Analyzing Use of Official Websites for Stakeholder Communication in Nepal's Private Hydropower Projects

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ABSTRACT

In recent years, the role of the private sector in hydroelectric power generation in Nepal has grown substantially, intensifying the need for effective stakeholder communication, particularly with local communities. As digital technologies evolve, private hydropower developers increasingly rely on online platforms, particularly official websites, to disseminate project-related information. However, the extent to which these digital channels are strategically employed for stakeholder engagement remains unclear. This study addresses this research gap by examining the communication tools adopted by private-sector hydropower projects in Nepal, with a specific focus on the use and effectiveness of official websites. Survey and content analysis methods were employed, combining a survey of 100 randomly selected private hydropower projects with content analysis of project websites. Among these, 71 projects maintained active official websites, of which, 44 published stakeholder-targeted messages. Across all projects, 450 messages were identified, with websites accounting for the largest share (194), followed by traditional channels such as meetings, social media, and mass media. The findings reveal that while digital platforms, particularly websites, are becoming central to stakeholder communication, they are not sufficient as standalone tools. A multi-channel communication strategy integrating both digital and traditional media is essential to ensure inclusive and effective stakeholder engagement. This study contributes to the broader discourse on digital engagement in infrastructure development and offers practical insights for policymakers and private developers aiming to enhance participatory communication in the hydropower sector.

Keywords: Hydropower, private sector, stakeholder engagement, websites.

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1. INTRODUCTION

Internet-based tools are increasingly becoming popular and influential in enhancing greater interactions with stakeholders. Information and Communication Technology (ICT) plays a critical role in fostering stakeholder engagement on key social and political issues (Aondover *et al.*, 2025), with tools like websites, digital media, and social platforms appearing to be effective for geographically dispersed stakeholders (Williams *et al.*, 2015). Hydropower projects involve diverse stakeholders who require extensive engagement to support timely delivery. The Government of Nepal has targeted the generation of electricity to 28,500 MW by 2035 (GoN, 2024). As of 2024, private-sector hydropower projects contribute 2,496 MW—80% of the total 3,132 MW installed capacity (NEA, 2024). These projects often face stakeholder conflicts over environmental impacts, property damage, and compensation disputes, highlighting the need for effective engagement (Koirala *et al.*, 2020; Shawan *et al.*, 2021). Given the complexity of large-scale hydropower projects, transparent communication with stakeholders is crucial (Ghimire, 2021). However, research on the use of official websites for stakeholder engagement with stakeholders in this sector is limited. Given the proliferation of digital technology, the growing participation of the private sector in Nepal's hydropower sector, and the increasing stakeholder concerns, this study assesses the use of official websites for private hydropower projects. To address

the knowledge deficit, this research analyzes the application patterns of the official websites of Nepal's private-sector hydropower projects to engage relevant stakeholders using digital platforms.

2. Literature Review

2.1. Stakeholder Engagement

Stakeholders are individuals or groups that can influence or are affected by an organization's objectives (Freeman, 1984). Various definitions highlight their diverse roles, from those directly affected by projects (IFC, 2007) to those actively participating or holding vested interests (PMI, 2013). Stakeholders range from local communities and government authorities to civil society organizations, businesses, and academia. Stakeholder engagement refers to interactions with concerned individuals and groups (Bruce & Shelley, 2010). Freeman's Strategic Management: Stakeholder Approach under stakeholder theory challenged the shareholder-centric approach, and engagement with other stakeholders has been recognized as crucial for achieving better organizational performance and outcomes. With the proliferation of digital technology, online platforms have transformed stakeholder engagement. The Internet has enabled digital and online information sharing (Kotut & Sakataka, 2018) and strengthened communication by reducing information gaps (Jeffres & Lin, 2006). Websites foster access to information and feedback opportunities (Mota, 2015).

2.2. Efficiency of the Official Websites

Rapid advancements in digital technology have paved the way for organizations to leverage official websites to enhance efficiency and communication. This research builds upon Freeman (1984)'s theory alongside the Technology Acceptance Model (TAM), developed by Davis (1989), which explains technology adoption based on perceived usefulness and ease of use. Freeman's (1984) stakeholder theory emphasizes the giving of high value by organizations to external stakeholders who can influence or are influenced by organizational activities. With technological advancements, organizations are increasingly applying technology to stakeholder communication. Despite its growing significance, TAM has been criticized for its narrow focus on individual perspectives and ignoring social and cultural contexts (Bagozzi, 2007). To address these limitations, various researchers have attempted to enrich this approach. Goodhue and Thompson (1995) introduced the Task Technology Fit (TTF) theory, highlighting the importance of the alignment between technology and organizational tasks. Mota (2015) assessed state-run websites in Lesotho and South Africa and highlighted their role in facilitating access to regular and relevant information while promoting stakeholder interactions. Similarly, Rogers et al. (2021) finds that effective stakeholder engagement necessitates open and transparent two-way communication facilitated by careful planning.

Ghanem and Elgammal (2017) analyzed how official websites foster sustainability, stating that less competitive and less developed tourist destinations are better performers in stakeholder communication on sustainability issues. Midin et al. (2016) studied Malaysia's local council websites and shed light on their role in promoting transparency, accountability, and sustainable development in the public sector. Jeffres and Lin (2006) investigated U.S. city council websites, and found that they were the most effective tools for stakeholder engagement. However, many websites lack a structured framework for improving communication. Similarly, Schulte (2015) studied water companies in New Mexico, revealing that they often failed to address burning water issues or disseminate sufficient educational content, while enhancing transparency and collaboration. Schulte (2015) posits that companies prioritize community concerns and promote interactions with stakeholders on pressing topics. The study concludes that official websites should provide accurate and updated information to serve as platforms for stakeholder education and law enforcement (Schulte, 2015). Professionally designed websites can systematically provide information and enhance stakeholder trust (Chibudike et al., 2021). However, many organizations still choose to practice a hybrid communication approach that integrates traditional meetings, mass media, and online platforms to ensure that all stakeholders can be effectively reached.

2.3. Communication Tools in the Hydropower Projects

The literature shows the growing use of digital platforms for stakeholder engagement, with corporate websites playing a critical role in fostering transparency, involvement, and trust. However, several studies have indicated that organizations often fail to effectively utilize their official websites and social media pages for stakeholder engagement. Prebanic and Vukomanovic (2021) revealed that inadequate use of Information and Communication Technology (ICT) leads to less digital stakeholder management in construction projects. Communication and collaboration issues remain sustained among stakeholders owing to various organizational and technological barriers in the construction sector

(Prebanic & Vukomanovic, 2021). Paraskevopoulou (2015) found that the inadequate use of official websites by several organizations for stakeholder interaction, beset by a lack of investment in advanced web technology led to economic uncertainties. Despite websites being economic media for fostering stakeholder engagement, many organizations fail to harness their potential (Paraskevopoulou, 2015). Rogers *et al.* (2021) analyzed stakeholder engagement frameworks and communication theories and concluded that digital platforms—such as official websites and social media—are particularly effective for engaging stakeholders across diverse geographic locations. Chibudike *et al.* (2021) also examined the role of official websites on health and socio-economic organizations and found no similarity in the use of websites by the two sectors. However, health-related institutions have demonstrated a greater capacity to share innovations online. The study emphasized that well-designed websites are essential for organizations to improve visibility, establish trust, and enhance stakeholder engagement (Chibudike *et al.*, 2021).

3. METHOD

This study employed a survey and content analysis to collect the data. A total of 100 private-sector hydropower projects in Nepal were randomly selected. A survey of senior officials (chairmen or chief executives) was conducted to identify the composition of the media they used to communicate project messages to project stakeholders, focusing on local communities. Similarly, the content of the websites was analyzed to assess stakeholder-related information on their respective websites. Data were collected through a survey via telephone and email conversations with senior officials of the respective projects. Similarly, a Google search was performed to identify whether the hydropower projects were operating on their official websites. Websites were then visited to examine whether they were sharing stakeholder-targeted messages. The study was conducted between June 1, 2024 and September 1, 2024.

4. RESULTS

Results have shown that Nepal's private hydropower projects utilize official websites, with a focus on messages targeting stakeholders.

4.1. Dominance of Projects with Official Websites and Digital Engagements

Fig. 1 shows that among the 100 projects surveyed, 30 were in the operational phase, 40 are under construction, and 30 were in the pre-construction phase. Among the projects, the majority of 71 (71%) projects had official websites, while 29 (29%) still did not have official websites.

4.2. Digital Stakeholder Engagement Uneven Across Project Lifecycle

Fig. 2 demonstrates that among the operational projects, 22 have their official website, 28 have official websites among under-construction projects, and 21 projects in the pre-construction phase have official websites.
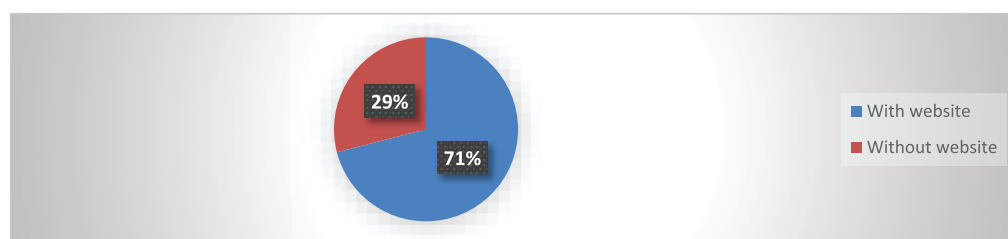

Fig. 1. Use of website in Nepal's private hydropower projects. Source: Survey as the primary source.
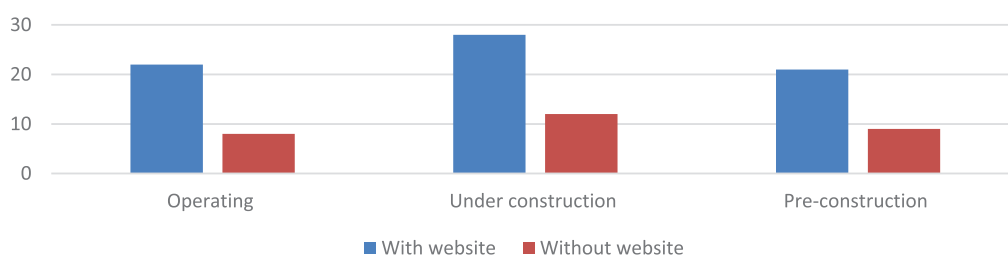

Fig. 2. Project phase-wise website use status. Source: Survey as the primary source.
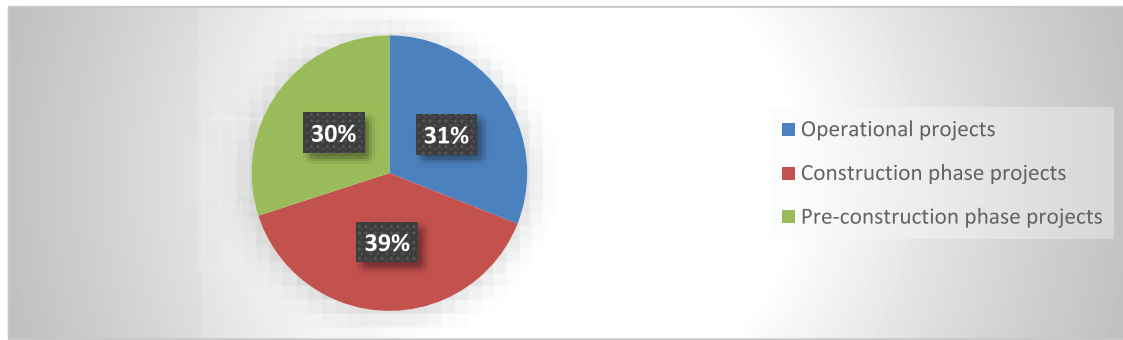
Fig. 3. Projects with official websites. Source: Survey as the primary source.
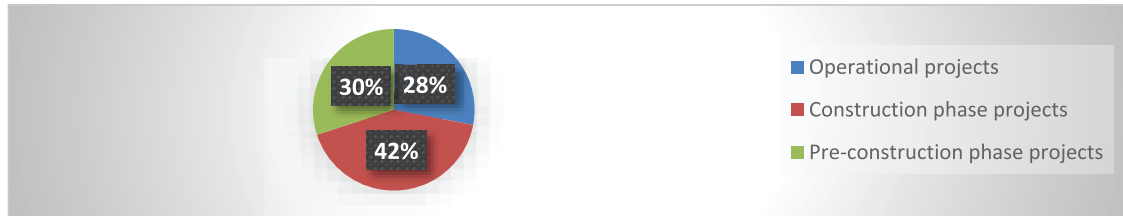

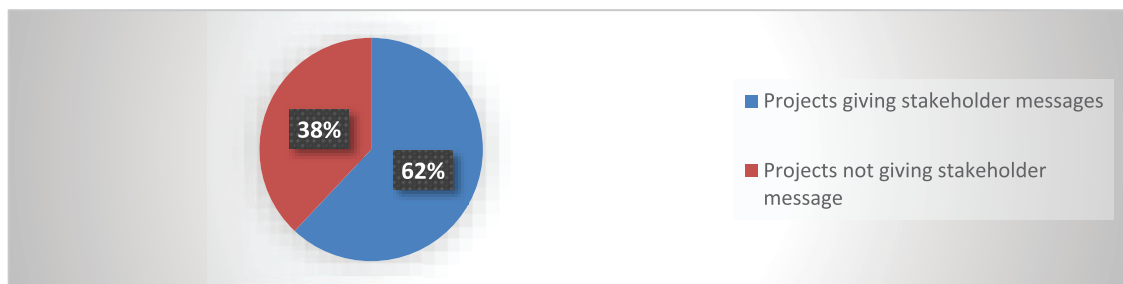Fig. 4. Projects without official websites. Source: Survey as the primary source.

Fig. 5. Official websites and stakeholder messages. Source: Survey as the primary source.

Fig. 6. Phase-wise (project websites without stakeholder-related messages). Source: Survey as the primary. source (websites of respective projects).

Fig. 3 shows that among the projects with official websites, 22 (31%) represented operational projects, 28 (39%) represented construction-phase projects, and 21 (30%) represented pre-construction phase projects.

Fig. 4 shows that among the projects without official websites, eight (28%) represented operational projects, 12 (30%) represent construction-phase projects, and nine (42%) represent pre-construction phase projects.

4.3. Project Websites With and Without Stakeholder-Related Messages

Fig. 5 shows that out of the total 71 projects operating official websites, 44 (62%) projects issued stakeholder-related messages through their respective websites, while 27 (38%) projects were found not to have disseminated any such messages during the review period.

Fig. 6 shows that out of the total projects giving stakeholder messages, 17, 18, and 9 projects represent the operational, under-construction, and pre-construction phases, respectively. This shows that projects in the construction phase are more active in making their website functional as compared to other projects.
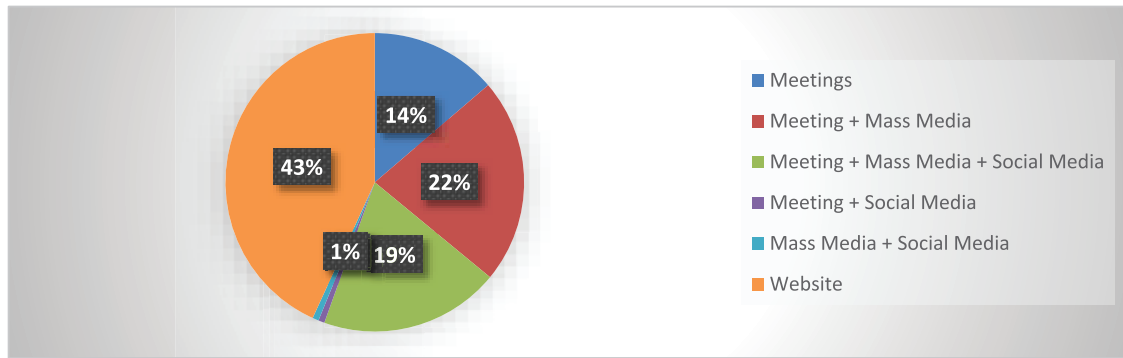
Fig. 7. Messages and channels for stakeholder engagement used by projects. Source: Content Analysis as the primary source (interviews).

4.4. Official Websites Lead in Stakeholder Communication

Fig. 7 shows that 450 messages were delivered through meetings, mass media, social media, and the official websites of the respective projects during the study period. Official websites circulated the highest number of messages, 194 (43%), followed by meetings and mass media 100 (22%). Similarly, 88 (19%) messages were shared with stakeholders through meetings, mass media, and social media platforms. The least number of messages, three (1%), was shared through meetings and social media combined, and mass media and social media combined. Similarly, 62 messages (14%) were disseminated through meetings.

5. Discussion

The findings show that the dominance of the projects with official websites shows that Nepal's private sector hydropower projects are adopting digital technology to their relevant stakeholders. Kent and Taylor's (1998) framework highlighted the concept of dialogic communication by applying Internet-based technology to enhance effective relationships and mutual understanding between organizations and their relevant stakeholders. Rogers (1962), in his Diffusion of Innovation Theory, states that ideas, practices, or technologies proliferate over time in a social system, with individuals adopting such innovations influenced by comparable advantages, compatibility, complexity, testability, and observability. Innovations are received in society, and the pace of innovation-adaptability depends on individuals who are innovators, early adopters, early majority, late majority, and laggards (Rogers, 1962). Projects representing every phase were found actively giving officials. Out of the total projects giving stakeholder messages, 17, 18, and 9 projects represent the operational, under-construction, and pre-construction phases, respectively. This shows that projects in the construction phase are more active in making their websites functional compared to other projects due to comparatively more activities carried out by the project in this phase. Dominance of projects giving stakeholder messages through the official website shows that this channel is the most popular medium for exchanging messages because of its greater interactivity and wider reach. However, Troise and Camilleri (2021) found that digital technologies, especially social media, support marketing, promote corporate social responsibility (CSR) initiatives, and effectively engage stakeholders.

Yet, the study highlighted the reluctance of many projects to operate official websites, which still rely on traditional or hybrid communication approaches to engage stakeholders. Moreover, official websites are not sufficient, as they should be functional enough to deliver the messages to targeted stakeholders regularly. This is consistent with the findings of Rogers *et al.* (2021), who suggested that while websites provide cost-effective communication, their maintenance requires continuous investment in content development and stakeholder interaction. Although official websites are influential tools for disseminating information, their utilization by projects varies across the project lifecycle. The underutilization of official websites for community-targeted messages indicates a need for improved digital engagement strategies in hydropower projects.

As infrastructure projects involve multiple stakeholders, they engage in multiple engagement tools to reach their respective stakeholders. The study found that official websites circulated the highest number of messages while the lowest engagement levels were recorded through meetings, social media (three messages), mass media, and social media (three messages). This trend indicates that hydropower projects still prefer direct and traditional modes of stakeholder engagement despite the growing use of online-based tools. Krick *et al.* (2005) also acknowledge the need to apply diverse channels to engage stakeholders. Gregory *et al.* (2003) view that depending on a single medium of communication leads to a failure to understand stakeholder concerns and values; the integration of various channels will

be instrumental in developing mutual understanding between organizations and their stakeholders (Gregory *et al.*, 2003).

6. Conclusion

The research is based on the survey and content analysis focusing on the media of stakeholder communication and messages posted on the official websites of the studied 100 hydropower projects between 1 July and 1 September 2024. The study found that 71 of the surveyed projects maintained official websites, with 44 actively sharing stakeholder-related information. The study indicated that, though the use of digital media is increasing, the traditional methods of engaging stakeholders are still significant and widely used in hydropower projects. Of the total 450 messages delivered by the private projects during the period, these included meetings, mass media, social media, and the respective projects' official websites. Official websites circulated the most messages, 194, followed by 100 through meetings and mass media combined. Likewise, 88 messages were shared with the stakeholders through meetings, mass media, and social media combined, followed by 62 through meetings. Though online-based platforms, including official websites, are increasingly gaining popularity, traditional methods like meetings and mass media remain essential for building trust and facilitating meaningful dialogue with local communities. Organizations are increasingly using digital and web-based tools to disseminate messages about their affairs to stakeholders, even though the conventional communication media are still influential. It indicates that a multi-channel approach to communicating with stakeholders is dominant.

7. Research Implications

This research's findings present valuable guidance for the corporate sector and policymakers to foster good stakeholder relations to avoid possible conflict with stakeholders for the smooth implementation of infrastructure projects. This research is limited to the use of official websites as a medium to communicate messages to community stakeholders by private-sector hydropower projects. Future research could focus on social media and other digital media in public-funded infrastructure projects, given the ever-increasing expansion of digital technology. Similarly, longitudinal research can be performed to identify the trend to assess the trend of application of digital technology over a certain period.

Conflict of Interest

The authors declare that they do not have any conflict of interest.

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