



Social media in project management: A systematic narrative literature review

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Abstract:

Despite the adoption of social media in many business operations, evidence suggests that the usage of social media for project management activities is scarce. Through this literature review, the paper seeks to clarify the scope of the available knowledge, highlight the significance of new research agendas and address the principal reason for the limited use of social media in project management. A literature review was conducted to analyze the benefits of using social media in project management along with the areas in which it is used, the threats, barriers and enablers of social media adoption. Key areas where social media is used in project management include requirements management, communication management, policymaking, knowledge management and collaboration. Social media usage has shown to improve information sharing, engagement and relationships. Threats include a negative impact on reputation, employee productivity and information privacy. The reviewed literature highlights that the lack of a social media adoption strategy is the principal reason for the limited use of social media in project management. This study contributes to both the project management practice and literature by introducing a model for social media adoption in project management.

Keywords:

project management; social media; social media benefits; social media enablers; social media threats; social media adoption model.

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1. Introduction

Interest in social media adoption to exploit organizational objectives demands new features. The emergence of new social media platforms which are equipped with an array of functions has provided businesses many opportunities [1]. The benefits that social media presents to organizations encourage greater integration of social media into business operations. Adoption of social media in projects is estimated to improve productivity by 25 per cent and to unravel up to \$1.3 trillion of annual value globally [2]. Social media enables organizations to connect internally and externally with its diverse stakeholders and brings various opportunities, and tapping into this resource is vital [3].

Project management is a domain in which success is heavily linked to the systematic identification and application of best practices. Project management refers to processes that help to manage resources, complete a project within scope, time, quality and cost and mitigate uncertainty [4], and social media has a role to play. Using social media in managing projects requires standardized frameworks and methods to help retain control and operate effectively. Compromised security and disclosure of sensitive project data are some of the significant threats [5]. The application of social media in managing projects has raised concerns about the rigor of the methods used for the integration of social media in project management. Hence, a holistic social media adoption strategy is needed to ensure the effective usage of social media in project management.

The nexus of social media and project management is the crossroads for the literature synthesis in this study. According to Kaplan and Haenlein [6], "social media is a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" (pg. 61). On the other hand, project management is described as "the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements" [7]. Therefore, in this study, project management areas are referred to as activities in the project life cycle where social media can be adopted to apply knowledge, skills, tools, and techniques to project activities for achieving project objectives.

Organizations undertake Information Technology (IT) projects to transform and grow [8]. When adopting social media for managing projects, organizations need to consider the factors affecting the complexity and success of its adoption. Megaprojects are generally exposed to underperformance [9], hence do not resemble the best setting for social media adoption, as no specific framework or methodology is recorded in the literature for managing complex IT projects [10]. For the strategic integration and use of social media in project management, the associated benefits and risks need to be explored. Project managers could benefit from social media use in addressing the challenges of current practices. Documentation of design projects and traceability of decisions and revisions is of high importance [11] and is an example where social media use can be beneficial. In managing risks, a holistic approach is needed to probe the threats at both a project and an organizational level [12]. Hence, a comprehensive review of the benefits and risks of social media use in project management is imperative.

A better understanding of social media use in project management will enrich a social media strategy. As of writing this paper, no prior literature review was found that holistically explored social media usage in project management through a review of the literature, particularly with regards to the project management areas where social media can provide benefits. The work undertaken by Kanagarajoo et al. [1] and Zhang et al. [13] reviewed different aspects of social media's contribution to the project communication area only. Moreover, a comprehensive amalgamation of the aspects from which social media adoption in project management areas are probed in literature is imperative for researchers and practitioners. Additionally, for broader social media adoption in project management and unlocking its potential for organizations, it is of significant value to clarify and catalogue the reported benefits of social media use. Despite a list of opportunities and benefits showcased by Hysa and Spalek [5], other scholars such as Ninan et al. [14] called for further scouting of social media adoption benefits from different perspectives. In the project management context, threats are uncertain and, if materialized, they will negatively impact project objectives [7]. Equitably enumerating the threats of social media use in project management is of grave importance to curtail uncertainty and encourage social media adoption. Furthermore, threats of social media in project management which are explored by Rosenberger et al. [15] are distinctive from those reported by Hysa and Spalek [5]. Any formulated strategies for social media adoption in

project management would lack efficacy where barriers and enablers of social media usage are neglected or left unexplored under a combined lens. To the best of our knowledge, an exhaustive record of these factors is not explored nor contrasted in any previous studies and this study endeavors to fill the gap.

Hence, through the lens of a systematic narrative literature review, this study examines the project management areas in which social media is used. After setting the context, the benefits and threats of using social media in projects are investigated. Furthermore, the barriers and enablers of social media use in management are explored as they influence the success of social media adoption. The insight gained through this review provides significant value for the development of social media adoption strategy in project management.

This paper is structured as follows. The next section outlines the research method adopted in this study. It is followed by the section in which the project management areas where social media is used are outlined. The benefits and threats of using social media in project management are described next. Barriers and enablers follow. The discussion section outlines the significance of the findings, in light of the existing literature and presents a social media adoption model. Subsequently, further research areas are reviewed, and the conclusion summarizes critical aspects of the study along with the limitations.

2. Research method

This study aims to provide a synthesis of the previously published studies about the use of social media in project management. Through this literature review, the paper seeks to clarify the scope of the available knowledge and highlight the significance of new research agendas. Thus, a systematic narrative literature review is chosen as the primary research method for this study. Comprehensiveness is the fundamental characteristic of the narrative review, which caters for broad coverage of the studied issues [16]. The narrative literature review provides a robust platform for a comprehensive study, analysis and synthesis of existing literature. However, the criteria for selecting specific sources for review are not always apparent to researchers [17]. Unclear selection criteria of the researched literature could raise legitimate concerns about the outcome of the study. These concerns could question the biased selection of the researched literature and the intention of researchers to narrate the findings selectively. This study has used a systematic search to select the relevant articles to eliminate these possible biases. A systematic search was formulated with an explicit inclusion and exclusion criteria. In addition, the researched terms and methods are outlined to enable the readers to replicate the same range of literature. Critical assessments were also conducted to appraise the relevance of the extracted data with the researched topic. These steps enabled the research to overcome the lack of transparency which is a side effect of the narrative literature review. All relevant databases were included to ensure the literature of social media usage in project management has been covered extensively. For conducting this systematic narrative literature review, the guideline provided by Denyer and Tranfield [18] was followed in which the selection process took place in three stages – planning, conducting and reporting.

2.1 *Planning the review and computer search*

To design the review, the purpose and protocols of this study were established [18]. The research protocol in this study is defined by the research questions, search strategy, inclusion and exclusion criteria, database search and duplicate elimination, and data extraction strategy.

2.1.1 *Research questions*

The following research questions were defined to perform the systematic narrative literature review:

- RQ 1. What are the project management areas in which social media is used?
- RQ 2. What are the benefits of using social media in project management?
- RQ 3. What are the threats of using social media in project management?
- RQ 4. What are the barriers and enablers of social media usage in project management?

2.1.2 Search strategy

As part of the search strategy, the required actions were planned to return appropriate answers to the defined research questions. The usage of social media and project management literature is intended to be captured by searching the relevant databases. Through assessment and refinement, appropriate keywords for searching were established. It was also decided to conduct a few initial searches to test search terms and combinations. A shortlist of the relevant databases was also narrowed down, along with the development of the inclusion and exclusion criteria.

2.1.3 Inclusion and exclusion criteria

In order to set boundaries for the search, inclusion and exclusion criteria were established. Table 1 describes the inclusion and exclusion criteria for this study.

Table 1. Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Exposure of interest	Social media in project management	Social media in other domains
Language	Written in English	Written in any other language
Type of publication	Peer-reviewed journal articles	Book reviews, editorials, and papers in conference proceedings
Period	2014 - 2019	Before 2014

Available resources and language expertise prevented this research from investigating published works in any language other than English. Peer-reviewed journal articles were chosen to maintain quality standards and a scholarly level of analysis. In the last five years, due to its pervasive merger with workplace operations, social media has paved its way into the project management domain. This phenomenon has raised many concerns about the appropriate usage and integration of social media into project management. Hence, this study explores the highlighted aspects of the usage and integration in the published literature over the past five years.

2.1.4 Database search and duplicate elimination

EBSCOhost, Emerald, Oxford Academic Journals, ProQuest, ScienceDirect, Scopus, Springer Link, and Web of Science were the selected databases to ensure relevant academic sources are captured. To ensure appropriate articles are obtained, the title and abstract field of the database was used. Further filtering of titles removed duplicate papers.

2.1.5 Data extraction strategy

After applying the inclusion and exclusion criteria, the articles were examined against the research questions to remove irrelevant literature. The data analysis was then performed by reading the selected papers.

2.2 Conducting the review

The systematic literature search was executed between August 2019 and September 2019. During this stage, the databases were extensively examined. Table 2 demonstrates the utilized string and the generated search output numbers for each database prior to the screening stages comprising of sixty-six search results.

Table 2. Database search results

Database	Used terms and operators	Search Field	No. of peer-reviewed studies	No. of studies within (2014-2019)	No. of studies in English	No. of studies as journal articles	No. of studies before screening stages
EBSCOhost	"project management" AND "social media"	AB Abstract	7	5	4	2	2
Emerald	"project management" AND "social media"	Abstract	66	42	42	33	5
Oxford Academic Journals	"project management" AND "social media"	N/A	158	129	129	101	7
ProQuest	"project management" AND "social media"	Abstract AB	5	3	3	3	2
ScienceDirect	"project management" AND "social media"	Abstract	8	8	8	7	7
Scopus	"project management" AND "social media"	TITLE- ABS- KEY	145	97	96	23	17
Springer Link	"project management" AND "social media"	N/A	2,115	1,733	1,575	370	12
Web of Science	"project management" AND "social media"	Topic	39	31	30	15	14

After identifying and removing duplicates, the remaining publications were further investigated to ascertain the inclusion of social media in managing projects. Selection of the articles took place after a staged review of their topic, abstract and conclusion while maintaining the focus on the literature of most considerable pertinence to the research questions. A list of forty-three articles was shortlisted in relation to the usage of social media in project management. The next stage was to undertake a complete reading of all the shortlisted articles to ensure the articles helped in addressing the research questions. This led to a final shortlist of twenty-nine articles, which formed the premise for the analysis. Table 3 illustrates the articles came from twenty-five journals, with the most number of articles published in 2017 over the past five years.

Table 3. Journal listing

Journal Title	Number of articles from the journal	Year published
Advanced Science Letters	1	2017
Business & Information Systems Engineering	1	2019
Corporate Communications: An International Journal	1	2014
Global Journal of Flexible Systems Management	1	2016
Government Information Quarterly	1	2016
Heliyon	1	2019

Journal Title	Number of articles from the journal	Year published
Indian Journal of Science and Technology	1	2016
Information Systems Frontiers	2	2017, 2018
International Journal of Managing Projects in Business	1	2016
International Journal of Productivity and Performance Management	1	2019
International Journal of Project Management	2	2018, 2019
International Journal on Interactive Design and Manufacturing	1	2018
ITNOW	1	2014
Journal of Business Economics and Management	1	2014
Journal of Business Research	1	2019
Journal of Communication	1	2015
Journal of Computer-Mediated Communication	1	2016
Journal of Construction Engineering and Management	1	2016
Knowledge Management Research & Practice	3	2017, 2017, 2017
Perspectives on Public Management and Governance	1	2018
Project Management Journal	1	2015
The Learning Organization	1	2014
Transforming Government: People, Process and Policy	1	2017
Vision: The Journal of Business Perspective	1	2017
Water Policy	1	2018

2.3 Reporting the review

The purpose of this stage is to enable dissemination of the systematic narrative literature review of the selected topic among the potentially interested stakeholders by stating the findings of the study. As this study aimed to explore responses to the pre-determined research questions, a narrative analysis was carried out with the aim of constructing the results as the examination progressed. More specifically, a narrative thematic analysis was carried out in which content within the text was analyzed involving five stages: organizing data, deriving an overall view of the information, coding, identifying categories and interpretation [19]. Importantly, the codes were condensed into categories that helped in addressing the research questions. Interpretation involved making sense of the data and deriving meaning from it to provide insight into the use of social media in project management.

The narrative thematic analysis of the reviewed literature revealed that a lack of social media adoption strategy is the principal reason for the minimal use of social media in project management [1],[5]. The systematic review also confirmed that none of the reviewed literature in this study has developed nor presented a model for social media use in project management. Thus, due to its capacity for comprehensive study and analysis of the literature [16], narrative analysis was carried out to formulate a holistic solution for the highlighted problem. The proposed model in this study has emerged through a systematic narrative literature review.

3. Project management areas in which social media is used

Social media is used for a variety of purposes in project management such as managing requirements and configuration [20], communication management [21], policymaking [13],[22], and management of knowledge and collaboration with project stakeholders [1].

3.1 Requirements management

Requirements and configuration management could be a long and complicated process. Sharing acceptance criteria via social media enables the project team to commence testing of the released project components before completion of the entire requirements documents [20]. Application of social media provides flexibility and integrity for the management of the stakeholders' requirements. Using different social media features such as hashtags or bookmarks ensures project and configuration updates are retrievable at any point of the project lifecycle [20]. A hashtag is used as a label for the content being produced on social media. By searching a hashtag, every tagged content by that hashtag will be retrieved easily.

3.2 Communication management

Managing project communication is one of the essential areas in which social media is used [5],[21]. Conducting project meetings, reporting project progress and accomplished milestones, communicating project outcomes and sharing best practices are some examples of social media use in managing project communications [21]. Social media's capacity to provide broad communication channels with stakeholders, as well as the capability for prompt reflection on project issues, helps project managers to be more effective in their jobs [5]. In addition to social media's contribution to the effective decision making in projects, the potential to quickly share large volume project documents have made social media a competent means of communication for the project managers [1],[23].

Social media's role in communication and sharing knowledge is highlighted as a significant reason for organizations to use it in projects [1]. However, to exploit the benefits of social media adoption in projects, its usage must comply with predefined principles [5]. Stating the purpose and form of social media use, clarifying restricted and confidential project information, defining project members' scope of responsibility and establishing guidelines for distinguishing professional and private presence in social media are some of the underlying principles that need introspection [1],[5].

There are also case studies in the literature where social media is used as a communication channel in government projects. In a case study in India, social media was employed to broadcast progress updates, engage community members, advertise project vacancies and promote a national organizational brand [14]. The purpose was to boost the support of external stakeholders. In China, social media comments about the "south to north water transfer" project were analyzed to conceive interests and opinions of the community [13]. In another study in China, the government's decision to respond to negative comments through social media exhibited a two-way proactive communication approach to address potential public relation problems [22]. In e-government projects where the failure rate is expected to be high, the Twitter analysis method can be a sound practice. This method is used to track citizens' reaction to project failure and address those reactions with an appropriate communication management plan implemented through social media [24],[25].

3.3 Policymaking

There are instances where social media has been used for policymaking as a nexus of communication and collaboration between governments and citizens [13],[22]. Public opinion shapes the collaboration intensity between community and government. Governmental projects typically are enormous in scope and complexity. Any issue in a large complex project which engages a broad range of citizens could represent a social issue. Literature suggests, in such projects, governments must analyze social media content and monitor social opinions, trends and emotions [22]. By recognizing public interests through social media analysis, governments can make or modify project policies to maintain or enhance collaboration between them and citizens.

3.4 Knowledge management

Knowledge management has different aspects such as capturing lessons learned, updating organizational process assets and sharing or retrieving project knowledge. The use of social media in knowledge sharing for productivity improvement is increasing [26]. Social media enables knowledge sharing to take place instantly beyond defined boundaries in organizations [1]. Using social media, project staff establish knowledge repositories where they store cross-functional knowledge [27]. Literature suggests that knowledge sharing is facilitated by establishing close relations with others [5], and social media is an efficient means to do it. Some organizations are utilizing Enterprise Social Media (ESM) to conquer the knowledge sharing complexity imposed by their organizational structure [28]. Through the usage of ESM, project staff communicate with team members from other divisions, form inter-organizational groups, view messages or shared documents posted by other members and edit or reflect on posted topics by others [29].

Social media platforms are also used for capturing lessons learned in projects [1],[28],[30]. Social media facilitates both retrospective, and prospective learning practices [31] which are usually discussed in lessons learned sessions. Scholars suggest that some social media features are adequate for knowledge management activities [20]. Although characteristics of social media simplify cross-functional discussions and knowledge creation, concerns about the factors affecting the quality of knowledge management processes exist [32]. The effectiveness of knowledge management processes is dependent on the capacity of the used infrastructure and technology [32].

3.5 Collaboration

Cross-boundary communication and knowledge sharing between project staff and stakeholders increase collaboration in organizations. As previously highlighted, social media facilitates the creation of relationships between project staff and the broad community of stakeholders. Social media facilitates virtual team set up, thereby significantly reducing travel needs of project team members. This, in turn, translates into cost savings [5]. Real-time knowledge sharing is one of the main advantages of using social media for knowledge management. The reviewed literature demonstrates that the usage of real-time social media tools increases collaboration value by reducing coordination costs [5]. Hence, collaboration is another application area for social media in projects [5],[21],[33],[34].

Governments have also used social media for improving the collaboration intensity with the community [34]. Governments develop or modify policies based on the analysis of public opinion shared in social media platforms to intensify collaboration with communities. These collaborations are critical where governments seek to co-produce public services with community members [34].

4. Benefits of using social media in project management

Social media benefits justify its usage in project management. Hysa and Spalek [5] employed a quantitative questionnaire which measured the influence of using social media in project management in different fields. The research found that social media adoption in organizations is beneficial as improvements were reported in communication, collaboration, engagement, productivity and flow of knowledge and information [5].

Ease of access through computers and mobile devices enabled social media to become a quick and efficient information-sharing and communication tool [1],[23],[35]. The capacity to allow instant messaging helped project managers to establish reliable and efficient communication networks with the project participants and owners [5].

Social media could also be beneficial when used to improve collaboration in virtual teams [5]. A virtual team is a group of individuals who are geographically dispersed. To collaborate on assigned objectives, they use virtual communication technology such as email or video conferencing services. Social media provides cost-effective solutions when employed by virtual teams as it reduces costs associated with the required travel for the virtual team members and establishment fees for offshore call centers. Social media also helps to improve the project personnel's engagement [5]. It increases the participation of team members in project discussions, information sharing and decision making [1].

In knowledge management, social media facilitates instant and broad information exchange between the project participants and experts. When managed strategically, social media also enables knowledge depository and revisal through established mechanisms. Quick and cost-effective access to knowledge and communication channels, when coupled with the encouraging participation and collaboration, boosts the project team's synergy and productivity [5]. Social media is also beneficial for managing external stakeholders and resources. Building relationships with project partners [21], customers, community members and future talents [36] are some examples.

Governments have explored opportunities in collaborative policymaking with the participation of the community members [15]. Ninan et al. [14] reviewed a case study in India and reported the benefits of social media usage by the local government in a megaproject. Promoting the project's benefits, saving costs through crowdsourcing, publishing progress reports and engaging with the community helped to build a positive brand image for the mentioned project [14]. Another case study in China highlighted some similar benefits as well as the increased transparency and accountability yielded by the local government through the usage of social media in the management of a megaproject [34].

5. Threats of using social media in project management

The reviewed literature has limited yet insightful cases where the threats of using social media in project management are studied. Di Gangi et al. [37] classified social media threats as social, technical and legal. Social threats can impact the reputation of an organization and the confidence of customers in a business brand. In contrast, technical threats endanger organizational information technology resources as introducing malicious code (malware) into the organizational computing environment or harming digital devices, and legal threats can lead to corporate loss due to mishandling sensitive information of business partners [37]. Projects can also face similar threats when social media is used. Hence, awareness is vital.

In the communication area, Hysa and Spalek [5] have cited different social media threats including, disclosure and acquisition of confidential project data, incidences of various technical issues, and hacked project staff accounts. In collaboration and work productivity areas, they have found wastage of time on personal and non-work-related matters. In engagement and work productivity areas, they also cited the threat of occupational burnout due to blurred borderline of professional and personal time.

In managing projects, social media threats could be more extreme for governments. Losing citizens' trust should be avoided at both political and technological levels [15]. Inability to govern accident or failure news ethically can stimulate negative emotions of the citizens [14]. Governments are exposed to data privacy, data security, and data accessibility threats primarily when they use third-party social media platforms [15], hence caution should be exercised.

6. Barriers and enablers of social media usage in project management

Although many studies stated the benefits of social media usage, others suggest that some organizations are still reluctant to deploy social media tools. The absence of explicit social media enablers and the presence of barriers could dampen the interest of using social media in project management. This theme reviews the available literature to uncover the barriers and enablers of social media usage.

6.1 Barriers

Barriers should be considered in the strategic management of social media usage as they could hinder adoption initiatives. Empirical research [1],[5],[38] suggests that the fear of losing control over information and security is the primary barrier for social media implementation. Other restrictions are the technology used, time constraints, inadequate clarity of the business needs, and training requirements for social media integration [39]. The adoption of new technology demands changes, and undesired changes could stall the adoption process. Inadequate technology infrastructure or inclusive social media restrictions also inhibit usage [1].

Social media restrictions are practiced by governments to prohibit freedom of speech or to control the flow of information for political or national security purposes [1]. Furthermore, where tight delivery timeframes are set, the motive to explore and deploy social media tools is hampered. In business areas where social media adoption is a complex task and is vaguely defined, the adoption initiatives could halt [39]. Moreover, time, cost, and resources associated with social media training could undermine deployment benefits. In addition, Rimkuniene and Zinkeviciute [38] state that the lack of confidence in personnel's appropriate use of social media inhibits the adoption. Project managers are worried that project staff would waste time on social media channels over individual matters, provoking a decrease in productivity [5]. Additionally, the absence of a comprehensive strategy for social media management has been underlined as a significant inhibitor [1],[5],[38].

6.2 Enablers

Enablers are the factors which facilitate practical usage and management of social media in project management. Strong leadership, a culture of knowledge sharing, and business needs could ease social media adoption [39]. Where business leadership is invested, middle management and the project staff are compelled to explore opportunities to employ social media tools. Even in the presence of strong leadership support, the willingness to share learned experiences should be one of the values forming an organizational culture. Besides, the absence of a suitable communication channel for any business could accelerate the adoption of social media. Rimkuniene and Zinkeviciute [38] state that mapping appropriate social media tools with business needs and objectives is the business manager's responsibility. Inevitably, the quality of the communication rests on the competency of the deployed technology [40]. Another enabler is the convenience of accessibility on multiple devices as smartphone, tablet, and computer [1]. Personnel competency could minimize the required induction and training procedures. Expertise is recognized as an essential factor when deploying social media tools [23].

7. Discussion

The integration of social media into the value chain activities of organizations has become necessary. Project management processes are no exceptions as they are a vital part of organizational value chain activities. The findings of this study confirm that social media is used in projects for different purposes. However, the literature also suggests that social media adoption in projects is minimal [5],[21].

The lack of a social media adoption strategy is the principal reason for the limited use of social media in projects [1],[5]. The absence of a strategy discourages actions and may hinder attempts from delivering successful results. In developing a strategy, objectives must be clarified and translated into a practical roadmap to guide adoption. Thus, organizations must specify the purposes of social media use in their projects before formulating any strategy [1],[5].

Once the objectives are set, appropriate social media tools should be selected for the successful delivery of the determined purposes [1],[38]. Subsequently, manuals are needed to guide the proper usage of the chosen platforms.

Clearly defined guidelines improve understanding of a well-crafted strategy. A clearly drafted strategy is more likely to earn support and deliver successful results. Organizational social media policies summarize the guidelines for effective governance of social media in organizations. The scope of the responsibility [5] and the barriers and enablers of using social media also need to be addressed in social media policies. In the context of the organizational environment, a comprehensive social media policy needs to consider the consequences of social media misconduct from both individual and corporate perspectives [37]. In addition to the social media policy, updated Information and Communication Technologies (ICT) security policies are required to enable organizations to mitigate the security threats associated with the adoption of social media [1],[5],[37]. Finally, a receptive environment facilitates the successful implementation of social media in projects.

Identifying and sustaining critical success factors contribute to the successful implementation of strategies. The reviewed literature highlights the essential factors of success as:

- frequent training of social media and ICT policies [5],[37],[38];
- recognizing and rewarding the compliance and governance of the project team with the social media policies [37]; and
- documenting, sharing and applying the best practices of social media use in projects [21].

Figure 1 illustrates a social media adoption model for project management based on the findings of this study. As highlighted in the research method section, this model has emerged through a systematic narrative analysis of the literature. Four elements of the model are described here in order.

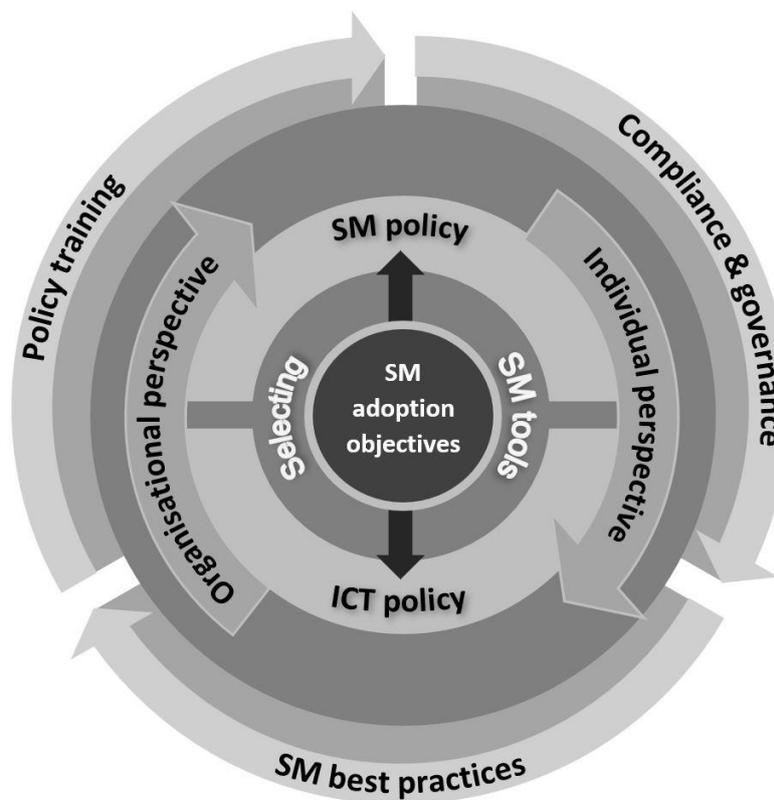


Fig. 1. Social media adoption model for project management

7.1 Setting the objectives

In this model, setting objectives for social media use is the foundation of a successful social media adoption strategy. It is imperative for organizations to clarify the objectives of social media use in project management before formulating any strategy [1],[5]. It enables the postulation of a clear vision to erect a model and performs as a decision-making compass too.

7.2 *Selecting social media tools*

After assessing the purposes of social media use in project management, businesses then need to decide which social media platforms best cater to their established goals. The selection of social media platforms must be aligned with the set objectives [1],[38], based on the characteristics of social media platforms, so the successful delivery of the determined objectives are provisioned.

7.3 *Tailoring social media and ICT policies*

Based on the selected platform, social media and ICT policies need to be tailored to address the threats and barriers of social media use at an individual and organizational level. For prevention and effective management of the threats of social media misuse, comprehensive social media policies must consider both individual and corporate perspectives [37]. Simultaneously, ICT security policies are also of importance in the prevention and mitigation of security threats where social media is used in organizations [1],[5],[37]. Thus, tailored social media and ICT policies enable organizations to govern the effective adoption of social media in project management. Any changes to the social media adoption objectives need to be reflected in the array of social media tools and governance policies to sustain the efficacy of the model.

7.4 *Establishment of the critical success factors*

The organizational environment could support or impede initiatives and the successful implementation of any model. The proposed model also recommends three critical success factors for an effective social media adoption strategy; frequent policy training, establishing a best practice culture for social media adoption and auditing the compliance and governance of social media and ICT policies.

- Organizations must frequently train their staff on the content and application of social media and ICT policies [5],[37],[38]. Frequent training sessions would ensure that staff are kept aware of social media and ICT policies, the latest updates made to each policy, examples of social media misconduct, individual and corporate level threats and consequences, the means to mitigate the threats, and effective application of social media to fulfil organizational objectives.
- Organizations must audit whether their staff's usage of social media complies with organizational policies and governance procedures. A recognition and rewards program enforces the appropriate application and reminds the consequences of non-compliance behavior [37]. A compliance and governance audit mechanism should be established once the social media and ICT policies training are developed. Training and appropriate audit mechanisms would jointly encourage appropriate social media use.
- Organizations must document, share and apply the best practices of social media use in project management [21]. Application of best practices is a practical approach to improve efficacy and consequently, the credibility of the employed model. Subsequently, the model could gain better support from different levels of an organization. Additionally, access to documented best practices boosts the confidence of project managers to adopt social media in the management of their projects [38], which could enhance social media adoption rate in project management activities.

The social media adoption model for project management signifies the importance of this study. Through a detailed review of the selected studies, this research synthesized multiple elements of the literature and converged them into a single social media adoption model. This model could aid in the integration of social media in project management and enhance project management activities.

8. **Further research areas**

For social media integration in project management, a holistic approach, alongside a thoroughly devised strategy, has a paramount role. Empirical research has unveiled that there is scant literature concerning the effective use of social

media for managing projects. The literature suggests that studies have only covered the social media application during the conceptualization stage of projects [41]. Thus, further studies are needed to explore the application of social media in other stages of a project too.

Where the adoption of social media is intended for internal purposes, scholars stressed their concerns about the lack of rigor in using social media and lack of studies to explore how policies and procedures should be used to govern social media use in project management [1],[5]. Social media policy robustness, human resource policy compliance with safe social media integration, security knowledge and discipline are other unexploited areas [37].

Furthermore, literature in using social media for external purposes is even more scarce. Ethical guidelines, information privacy and user permission, need to be handled delicately. The risk of losing citizens' trust has to be studied and analyzed at both political and technological levels [15]. Social media usage by citizens to collaborate with governments also stimulates the sharing of emotions. There are very few theories on how emotions should be dealt with in governance processes [42], and this could be investigated.

The absence of best practices for social media integration in project management has raised many concerns [21]. Rimkuniene and Zinkeviciute [38] concluded that the use of social media requires a holistic approach in which project management professionals need to rethink their communication approach, enhance their competence and usage practices. Appropriate policies can enable clear description and effective implementation of best practices. It was determined that traditional information technology policies do not cater for social media to exploit its full potential and appropriate policies and procedures are needed for the safe and effective integration of social media in project management [1],[5]. Further studies, particularly case studies that shed a real-world perspective, are required to explore the integration of social media in project management.

9. Conclusion

A review of the areas where social media is adopted in project management was carried out in this study to set the context for analysis of the benefits and threats associated with the integration and use of social media for project management activities. A synthesis of the literature suggests that social media adoption for project management is both beneficial and a menace for organizations. Key areas where social media is used in project management include requirements management, communication management, policymaking, knowledge management and collaboration. Social media usage has shown to improve information sharing, engagement and relationships. Threats include a negative impact on reputation, employee productivity and information privacy. Notably, social media is useful for projects and project management, where it allows overcoming organizational and contextual boundaries. It can also be risky where there is lack of governing guidelines. The effective management of social media in project management requires a holistic approach. The impact of barriers and enablers on social media adoption is beyond doubt. In the development of a social media adoption strategy, the barriers and enablers of social media adoption should be studied and considered.

As with any study, this one is not exempt from limitations either. It has the usual restrictions that apply to literature reviews, particularly the inability of not finding articles that were outside the scope of the chosen databases.

In response to the minimal use of social media in projects, this study presented a social media adoption model for project management intending to enhance social media adoption. The findings of this study also unveil the scarcity of literature concerning the effective use of social media in project management. This vacuum signifies the importance of this study. Further research areas were also highlighted. The absence of best practices for social media integration in project management requires project management practitioners and scholars' attention. From a practical and theoretical standpoint, social media has untapped potential for managing projects.

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References

- [1] M. V. Kanagarajoo, R. Fulford, and C. Standing, "The contribution of social media to project management," *International Journal of Productivity and Performance Management*, vol. 69, no. 4, pp. 834-872, 2019, doi: 10.1108/ijppm-09-2018-0316.
- [2] J. Jensen, "How many project managers does it take to send a Tweet?," *ITNOW*, vol. 56, no. 2, pp. 6-7, 2014, doi: 10.1093/itnow/bwu033.
- [3] R. Chugh, *Harnessing social media as a knowledge management tool*. IGI Global, 2016.
- [4] K. Samset and G. Volden, "Front-end definition of projects: ten paradoxes and some reflections regarding project management and project governance," *International Journal of Project Management*, vol. 34, no. 2, pp. 297-313, 2016, doi: 10.1016/j.ijproman.2015.01.014.
- [5] B. Hysa and S. Spalek, "Opportunities and threats presented by social media in project management," *Heliyon*, vol. 5, no. 4, p. e01488, 2019, doi: 10.1016/j.heliyon.2019.e01488.
- [6] A. M. Kaplan and M. Haenlein, "Users of the world, unite! The challenges and opportunities of social media," *Business Horizons*, vol. 53, no. 1, pp. 59-68, 2010, doi: 10.1016/j.bushor.2009.09.003.
- [7] PMI, *A guide to the Project Management Body of Knowledge (PMBOK® Guide)*, 6th ed. Newtown Square, PA: Project Management Institute, 2017.
- [8] C. Iriarte and S. Bayona, "IT projects success factors: a literature review," *International Journal of Information Systems and Project Management*, vol. 8, no. 2, pp. 49-78, 2020, doi: 10.12821/ijispm080203.
- [9] M. Nyarirangwe and O. K. Babatunde, "Megaproject complexity attributes and competences: lessons from IT and construction projects," *International Journal of Information Systems and Project Management*, vol. 7, no. 4, pp. 77-99, 2019, doi: 10.12821/ijispm070404.
- [10] S. Morcov, L. Pintelon, and R. J. Kusters, "Definitions, characteristics and measures of IT project complexity-a systematic literature review," *International Journal of Information Systems and Project Management*, vol. 8, no. 2, pp. 5-21, 2020, doi: 10.12821/ijispm080201.
- [11] T. Kinneging, R. de Graaf, S. Siebelink, and T. van Dijck, "The documentation of design decisions in engineering projects: a study in infrastructure development," *International Journal of Information Systems and Project Management*, vol. 8, no. 1, pp. 44-64, 2020, doi: 10.12821/ijispm080103.
- [12] C. Micán, G. Fernandes, and M. Araújo, "Project portfolio risk management: a structured literature review with future directions for research," *International Journal of Information Systems and Project Management*, vol. 8, no. 3, pp. 67-84, 2020, doi: 10.12821/ijispm080304.
- [13] D. Zhang, M. Qiang, H. Jiang, Q. Wen, N. An, and B. Xia, "Social sensing system for water conservation project: a case study of the South-to-North Water Transfer Project in China," *Water Policy*, vol. 20, no. 4, pp. 667-691, 2018, doi: 10.2166/wp.2018.141.
- [14] J. Ninan, S. Clegg, and A. Mahalingam, "Branding and governmentality for infrastructure megaprojects: the role of social media," *International Journal of Project Management*, vol. 37, no. 1, pp. 59-72, 2019, doi: 10.1016/j.ijproman.2018.10.005.
- [15] M. Rosenberger, C. Lehrer, and R. Jung, "Integrating data from user activities of social networks into public administrations," *Information Systems Frontiers*, vol. 19, no. 2, pp. 253-266, 2016, doi: 10.1007/s10796-016-9682-6.
- [16] J. A. Collins and B. C. J. M. Fauser, "Balancing the strengths of systematic and narrative reviews," *Human Reproduction Update*, vol. 11, no. 2, pp. 103-104, 2005, doi: 10.1093/humupd/dmh058.
- [17] P. Cronin, F. Ryan, and M. Coughlan, "Undertaking a literature review: a step-by-step approach," *British Journal of Nursing*, vol. 17, no. 1, pp. 38-43, Jan 10-23 2008, doi: 10.12968/bjon.2008.17.1.28059.
- [18] D. Denyer and D. Tranfield, "Producing a systematic review," in *The Sage handbook of organizational research methods*. Thousand Oaks, CA: Sage Publications Ltd, 2009, pp. 671-689.
- [19] M. Butina, "A narrative approach to qualitative inquiry," *Clinical Laboratory Science*, vol. 28, no. 3, pp. 190-196, 2015, doi: 10.29074/ascls.28.3.190.
- [20] V. Sundaramoorthy and B. Bharathi, "Need for social media approach in software development," *Indian Journal of Science and Technology*, vol. 9, no. 21, pp. 1-6, 2016, doi: 10.17485/ijst/2016/v9i21/95271.

- [21] M. Pivec and A. Maček, "Employment background influence on social media usage in the field of European project management and communication," *Journal of Business Research*, vol. 94, pp. 280-289, 2019, doi: 10.1016/j.jbusres.2018.03.021.
- [22] H. Jiang, P. Lin, and M. Qiang, "Public-opinion sentiment analysis for large hydro projects," *Journal of Construction Engineering and Management*, vol. 142, no. 2, 2016, doi: 10.1061/(asce)co.1943-7862.0001039.
- [23] P. Orta-Castañón, P. Urbina-Coronado, H. Ahuett-Garza, M. Hernández-de-Menéndez, and R. Morales-Menendez, "Social collaboration software for virtual teams: case studies," *International Journal on Interactive Design and Manufacturing (IJIDeM)*, vol. 12, no. 1, pp. 15-24, 2018, doi: 10.1007/s12008-017-0372-5.
- [24] L. Anthopoulos, C. G. Reddick, I. Giannakidou, and N. Mavridis, "Why e-government projects fail? An analysis of the Healthcare.gov website," *Government Information Quarterly*, vol. 33, no. 1, pp. 161-173, 2016, doi: 10.1016/j.giq.2015.07.003.
- [25] N. L. Williams, N. Ferdinand, and B. Pasian, "Online stakeholder interactions in the early stage of a megaproject," *Project Management Journal*, vol. 46, no. 6, pp. 92-110, 2015, doi: 10.1002/pmj.21548.
- [26] D. Mukherjee and N. S. Natrajan, "Comparative analysis of social media tool used in software projects deploying virtual teams," *Vision*, vol. 21, no. 4, pp. 397-409, 2017, doi: 10.1177/0972262917733180.
- [27] P. Sarka and C. Ipsen, "Knowledge sharing via social media in software development: a systematic literature review," *Knowledge Management Research & Practice*, vol. 15, no. 4, pp. 594-609, 2017, doi: 10.1057/s41275-017-0075-5.
- [28] N. Oostervink, M. Agterberg, and M. Huysman, "Knowledge sharing on enterprise social media: practices to cope with institutional complexity," *Journal of Computer-Mediated Communication*, vol. 21, no. 2, pp. 156-176, 2016, doi: 10.1111/jcc4.12153.
- [29] P. M. Leonardi, M. Huysman, and C. Steinfield, "Enterprise social media: definition, history, and prospects for the study of social technologies in organizations," *Journal of Computer-Mediated Communication*, vol. 19, no. 1, pp. 1-19, 2013, doi: 10.1111/jcc4.12029.
- [30] A. Wiewiora and G. Murphy, "Unpacking 'lessons learned': investigating failures and considering alternative solutions," *Knowledge Management Research & Practice*, vol. 13, no. 1, pp. 17-30, 2015, doi: 10.1057/kmrp.2013.26.
- [31] D. V. Rosa, M. S. Chaves, M. Oliveira, and C. Pedron, "Target: a collaborative model based on social media to support the management of lessons learned in projects," *International Journal of Managing Projects in Business*, vol. 9, no. 3, pp. 654-681, 2016, doi: 10.1108/ijmpb-12-2015-0120.
- [32] R. Maier and A. Schmidt, "Explaining organizational knowledge creation with a knowledge maturing model," *Knowledge Management Research & Practice*, vol. 13, no. 4, pp. 361-381, 2015, doi: 10.1057/kmrp.2013.56.
- [33] S. Orenga-Roglá and R. Chalmeta, "Methodology for the implementation of knowledge management systems 2.0," *Business & Information Systems Engineering*, vol. 61, no. 2, pp. 195-213, 2017, doi: 10.1007/s12599-017-0513-1.
- [34] C. Wang and R. Medaglia, "Governments' social media use for external collaboration," *Transforming Government: People, Process and Policy*, vol. 11, no. 4, pp. 572-595, 2017, doi: 10.1108/tg-02-2017-0009.
- [35] Y. Zhang, J. Sun, Z. Yang, and Y. Wang, "Mobile social media in inter-organizational projects: aligning tool, task and team for virtual collaboration effectiveness," *International Journal of Project Management*, vol. 36, no. 8, pp. 1096-1108, 2018, doi: 10.1016/j.ijproman.2018.09.003.
- [36] S. Dreher, "Social media and the world of work," *Corporate Communications: An International Journal*, vol. 19, no. 4, pp. 344-356, 2014, doi: 10.1108/ccij-10-2013-0087.
- [37] P. M. Di Gangi, A. C. Johnston, J. L. Worrell, and S. C. Thompson, "What could possibly go wrong? A multi-panel Delphi study of organizational social media risk," *Information Systems Frontiers*, vol. 20, no. 5, pp. 1097-1116, 2016, doi: 10.1007/s10796-016-9714-2.
- [38] D. Rimkuniene and V. Zinkeviciute, "Social media in communication of temporary organizations: role, needs, strategic perspective," *Journal of Business Economics and Management*, vol. 15, no. 5, pp. 899-914, 2014, doi: 10.3846/16111699.2014.938360.
- [39] G. J. Baxter, S. H. Janes, K. Patrick, and F. Dotsika, "Implementing a social intranet in a professional services environment through Web 2.0 technologies," *The Learning Organization*, vol. 21, no. 1, pp. 26-47, 2014, doi: 10.1108/tlo-11-2012-0068.

- [40] J. W. Treem, S. L. Dailey, C. S. Pierce, and P. M. Leonardi, "Bringing technological frames to work: how previous experience with social media shapes the technology's meaning in an organization," *Journal of Communication*, vol. 65, no. 2, pp. 396-422, 2015, doi: 10.1111/jcom.12149.
- [41] V. Vadhanasin, S. Ratanakuakangwan, and K. Santivejkul, "Social media in project communication management—a conceptual framework," *Advanced Science Letters*, vol. 23, no. 1, pp. 581-584, 2017, doi: 10.1166/asl.2017.7262.
- [42] E. H. Klijn and I. Korthagen, "Governance and media attention: a research agenda about how media affect (network) governance processes," *Perspectives on Public Management and Governance*, vol. 1, no. 2, pp. 103-113, 2018, doi: 10.1093/ppmgov/gvx004.

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