Social Media for Team Feedback and Team Performance

Subjects: Construction & Building Technology | Management

Contributor: Razieh Karimi, Milad Baghalzadeh Shishehgarkhaneh, Robert C. Moehler, Yihai Fang

Construction work is challenging due to the unique nature of construction projects, and construction project management requires the application of knowledge to meet project requirements. It is common for construction teams to seek additional knowledge to complete work tasks because of the dynamic and complex nature of construction projects.

Keywords: social media use (SMU) ; social media practices (SMPs) ; social media (SM) ; team feedback (TF) ; project management ; team performance (TP)

1. Introduction

Construction work is challenging due to the unique nature of construction projects, and construction project management requires the application of knowledge to meet project requirements [1]. It is common for construction teams to seek additional knowledge to complete work tasks because of the dynamic and complex nature of construction projects [2]. Since the knowledge needed to complete a construction project is held by project team members, knowledge sharing is crucial to integrate distributed knowledge and achieve project performance [1]. Other critical elements in construction are the communication and coordination between team members on a construction site [3][4].

Three project-management-based theories have been applied in the project context: stakeholder management theory, social exchange theory, and knowledge-based theory [5]. From the standpoint of work organizations, SM has emerged as a valuable information channel, allowing employees to search for and access relevant information through collaborative efforts [6]. According to Ma et al. [7], Kanagarajoo et al. [8], using SM at work has positive effects on teams' processes such as communication, knowledge sharing, and coordination. In addition, the created perception of social presence/intimacy [9] and real-time/immediacy transparency [10] are emphasized as a strong argument for organizations using SM in projects. There is limited knowledge about how SM use affects employees in the construction industry [11]. Using SM for project management creates several limitations, including (1) *behavioral* (a "write first, think later" tendency; a lack of focus and direction in discussions); (2) *cognitive* (impaired decision-making due to a lack of appropriate and complete information); and (3) *environmental* (management of access control and accountability; information leakage) [12][13][14]. Other limitations to adoption include the lack of trustworthiness, confidentiality/privacy [15], the leakage of sensitive key project data, being among the biggest threats [13], the lack of clarity of ownership of technical infrastructure (many people blend private devices, accounts on platforms, etc.) or inclusive SM rules, software breakdown problems, resistance from older staff members, and data synchronization problems, according to [16].

Furthermore, previous studies have suggested that using innovative information technologies is a common approach to enhance teams' processes in construction projects [17][18]. Many construction companies have implemented SM platforms to improve project team processes [19][20]. SM enable users to communicate and produce content without being physically present, as noted by Zhang et al. [21]. SM platforms can assist organizations in getting around geographical restrictions by allowing team members to communicate constantly online. According to Aichner and Jacob [22], SM can be classified into various categories, including social networking sites, blogs, forums, micro-blogs, photo- and video-sharing platforms, product/service review sites, evaluation communities, social gambling sites, and other online platforms. SM platforms named in the literature such as Slack, Twitter, WhatsApp, Facebook, YouTube, LinkedIn, WeChat, Wikipedia, Twitter, Instagram, and TripAdvisor, online forums, ratings, and review forums are not only transforming the way people communicate in everyday life, but also open up new chances for effective collaboration [7][8][23][24][25][26][27].

Hasan et al. [19] also argue that the use of SM has changed how knowledge is shared in construction projects due to their mobility. Despite the adoption of SM technologies by construction project teams, there is a lack of empirical research on the impact of SM use at work on construction project teams' processes and management performance, leading to uncertainty about the benefits of SM and the reluctance to adopt them in the construction industry. Additionally, there is

currently no effective framework to integrate these elements and provide a comprehensive explanation of how SM use affects teams' processes and performance. However, for SM use in construction projects to be fully beneficial, it must adhere to a set of standards [13]. Some of the underlying principles that need to be looked at include a clear definition of the purpose and format of SM use, clarification of restricted and confidential project information, defining the roles and responsibilities of project team members, and establishing rules for differentiating between professional and private presence [8]. One of the more-confusing problems facing site teams today is finding ways to fairly and efficiently manage teams and team members while giving incentives to improve productivity and performance, which could be achieved through effective team feedback [28].

2. Social Media Definition

Social media (SM), as initially defined by Kaplan and Haenlein [9], are a collection of Internet-based applications built on the technological and ideological foundations of Web 2.0, allowing for the creation and exchange of user-generated content. This encompasses a multisensory communication platform, enabling users to create, share, receive, and comment on social material among multiple users, thus differing from social networking, which is more-direct and two-way in nature [29]. Even though the phrases "social media" and "social networking" are frequently employed interchangeably and have some overlap, they are not equivalent. An SM operates as a communication platform that delivers a message, such as requesting something [15]. Kaplan and Haenlein [9] mentioned that communication through social networking is two-way and direct, and information is shared among a variety of parties. Several ways can be employed to categorize SM, including collaborative projects (e.g., Wikipedia), content communities (e.g., YouTube), social networking sites (e.g., Facebook), and virtual games and worlds (e.g., World of Warcraft, Second Life). The importance of SM in communication and knowledge sharing [8], the created perception of social presence/intimacy [9], and the real-time/immediacy transparency are emphasized as strong arguments for organizations using them in projects.

In contrast, SM in construction projects offer a wider scope, incorporating tools like blogs, content communities, and social networking sites, as described by Kaplan and Haenlein [9]. The applications are varied, including enhancing communication within the supply chain and supporting collaboration, especially in projects with teams spread across different locations. For instance, Kaplan [29] discussed how mobile social media can be leveraged for marketing research and relationship development in construction projects. Here, the focus is broader, extending communication beyond the internal team to include public and external stakeholders. SM serve as platforms for real-time interaction, facilitating a more-inclusive and participatory approach in construction processes, as illustrated by the use of social media for stakeholder engagement in international projects [30]. This expansive approach to communication harnesses the potential of SM to reach and engage a wide array of participants, from team members to the general public.

3. Using SM in Project Teams

SM serve as potent platforms for social networking, offering a range of information and communication tools that facilitate multiple communication channels in both social and work settings [31]. Despite extensive research on the individual and organizational impacts of SM use [32][33], its effects at the project level, particularly in the construction sector, are less understood, warranting further exploration [7]. Recent studies have begun to reveal the benefits of SM use in construction organizations, such as enhanced knowledge accessibility, reduced costs, and improved customer relations [34]. Facebook, LinkedIn, and Twitter have been identified as popular SM platforms among construction professionals [20], while in China, platforms like WeChat and DingTalk are gaining prominence in various industries, including construction [23]. Azhar and Abeln [35] noted the advantages of SM platforms in increasing communication effectiveness in the construction industry, while Hasan et al. [36] argued that SM technologies contribute to increased construction productivity through improved communication and knowledge sharing.

SM offer flexible platforms for various forms of collaboration in the workplace, ranging from simple task coordination to complex collaborative efforts [37]. They allow for active involvement through collaboration embedded within informal social interactions, fostering a shared vision among group members and aligning goals. The use of SM enhances collaboration, communication, and teamwork in work environments. Cao et al. [38] indicated that SM usage significantly contributes to the development of employees' social capital, as evidenced by the formation of network links, a shared vision, and trust, which facilitate knowledge transfer within organizations. This, in turn, positively impacts work performance.

Furthermore, Cummings [39] suggested that the positive correlation between knowledge sharing and team performance is bolstered by network diversity. SM platforms are categorized into work-oriented types like Microsoft Yammer and Slack and socialization-oriented types such as task management tools and internal corporate communication platforms, acknowledging the dual nature of SM use in addressing both the work-related and social needs of employees [23]. The

synergy between these categories enhances team and employee performance, where work-oriented SM platforms offer tangible benefits like efficient communication and job monitoring, while socialization-oriented platforms contribute to effective relationships and trust, crucial for team performance [40].

4. SM and Knowledge Sharing in Project Management

Knowledge sharing in project management, particularly within the context of SM, is an evolving area that has garnered considerable attention in recent years. Ma et al. [7], Dong et al. [41] define knowledge sharing as the effective communication of knowledge from a source to a recipient, fostering learning and the application of that knowledge. SM platforms, as described by Leonardi [42], serve as "*leaky pipes*" for communication, enhancing the accuracy of members' metaknowledge—the awareness of who knows what and whom. This facilitates knowledge sharing in a community where members engage in public communication.

Trust is identified as a critical prerequisite for effective knowledge sharing [43]. Studies by Cramton et al. [44] and Ma et al. [7] suggest that visibility in communication plays a crucial role in building interpersonal trust, which is essential for knowledge sharing. Neeley and Leonardi [45] emphasize the importance of informal interactions within organizations for fostering this trust. They found that employees' use of SM for both non-work and work-related content aids in acquiring necessary knowledge while developing a sufficient level of trust for knowledge sharing. Song et al. [23] further illustrate that SM platforms oriented towards socialization are particularly effective in facilitating team knowledge sharing. In the construction project context, Ma et al. [7] note that the use of SM enhances visibility and informal interactions, thereby fostering trust among project teams and promoting knowledge sharing.

Furthermore, knowledge sharing on SM platforms has been recognized as a crucial tool for large groups to connect and exchange knowledge [9][46]. Organizations are increasingly encouraging the use of SM for knowledge sharing, as they enable efficient information flow within and between teams [47]. Ahmed et al. [48] identified three distinct activities that enhance the benefits of SM for knowledge sharing: knowledge-seeking, knowledge-contributing, and social interactivity.

In terms of measuring knowledge sharing in virtual teams, two theories are prominent: the social exchange theory and the knowledge-based theory [5][49]. According to the knowledge-based theory, each team member is a potential source of knowledge, and virtual teams built on SM can share information more effectively due to faster dissemination and a smaller internal feedback loop. The social exchange theory, on the other hand, posits that individuals act to maximize reward with minimal effort. While SM facilitates rapid information sharing, they may also lead to delays in project completion if team members are hesitant to share knowledge due to the extra effort required to interpret ambiguous information [50]. These studies collectively highlight the transformative role of SM in knowledge sharing within project management, emphasizing the importance of trust, visibility, and informal interactions in promoting effective knowledge exchange.

5. SM and Coordination in Project Management

SM have become increasingly significant tools for coordination in project management. According to Briscoe and Rogan [51], coordination is essential in integrating different components within an organization, especially in complex projects like construction. SM platforms offer a new avenue for both individual and group interactions, streamlining coordination and enabling the creation of chat groups for efficient communication [52]. These platforms are especially beneficial in construction projects, where tasks are often interdependent and delegated to individuals [18]. Online communities formed by project members on these platforms facilitate the sharing of work structures, goals, schedules, rules, and procedures, contributing to a shared understanding of the project [53][54]. Yu et al. [55] point out that such online communities also help mitigate information and communication overload, thereby enhancing team coordination efficiency.

Research indicates that, while SM use at work impacts coordination, its effect is somewhat weaker compared to communication and knowledge sharing [7]. However, SM remain new-generation collaboration tools that align tools, tasks, and teams, thereby facilitating team coordination [37]. Majchrzak et al. [56] highlight the importance of metavoicingand triggered attending in facilitating interactions essential for coordination. Imran et al. [57] found that SM contributes to relationship building, trust, coordination, and cohesion in project management. Moreover, Juarez-Ramirez et al. [58] demonstrated that platforms like Facebook and G+ motivate team members, particularly younger developers, to remain online, thus aiding in communication and coordination in software projects.

In summary, SM platforms have emerged as powerful tools for enhancing team coordination in project management, particularly in complex and geographically dispersed projects. They facilitate efficient communication, foster shared understanding, and support relationship building, which are key elements for successful project coordination.

6. SM and Communication in Projects

Effective communication is fundamental to project management, impacting various stages and aspects of project teamwork. In the initial stages of a project, effective communication aids in establishing clear objectives and strategies as described by Mathieu and Schulze [59]. As projects progress, communication becomes vital during action episodes, defined by Marks et al. [60] as periods of active task engagement by team members.

Research underscores the importance of communication in facilitating essential teams' processes that drive performance. These processes include monitoring progress, systems monitoring, team monitoring, backup behavior, and coordination [60][61]. Effective communication is the most-influential attribute in enhancing team performance [62], fostering trust, cohesion, and improved performance, especially in virtual teams [63]. Moreover, Salvation [64] notes that effective communication in project teams enables goal achievement and reduces workplace conflicts.

However, challenges arise during action episodes due to distributed attention and multitasking [65], which can lead to slow response times and progress delays [66]. Despite these challenges, the utilization of SM platforms has been shown to significantly improve communication among project team members. SM platforms support real-time information exchange and are increasingly essential in various industries, including marketing, healthcare, and IT [10]. They facilitate continuous communication, even after task assignments, and enable instant feedback and two-way communication [11]. Teams utilizing SM platforms tend to achieve better outcomes with less effort, highlighting the platform's potential in project management [65]. Project managers can leverage these platforms for both formal and informal communication, aiding in coordination and status understanding [67]. In addition, the use of SM platforms contributes to improved team synergy, enhanced trust, faster communication, cost savings, and improved response times, as stated by Kanagarajoo et al. [8].

Hence, effective communication is a critical component of successful project management, significantly impacting team performance across various stages and activities. The integration of SM platforms further enhances this impact, facilitating real-time, efficient communication and collaboration within project teams.

7. Feedback in Teams

Feedback is described as the sharing of information about actions, events, processes, or behaviors related to task completion or teamwork to team members or the entire team [68][69][70][71]. Giving teams feedback has been promoted as a significant strategy for enhancing their performance and ability to learn [71]. A study also demonstrated that performance and occasionally a wide range of crucial teams' processes and states (such as motivation, team goals, collaboration, and cohesion) may be influenced by feedback, as well as, on occasion, performance [72].

Feedback is vital for enhancing individual and team performance in various contexts, including construction projects. It is a dynamic two-way process involving both the sender(s) and receiver(s) [73]. Feedback actions, defined as information provided by an external source about specific aspects of an individual's task performance, as stated by Kluger Denisi [74], enable individuals to adapt and refine their efforts. This information can relate to both successful and unsuccessful actions, shaping specific social roles in pursuit of goals [75]. In the construction industry, feedback has numerous applications. For instance, user feedback from multifamily housing projects has led to suggested construction details to satisfy users' privacy needs [76]. Additionally, technologies like 4D CAD and linear scheduling offer clear, multi-dimensional feedback to project teams, aiding in the identification of effective construction strategies [77][78]. In multidisciplinary design teams, individualized peer feedback, where students select performance competencies and cite specific behavioral examples, has proven effective [79]. Geotechnical monitoring in tunneling projects serves as a technical quality element in the feedback control system [80].

Effective teamwork relies on feedback [71][81]. Teams learn from feedback when members share information, add meaning to assertions, build understanding, and constructively discuss disagreements [82][83]. Feedback in the workplace serves several positive purposes, such as directing behavior, influencing performance goals, educating employees on their strengths and areas for improvement, and providing reinforcement. However, some individuals may react negatively to feedback due to evaluation anxiety and concerns about others' responses [84].

Team Feedback on Construction Sites

Team feedback is essential in construction site management for regulating activities and teams' processes. Traditionally, managers relied on personal experience and peer advice for task interpretation and completion [85]. However, the industry has evolved to recognize the importance of more-structured feedback mechanisms. Goal setting and feedback methods significantly improve safety performance on construction sites, with commitment to safety being crucial for success [86][87].

Feedback reduces risk-taking among contractors, thereby improving occupational health and safety performance [88]. Dialogue-based feedback enhances team understanding and acceptance of change, leading to improved performance and change acceptance [89].

The introduction of SM technology in the construction industry facilitates instant information sharing, timely updates, and immediate input among team members [90]. SM platforms are valuable channels for sharing solutions, feedback, and opinions, fostering knowledge exchange and collaboration within the construction community [48]. Additionally, a leading-indicator-based safety communication and recognition program in construction increased site unity and team building, highlighting the importance of engaging all workers through reliable and consistent communication infrastructure [91]. Enhanced communication, feedback, education, and regular observation can improve behavioral safety awareness among construction workers [92].

In summary, structured feedback mechanisms, supported by goal-setting, dialogue-based approaches, and modern communication technologies like SM, have become integral to improving safety, performance, and collaboration in construction site management. This evolution from reliance on individual experiences to structured, team-based feedback represents a significant advancement in the construction industry.

8. SM and Team Performance

Team performance in the construction industry, an “information-dependent” sector, is crucial for organizational success. Effective communication is vital for ensuring seamless collaboration and quality project delivery [93]. The industry has recognized the need for alternative communication methods, as challenges in communication can lead to increased expenses and impact project quality [16]. SM have emerged as powerful tools in this realm. They enhance information management and overall project performance by improving information sharing, accessibility, and knowledge exchange [94][95][96][97]. Recent studies have shown that the social network model in construction fosters professional trust and strong communication, leading to high-performance teams [98]. SM’s positive impact on project management includes time reduction [99] and their significant role in improving small and medium-sized enterprises’ business performance by increasing knowledge accessibility and reducing costs [34].

Moreover, SM use at work positively influences knowledge acquisition, enhancing construction managers’ work performance [11]. Both work-oriented and socialization-oriented SM use promote knowledge acquisition and project social capital, benefiting project performance [7]. However, it is important to note that, while SM facilitate collaboration and information sharing, team cohesion and trust dynamics are significant factors in their effectiveness [100]. In summary, effective knowledge sharing, information flow, and contributions are essential for success in the construction industry, and SM platforms are increasingly recognized as facilitators of these processes. They offer new ways of communication and collaboration, enhancing team performance and project management in construction [101].

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