understanding, and feedback. By utilising social media well, civil engineering projects can build more positive and productive relationships with the public, which in turn can lead to more inclusive and sustainable decisions. In addition, social media also provides an opportunity to educate the public about the importance of civil engineering projects (Castillo et al., 2021). By conveying clear and easy-to-understand information through social-media platforms, these projects can raise public awareness about the benefits and positive impacts they bring. This not only strengthens public support for the projects, but also helps communities feel more involved in the decision-making process involving critical infrastructure that will affect their lives. In other words, social media is not only a communication tool, but also an education and empowerment tool that has the potential to change the dynamics of the relationship between civil engineering projects and affected communities.

Although the impact of social media on civil engineering projects is increasingly relevant, scientific studies on this topic are still limited. Therefore, more in-depth research is needed to understand how the use of social media affects public perception specifically in the context of civil engineering projects. Thus, the background of this study underscores the importance of understanding the impact of social media on public perception of civil engineering projects. This research is expected to provide better insights into how the use of social media affects the way the

public perceives, understands and participates in these projects, and can provide guidance to improve effective communication and interaction between project parties and the public.

LITERATURE REVIEW

Social Media

Social media, also known as social networking platforms, are digital platforms that enable users to interact, share content, and communicate online (Ausat, 2023; Azzaakiyyah, 2023). These are tools used by individuals and groups to connect, communicate, and engage in various types of online activities (Ferine et al., 2023; Maitri et al., 2023; Tarigan et al., 2023). Here are some key characteristics of social media:

1. **User Profiles:** Social media users typically have personal profiles they create when registering on the platform. These profiles may include personal information such as name, photo, status, and user interests.
2. **Interaction:** Social media allows users to interact with others through various means, such as comments, likes, shares, and private messaging. Interactions can be either public or private, depending on user preferences.
3. **Content Sharing:** Users can share various types of content, including text, images, videos, links, and more. This content can be consumed and viewed by followers or friends of the user.
4. **Social Networks:** Social media enables users to build and manage their social networks by connecting with other users they know, as well as with new people who share similar interests or goals.
5. **Diverse Platforms:** There are various types of social media platforms, including social networks (like Facebook), photo and video sharing platforms (such as Instagram and YouTube), microblogging (like Twitter), and various other platforms that serve different communication and sharing purposes.
6. **User-Generated Content:** Content on social media is not only generated by platform providers but also by users themselves. This allows for a variety of voices and perspectives to be expressed.
7. **Virality:** Social media allows content to go viral quickly, meaning that compelling content can easily spread widely through sharing and user interactions.
8. **Commercial Use:** Many businesses and organizations use social media for marketing, branding, and communication with customers. Advertising and promotions are also commonly found on social media platforms.

Social media has become an integral part of daily life for many people worldwide, influencing how they interact, communicate, gather information, and engage in various online activities (Ohara, 2023). Due to its popularity, social media also has significant social, cultural, political, and economic impacts.

Public Perception

Public perception is the way individuals or groups of people understand, interpret, and respond to specific information, issues, or situations (Mahardhani, 2023; Rijal, 2023; Sari, 2023). It encompasses views, attitudes, beliefs, and judgments that individuals or groups hold about a particular subject. Public perception can affect how people act, interact, and participate in various contexts, including politics, social issues, economics, and culture (Dieckmann et al., 2021). Some key characteristics of public perception include:

1. **Subjectivity:** Public perception is subjective, meaning that each individual or group may have different views on the same matter. This can be influenced by personal experiences, values, education, and cultural backgrounds.
2. **Information Influence:** The information individuals or groups receive and the way they process and filter that information can influence their perceptions. Incomplete, biased, or inaccurate information can lead to misconceptions.
3. **Dynamism:** Public perception can change over time in response to new information or changes in social, political, or economic contexts.

4. **Social Influence:** Public perception can be influenced by the views and judgments of specific social or cultural groups. People often form their views based on the norms and values of the groups they belong to.
5. **Impact on Decisions and Actions:** Public perception can influence the decisions and actions of individuals or groups. For example, negative perceptions of a product can affect consumer purchasing decisions.
6. **Political Relevance:** In the political context, public perception plays a significant role in elections and government policy. Voters often form their views based on their perceptions of candidates or specific issues.
7. **Measurement and Research:** The study of public perception is often conducted through surveys, interviews, or social data analysis to understand how public views and attitudes change over time.

Public perception can impact many aspects of social and political life and is a focus of research in fields such as social psychology, sociology, communication, and political science. Understanding how public perception forms and changes can help in effective communication, understanding social behavior, and making better decisions in various contexts.

Civil Engineering Projects

Civil Engineering Projects are a series of activities involving planning, design, construction, and maintenance of physical infrastructure aimed at building or developing facilities and structures that support the daily lives of communities and the economy (Hadgraf et al., 2004). These projects encompass various types of construction and facilities related to the built environment, transportation, water and sanitation, and environmental engineering (Kiani Mavi et al., 2021). Here are some examples of civil engineering projects:

1. **Highways:** Projects involving the construction and maintenance of roads, including highways, urban streets, and bridges.
2. **Commercial Buildings:** Construction of commercial buildings such as offices, shopping centers, and hotels.
3. **Water and Sanitation Infrastructure:** Projects related to providing clean water, sewage systems, and wastewater treatment facilities.
4. **Power Generation:** Building power generation facilities, both conventional and renewable, such as wind or solar power plants.
5. **Mining Projects:** Mineral extraction projects, rock quarrying, and other mining activities.
6. **Transportation Networks:** Projects involving public transportation systems like railways, airports, and rapid transit systems.
7. **Waterfront and Marine Facilities:** Projects related to ports, docks, dams, and marina facilities.
8. **Earthworks Construction:** Construction projects that involve excavation, earthmoving, and grading for various purposes, including building and infrastructure.
9. **Drainage Systems:** Projects aimed at addressing flood issues and rainwater management.
10. **Housing Development:** Housing development projects encompassing residential complexes, social housing, and settlement projects.

Civil Engineering Projects typically involve various disciplines, including civil engineering, architecture, project management, and environmental science (Olawumi & Ayegun, 2016). They also engage various stakeholders, such as engineers, architects, contractors, governments, project owners, and the affected community. The primary goal of these projects is to create and maintain the necessary infrastructure for daily life, reduce environmental impact, and improve the quality of life for communities. Civil Engineering Projects are a crucial element in the economic and social development of a region or country (Albtoush et al., 2022).

RESEARCH METHOD

In this research, we utilize a qualitative literature review methodology to attain a deep comprehension of the influence of social media on the public's perception of civil engineering projects during the period spanning from 2004 to 2023. The primary objective of this approach is

to identify, scrutinize, and integrate relevant academic literature that has been published in diverse journals, conference papers, and other scholarly sources accessible through Google Scholar. The research process comprises several key stages. Initially, the researcher selects a specific and pertinent research topic while also gaining a clear understanding of the background and research objectives. Subsequently, they establish well-defined and precise search criteria to guide their literature exploration on Google Scholar, covering the timeframe from 2004 to 2023. After retrieving the search results, the researcher engages in a literature selection process by assessing the abstracts and summaries of each identified article or source. Literature that lacks relevance or fails to meet the research criteria is excluded from the analysis. The chosen literature is then subjected to a thorough examination, with a particular emphasis on identifying significant discoveries, concepts, theories, and trends within the literature. A qualitative approach is employed to gain a profound understanding of the research topic. The outcomes of this literature scrutiny are subsequently synthesized and elaborated upon by the researcher to develop a comprehensive grasp of the research subject. Furthermore, these findings are organized into a comprehensive research report characterized by a structured and coherent format. The report encompasses the primary findings, analysis, and in-depth interpretations. The research is concluded by formulating concise conclusions that encapsulate the core discoveries and implications derived from the literature review regarding the research subject. This methodology empowers researchers to acquire a comprehensive and profound understanding of the research topic without the necessity for primary data collection. By relying on existing literature, this research has the potential to make a substantial contribution to the advancement of theories, problem-solving, or decision-making in various scientific domains, particularly in the context of examining the impact of social media on public perceptions of civil engineering projects.

RESULTS AND DISCUSSION

Social media has undergone significant development and has profoundly changed the landscape of human communication and interaction (Baruah, 2012). In the context of civil engineering projects, the impact of social media on public perception and community participation in these projects is significant. First of all, social media has opened the door to various platforms that allow civil engineering projects to interact more directly with the public, gather feedback, and share project information more transparently (Ma et al., 2021). This can influence the way communities perceive these projects, raise their awareness of the importance of infrastructure, and invite more active participation. However, the impact of social media can also be challenging, as criticism and negative opinions can spread quickly, affecting the project's image and even disrupting the viability and success of the project. Therefore, it is important for civil engineering professionals to understand and manage the impact of social media wisely in the course of their projects.

Social media, as a growing platform, has become the main means for people to access information about civil engineering projects (Amade, 2017). These platforms provide diverse types of content, such as images, videos, and regular updates, which can be easily accessed by people from all walks of life. For example, sites such as YouTube, Instagram, or Facebook provide opportunities for civil engineering project teams to visually share project progress, introduce the latest technological innovations, and convey crucial information to the general public. Thus, interaction through social media not only opens the door to a better understanding of the projects, but also reduces the uncertainty that may arise in the minds of the public. In addition, social media also facilitates two-way communication that allows the public to provide feedback and questions to the project team directly (Wibowo et al., 2020). This creates an opportunity for more in-depth interaction between civil engineering professionals and the public, which in turn can improve the public's perception of the projects. However, it is important to remember that in this context, effective social media management is crucial, as poorly handled criticism or negative opinions can negatively impact the project's image and can be a challenge in maintaining the viability and success of civil engineering projects. Therefore, the integration of social media with the project

communication strategy must be done wisely and carefully.

Social media, with all its sophistication, has opened the floodgates for active public participation in discussions around civil engineering projects. Besides providing project information, these platforms also facilitate meaningful two-way interaction between civil engineering professionals and the public at large. The public can easily express their views, ask questions, and provide feedback through various mechanisms such as comments on project posts, specially created online surveys, or even discussion forums dedicated to discussing project-related issues. In this process, social media is not only a means of communication, but also a tool to empower communities to express their opinions and aspirations on projects that affect their neighbourhoods. Not only does it help the community to feel more involved and heard in the context of civil engineering projects, but it can also increase the overall transparency of the project. Projects that make good use of social media have the opportunity to provide more comprehensive information, clarify misconceptions, and clarify the objectives and impacts of the project (Walsh, 2020). As such, it can reduce the public's uncertainty and distrust of the project, which in turn can make a positive contribution to ensuring the long-term viability and success of civil engineering projects.

Social media can also have a significant emotional impact on public perception of civil engineering projects. While it is a very powerful communication tool, social media can also be a platform for negative comments, fake news, or subjective views to circulate on the platform. When inaccurate information or one-sided views spread quickly, it can significantly damage the project's image and affect the public's attitude towards it (Shen et al., 2019). Moreover, controversial issues or conflicts between interested parties in civil engineering projects can easily go viral in the social media world, creating serious tensions and debates among different groups of people (Li et al., 2012). Therefore, management of the emotional impact of social media is an aspect that should not be overlooked in carrying out civil engineering projects. Civil engineering professionals must pay attention to how the project is perceived by the public online and respond wisely to the issues that arise. This involves communicating correct and accurate information, proactively addressing people's questions or concerns, and endeavouring to create a healthy discussion environment on social media. In this way, it can be expected that the emotional impact of social media can be better managed so that it does not interfere with the continuity and success of civil engineering projects.

Social media, with its increasingly dominant role in modern society, has become a strategic tool for groups that have an agenda of projects they support or oppose. They can intelligently utilise social media platforms to gain sympathy and support from the public. One common use is through online campaigns that try to mobilise mass support and create social momentum (Kraak & Consavage Stanley, 2021). In this case, social media is not just a place to share information, but a platform where these groups can organise protests, plan demonstrative actions, or even propose concrete actions that they want the government or authorities to implement (Jost et al., 2018). When a group manages to effectively mobilise their supporters on social media, public pressure can become very strong, and this can have a direct impact on the viability of a civil engineering project. Especially if demands to stop or modify the project become louder, then the project may face serious challenges in continuing its implementation journey. In such a situation, it is important for civil engineering professionals, governments and relevant stakeholders to understand the crucial role that social media plays in shaping public opinion and collective action. They need to undertake smart and responsive communication efforts on social media to clearly explain the benefits of the project, respond transparently to public concerns, and maintain a constructive dialogue. In this way, it can be hoped that a more informed perspective will develop on social media, which will ultimately support efforts to maintain the viability and success of civil engineering projects.

Social media has an increasingly crucial role in crisis management and emergency response in civil engineering projects (Kankanamge et al., 2020). When these projects face emergency situations, such as unexpected natural disasters or serious infrastructure failures, social media can be a very effective tool in conveying important information to the public immediately after the incident occurs. Project teams can utilise various social media platforms to announce warnings, provide evacuation instructions, and provide regular updates on the development of the situation.

This not only helps in providing much-needed information to the community, but also in coordinating quick and efficient rescue efforts. In addition, through social media, project teams can ease panic and provide reassurance to the public in emergency situations, which is crucial in maintaining calm and safety. However, it is also important to remember that the use of social media in crisis management must be done carefully and in a timely manner. Accurate and clear information should be prioritised, and project teams should have a well-coordinated communication strategy (Galli, 2021). In addition, prompt and responsive responses to people's questions and concerns on social media are also important factors in ensuring that the information provided is understood and trusted by the public. By optimising the role of social media in crisis management, civil engineering projects can improve their ability to respond to and cope with emergency situations more effectively, ultimately saving lives and property and minimising damage.

In the context of civil engineering projects, it is important to recognise that the impact of social media can range between positive and negative, depending on how these platforms are managed and used by the project team and stakeholders. To maximise its positive potential, the project team should build a well-thought-out communication strategy. This involves delivering accurate and transparent information to the public, so that they can properly understand the project's objectives, benefits, and impacts. However, the communication strategy should also include measures to address challenges that may arise on social media, such as identifying and debunking fake news that could damage the project's image or defusing conflicts that may arise due to divergent views.

In an era where information travels fast and public opinion can change drastically in an instant, a deep understanding of social media dynamics is key. Civil engineering projects should be able to read the emerging issues on social media and respond to them wisely. In this way, social media can be used as a powerful tool to influence public perception of the project, with a positive impact on the smooth running and success of the project. Therefore, good communication management and a deep understanding of the social media ecosystem are crucial in the context of civil engineering projects in this digital age.

CONCLUSION

The impact of social media on public perception of civil engineering projects is an increasingly prominent and significant phenomenon in today's digital age. Social media has triggered fundamental changes in the way the public perceives, participates and responds to these projects. Moreover, these platforms have not only become the primary source of information about these projects, but also a platform for diverse interactions and discussions that influence the surrounding social and cultural dynamics. Social media has profoundly changed the communication landscape, bringing civil engineering projects into the public spotlight in an unprecedented way. With the ability to share images, videos, live updates and comments, the public can access real-time project information. This leads to a better understanding of the project, while increasing public participation in various stages of the project, from planning to execution. In addition, social media also becomes the main platform for groups supporting or opposing the project, allowing them to move quickly to organise campaigns, celebrate achievements, or express their concerns directly to the public. However, along with the opportunities it offers, social media also brings challenges, such as the spread of false information or online conflicts that can affect public perception of projects. Therefore, a wise understanding and management of the impact of social media is key to the smooth running and success of civil engineering projects in this digital age. In light of all the above, here are some suggestions for managing the impact of social media on public perception of civil engineering projects:

- a) **Transparent Communication:** Projects should maintain transparent communication with the public through social media. Accurate and up-to-date information should be shared regularly to reduce uncertainty and prevent the emergence of fake news.

- b) Conflict Management: Project teams should be prepared to deal wisely with conflicts that arise on social media. They should have a strategy to identify and deal with comments or content that could damage the project's reputation.
- c) Public Education: It is important to educate the public about civil engineering projects and their benefits. The more the public understands about these projects, the less likely there will be dissatisfaction or disapproval.
- d) Response to Community Concerns: The project team should actively listen and respond to community concerns expressed through social media. This can strengthen the relationship between the project and the affected community.
- e) Emergency Management: Projects should have an emergency plan that includes the use of social media to communicate important information in emergency situations. This can help mitigate negative impacts and ensure community safety.
- f) Social Media Education: Project actors should have a good understanding of social media dynamics. Social media-related training can help them manage these platforms more effectively.

With the implementation of these suggestions, civil engineering projects can capitalise on the positive impact of social media on public perception, while addressing potential challenges that may arise. In doing so, they can build strong support from the public and ensure the smooth running and success of their projects.

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