

Exploring the Connection between Sustainability and Stakeholder Management Process in Construction Projects: A Systems Thinking Approach

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Abstract

Stakeholder Management (SM) is critical in Project Management (PM). However, evidence show that SM has not been effectively implemented in the construction industry. Apart from the complexity of SM, the concept of sustainability has gained attention in PM and SM. This paper has conducted a systematic literature review to uncover the key factors that impact the SM in construction projects, and it has used a causal loop diagram based on systems thinking approach to explore specifically the connection between sustainability and the Stakeholder Management (SM) process. The findings reveal that there is a significant gap in the existing academic literature and research on achieving SM sustainably. Future research would need to identify the definition of Sustainable Stakeholder Management (SSM) and explore how Sustainable Stakeholder Management (SSM) process can contribute to sustainability in the construction industry.

Track: Project Experiences

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Background

The concept of “Stakeholders” first introduced by Freeman in 1984, it is defined as “those groups who can affect or are affected by the achievement of an organisation’s purpose” (Freeman, 1984). Littau et al. (2010) examined the project management literature related to the stakeholder between 1984-2009. They found that stakeholder is crucial in project success, with the construction industry being one of the main industries in this context (Littau et al., 2010). In the context of projects, Stakeholder Management (SM) is a very important concept (Aaltonen et al., 2008). Stakeholder management is an iterative process used to engage stakeholders effectively to support the project, which includes four steps: identify and analyse stakeholders; Plan strategies for stakeholder engagement; Managing stakeholder engagement; and Monitor stakeholder engagement (PMI, 2017). Effective SM helps to build trust between the project team and stakeholders, ensure customer satisfaction, achieve project objectives, and deliver value and benefits to stakeholders (Oppong et al., 2017, Yang et al., 2009b). Although scholars realised the importance of SM in the construction projects, researchers found that SM was less effective in the construction industry (Loosemore, 2006). Unsuccessful projects still exist, although project managers have tried various methods to enhance SM (Bulğan and Taş, 2023). Reasons for this ineffective application include involvement of multiple stakeholders in projects which makes conflict (rather than consensus) easier to happen and the diversity of tasks and parties in construction projects that undergo many changes and uncertainties (Kumar et al., 2024, Yang and Shen, 2015, Chinyio and Akintoye, 2008).

On the other hand, Eskerod and Huemann (2013) claimed that it is necessary to consider project stakeholder management in the context of sustainable development. Sustainable development is defined by the World Commission on Environment and Development (WCED) "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" in 1987 (Ortiz et al., 2009). Although there are more than 100 definitions for sustainability, most scholars highlight the need for a holistic approach that balances social, environmental, and economic goals simultaneously (Aarseth et al., 2017). These three goals are also called the three pillars of sustainable development (Aarseth et al., 2017, Labuschagne and Brent, 2005). Sustainability is a relatively new topic in the project management literature, with most publications dating back to the last decade (Aarseth et al., 2017, Silvius and Schipper, 2014). More and more countries and scholars are concerned about project management in the context of sustainable development (Li et al., 2022). However, Aarseth et al. (2017) emphasised that although there are articles from the construction background discussing sustainability or sustainable development, most of these only are mainly concerned about the green materials in construction. Phung et al. (2023) pointed out that managing sustainability in construction projects can support project success, they indicated that integrating sustainability factors into project success is "sustainable project success". They also stated that SM even has a slightly more significant influence than sustainability assessment regarding sustainable project success (Phung et al., 2023).

Given the critical role and complexity of SM and its potential role in sustainable project success, this paper aims to investigate the key factors that impact the SM process in construction projects and explore the relevance between sustainability and the SM process by conducting a Systematic Literature Review (SLR).

Research Questions

1. What are the key factors impacting SM process in the construction projects?
2. How has sustainability been discussed within the selected paper from SLR?

Methodology

Systematic Literature Review (SLR)

To explore the answers to the above research questions, this research has conducted a systematic literature review, which is a scientific, transparent, and reproducible literature review method (Davis et al., 2014, Linnenluecke et al., 2020) and it has been described as a gold standard among reviews (Snyder, 2019). PRISMA is Preferred Reporting Items for Systematic Reviews and Meta-analysis, which visualizes the research process and results by showing a transparent and clear literature selection process (Page et al., 2021). The PRISMA process for this SLR has shown below in Fig.1.

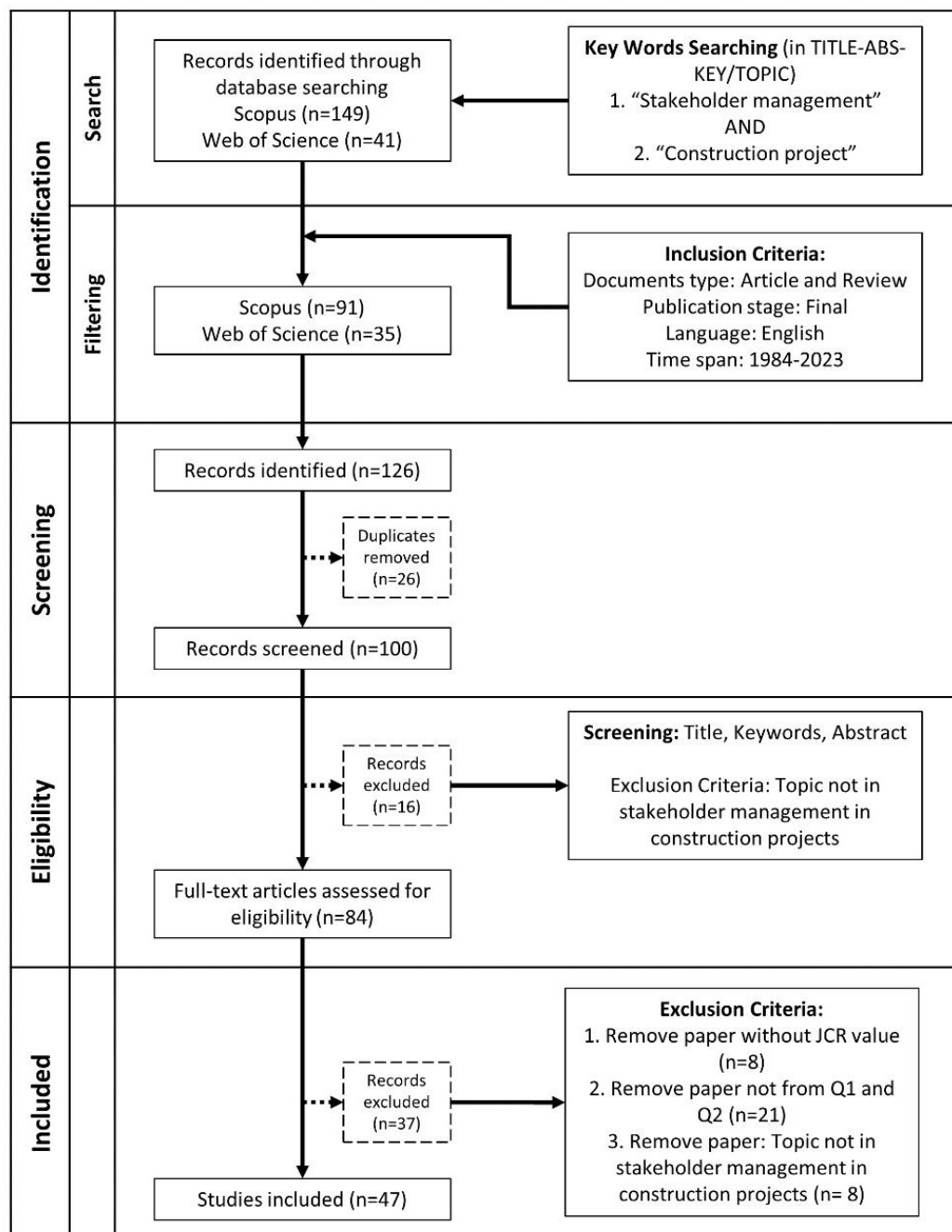


Fig.1. PRISMA process for this systematic review (author's own work)

Systems Thinking Approach

For analysing and mapping the results of SLR, systems thinking is used. Systems thinking is a discipline that thinks entirely, interrelation and dynamics instead of static and isolated (Ehrlich, 2022, Senge, 1990). It helps with understanding of how causal relationships and feedback work in daily problems. People can analyse and explain how changes happen in common problems within systems thinking, this is referred to as mental modelling (Haraldsson, 2004). Causal loop diagram is a transparent and visual tool for systems thinking that effectively maps the understanding of problems, and it helps to understand the system feedback mechanisms (Haraldsson, 2004).

The causal loop diagram for mapping the results of the SLR is presented in the next section.

Results

From the 47 reviewed papers, the researcher identified 52 factors that affect the SM process in construction projects. However, only 11 key factors were considered. These factors refer to key variables as they are part of at least one feedback loop. After confirming the causal relationships and feedback, the researcher used Vensim software to create the causal loop diagram, shown in Fig.2. The words in orange are 4 steps of the SM process. Each causal relationship can be seen based on the direction of the arrow and the polarity. For example, the causal relationship between ‘Identify and analyse stakeholder’ and ‘Project delay or stop’, ‘identify and analyse stakeholders’ has a negative impact on the ‘delay or stop of the project’, which indicates that identify and analyse stakeholders can help reduce the problem of project delay or stop. The explanations/evidence for each set of causal relationships are provided in Table 1.

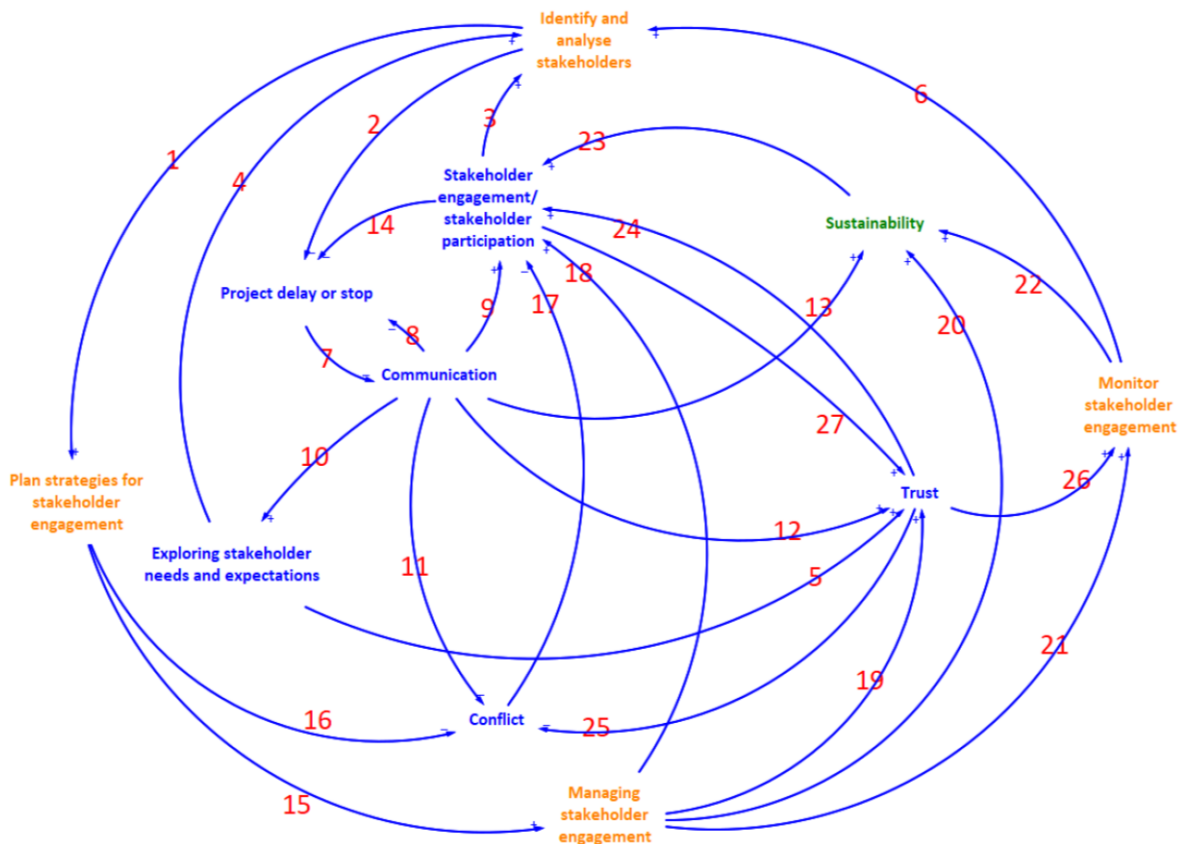


Fig.2. Causal loop diagram for key factors impacting SM process via Vensim (author's own work)

From this causal loop diagram, 'communication', 'trust' and 'stakeholder engagement' are the most important variables because they have more links with others and have the most loops. If one of them is not done well, it will have a cascading impact on the entire SM process.

Regarding the discussion on the sustainability or sustainable development in SM research of the 47 papers, Yang et al. (2009a) stated that project managers are responsible for being aware of stakeholders' influence and relationship changes and promoting stable relationships with different organisations. Because some stakeholders may still be involved at a later stage of the project or in potential future projects. In the meantime, managers need to monitor changes in stakeholder influence and relationships, contributing to sustainable development (Yang et al., 2009a). Mathur et al. (2008) believed that a well-designed sustainability assessment can help better SM. These findings provide ideas on how to achieve SM sustainably. However, the links between sustainability and other factors are limited in this causal loop diagram, implying the need for extensive research in the future.

Table 1: Evidence of the causal relationships

<i>No.</i>	<i>Relationship</i>	<i>REF</i>
1	Identify and analyse stakeholders → Plan strategies for stakeholder engagement	SM PROCESS
2	Identify and analyse stakeholders → Project delay or stop	By identifying stakeholders and their risks (especially threats), project delays can be effectively mitigated (Xia et al., 2018).
3	Stakeholder engagement/stakeholder participation → Identify and analyse stakeholders	Stakeholder engagement can help analyse stakeholder more effective (Yang et al., 2010).
4	Exploring stakeholder needs and expectations → Identify and analyse stakeholders	Understand the expectations/interests of stakeholders, and accurately realize that their potential impact on the project helps the project manager to correctly identify and analyse the potential interests (Nguyen et al., 2009).
5	Exploring stakeholder needs and expectations → Trust	Considering stakeholder needs and expectations builds trust, thereby making project work more efficient (Gaur and Tawalare, 2023).
6	Monitor stakeholder engagement → Identify and analyse stakeholders	SM PROCESS
7	Project delay or stop → Communication	Delays in projects can lead to further communication breakdowns (Olander and Landin, 2008).
8	Communication → Project delay or stop	Positive communication reduces active opposition from protest group, further avoiding project delays (Olander, 2007).
9	Communication → Stakeholder engagement/stakeholder participation	Build a communication platform can help identify stakeholders (Yang et al., 2018).
10	Communication → Exploring stakeholder needs and expectations	Build a communication platform can help exploring the needs and expectations (Yang et al., 2018).
11	Communication → Conflict	One-way communication can cause managers to be unresponsive to the concerns of other stakeholders, causing conflict (Olander and Landin, 2008).
12	Communication → Trust	Effective communication increases trust levels (Yang et al., 2018).

13	Communication → Sustainability	Appropriate and frequent communication helps achieve sustainable support (Yang et al., 2009a).
14	Stakeholder engagement/stakeholder participation → Project delay or stop	Stakeholder engagement helps establish common goals among stakeholders, thereby reducing the possible of project delays due to disharmony (Yang et al., 2018).
15	Plan strategies for stakeholder management → Managing stakeholder engagement	SM PROCESS
16	Plan strategies for stakeholder management → Conflict	A clear source of conflict is when formulating a project course of action without analysing the consequences of that decision for the different stakeholders (Olander and Landin, 2008).
17	Conflict → Stakeholder engagement/stakeholder participation	Conflicts of interests negatively influenced stakeholder participation (Khalilzadeh et al., 2023).
18	Managing stakeholder engagement → Stakeholder engagement/stakeholder participation	Effective relationship management helps a better stakeholder engagement (Najib et al., 2022).
19	Managing stakeholder engagement → Trust	Managers build and maintain a foundation of trust with stakeholders through effective stakeholder management processes (Olander and Landin, 2008).
20	Managing stakeholder engagement → Sustainability	Project managers have the responsibility to be aware of the influence of stakeholders and changes in relationships, and to promote stable relationships with them, which contributes to sustainable development (Yang et al., 2009a).
21	Managing stakeholder engagement → Monitor stakeholder engagement	SM PROCESS
22	Monitor stakeholder engagement → Sustainability	Managers need to monitor changes in stakeholder influence and relationships to achieve sustainable support, which contributes to the development of sustainability (Yang et al., 2009a).
23	Sustainability → Stakeholder engagement/stakeholder participation	Well-designed sustainability assessment process can help better stakeholder engagement (Mathur et al., 2008).
24	Trust → Stakeholder engagement/stakeholder participation	By building trust among stakeholders, it can help with better stakeholder engagement (Xue et al., 2022).
25	Trust → Conflict	The development of trust leads to an alignment of their interests, resulting in a collaborative work environment that enables conflicts to be resolved quickly and easily (Gaur and Tawalare, 2023).
26	Trust → Monitor stakeholder engagement	Mutual trust helps the Continuous support group work (El-Sawalhi and Hammad, 2015).
27	Stakeholder engagement/stakeholder participation → Trust	By engaging stakeholders in project issues, project team members can better build trust with them and foster collaborative relationships (Najib et al., 2022).

Discussion and Conclusion

This paper conducted a systematic literature review on SM in construction projects and applied a systems thinking approach to analyse the key factors that impact the SM process. These key

factors include communication, trust, stakeholder participation, exploring stakeholder needs, conflict, sustainability, and project delay or stop. This study further examined the latest literature and discussions about the connection between sustainability and SM process in this research field. The findings demonstrate that managing and monitoring stakeholders helps contribute to sustainable development, and the appropriate communication helps achieve sustainable support. Moreover, bringing sustainability into consideration is beneficial for improving stakeholder engagement. The limited links between sustainability and SM process in the causal loop diagram indicate a gap and need for exploring the connection between these. Although findings imply that effective SM is helpful for sustainable development, there is a lack of research on how sustainability elements can be reflected in the process of SM.

Limitation

The researcher acknowledges the limitation of the systematic literature review while using it. For example, the researcher chose Scopus and Web of Science as databases but did not use other search engines, which restricts the coverage of reviewed literature. Although these two databases cover studies in many fields and represent the largest databases (Alaloul et al., 2022), some research may not be included in them. Another limitation is the limited keyword searching. Despite the limitations, the purpose of systematic review is to inspire scholars and provide clues instead of providing detailed solutions (Denyer et al., 2008, Xia et al., 2018). The researcher indeed followed the scientific PRISMA process and gained valuable insights.

Future Expectation

Next steps on the development of the paper

The next steps in developing this paper are:

- 1) A comprehensive literature review with a focus on the connections between sustainability and SM process.
- 2) Define what Sustainable Stakeholder Management (SSM) is and how different it is from conventional SM.
- 3) Enhance the current SM process considering step 2 and/or develop a new SSM process which contributes to sustainability in SM process, and finally helps sustainable project management.

Potential Contribution of this paper

Considering the latest research in the area of Stakeholder Management (SM), this paper mapped out the connection between the critical variables of SM in construction projects, which helps project managers manage stakeholders in a more systematic manner and inform them of the consequences of their SM-related decisions. The expected full paper will not only provide a deeper understanding of the connections mentioned above, but considering the identified research gap around sustainability in this context, it will focus specifically on a detailed understanding of SSM with the aim of determining how SSM is different from traditional SM. And potentially propose an SSM process that guides project managers on the management of stakeholders more sustainably in order to contribute to sustainable management in the context of construction.

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