

Mediation Effect of Stakeholder Management between Stakeholder Characteristics and Project Performance

Tuan Son Nguyen¹ and Sherif Mohamed²

¹Doctor, School of Engineering & Built Environment, Griffith University, 1 Parklands Dr, Southport QLD 4215, Email: tuanson.nguyen@griffithuni.edu.au (corresponding author).

²Professor, Head of School, School of Engineering & Built Environment, Griffith University, 1 Parklands Dr, Southport QLD 4215, Email: s.mohamed@griffith.edu.au

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Abstract: Effective stakeholder management (ESM) is a critical success factor for projects. The increasing complexity in the relationships among stakeholders and their diverse characteristics, including power and interests makes the management of stakeholders increasingly challenging. To date, much of the literature has focused on the stakeholder analysis with very limited to the direct and indirect relationships between stakeholder characteristics (SC) and project performance (PP). Therefore, the aim of this study is to fill these research gaps by empirically examining (1) the relationship(s) between SC and PP and (2) the mediation effect of ESM on the above-mentioned relationships. Data analysis was conducted using structural equation modelling. The findings suggest that stakeholder legitimate behaviour (LB), opposing behaviour (OB), and conflicting interests affect the ability to achieve both sets of quantitative and qualitative PP negatively. ESM has been identified as a key element to eliminate the negative effects of the aforementioned behaviours on qualitative (and not quantitative) PP measures.

Keywords: Stakeholder power, stakeholder interests, effective stakeholder management, project performance.

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1. Introduction

It is widely recognised that many projects fail to achieve their original cost, schedule, and stakeholder satisfaction (Damoah and Akwei, 2017). For instance, researchers in New Zealand conducted a national study in 2017 and found that only 31% of organisations are likely to deliver projects on time, 29% are likely to deliver projects on budget, 33% deliver projects that are likely to meet the original goals or business objectives and 34% deliver projects that are likely to achieve stakeholder satisfaction (KPMG, 2017). Further, around 70% of organisations deliver projects that are likely to be either over budget or behind schedule, or that do not achieve stakeholder satisfaction or meet the original goals (KPMG, 2017).

There are many reasons for project failure. One reason is complexity, which makes projects more difficult to complete and requires greater efforts to overcome problems (Dao et al., 2016). Complexity in projects requires systematic approaches and appropriate project management skills to manage stakeholders to obtain the best outcomes for PP (Mok et al., 2015). Interestingly, stakeholder interrelationships are a cause of project complexity (Ommen et al., 2016). A large number of stakeholders in complex projects leads to complex

interactions among actors with varying stakes (Martinez, 2016), as well as conflicting stakeholder interests (SI), perspectives (Yang, 2014), concerns (McKenna and Metcalfe, 2013) and an inadequate understanding of complex stakeholders (Sæbø et al., 2011). A complex network of stakeholders may lead to a complex decision-making process (Blokhuys et al., 2012) and complex project evaluations involving multiple objectives and multiple stakeholder groups (Brucker et al., 2013).

Consequently, stakeholder management (SM) plays a critical role in improving stakeholder interrelationships and PP (Beringer et al., 2012). ESM must consider not only individual stakeholders, but also the influence of stakeholders on each other via complex interactions that involve multiple, and potentially interdependent, stakeholders (Beringer et al., 2012). Further, the literature demonstrates that stakeholder power and conflicting interests create a critical challenge for SM; consequently, project managers need to select appropriate strategies to deal with issues arising from specific SC (Aaltonen and Sivonen, 2009).

Power and interests which are two main SC, are commonly used in stakeholder analysis in the literature (Yang, 2014). Based on these characteristics, different

SM strategies can be applied to different stakeholder groups (Olander and Landin, 2005). Therefore, stakeholder power and interests are expected to have a strong correlation with SM strategies. In addition, because stakeholders use their power to protect or maximise their project interests, stakeholder power and interests may have a relationship with PP. Given that the main purpose of SM is to deliver projects on time and within budget while maintaining quality, the correlation between SM and PP should not be ignored.

However, there is a lack of empirical research into the specific relationships between SC and PP, as well as the mediation effect of ESM on these relationships. Therefore, research into these relationships is warranted. Accordingly, the objectives of this paper are to investigate (1) the relationship(s) between SC (power and interests) and PP and (2) the mediation effect of ESM on the relationship(s) between SC and PP. In achieving these objectives, the paper also seeks answers to the following research questions (RQ): (1) What is the relationship between SC and PP? And, (2) To what extent does ESM mediate the relationship between SC and PP?

2. Literature Review

2.1. Stakeholder Characteristics

The literature indicates that both stakeholder power and conflicting interests influence PP (Leung et al., 2013). Project managers need to use appropriate SM strategies to manage stakeholders who have their own characteristics (Aaltonen and Sivonen, 2009). The reason why power and interests were examined in this paper is that they are two main SC, are commonly used in stakeholder analysis in the literature (Yang, 2014).

2.1.1. Stakeholder power

Power is one of the main stakeholder attributes used for classifying stakeholders and it is an important attribute in the stakeholder salience model and stakeholder matrices (Nguyen and Mohamed, 2018). The stakeholder salience model was developed by Mitchell et al. (1997) to characterise and classify stakeholders according to the power, legitimacy, and urgency of their claims. The model suggests managers with a critical tool for determining the type and degree of attention a stakeholder should receive from management (Mitchell et al., 1997). The approach is useful to identify stakeholder influence on project decision-making (Aaltonen et al., 2008) because a stakeholder has different levels of influence over a decision-making process and project phase (Herazo and Lizarralde, 2016).

Stakeholder power can be defined as the capability of ones who have the power to accomplish their demanding outcomes (Salancik and Pfeffer, 1974). Leung et al. (2013) reported five different types of stakeholder power: reward power, coercive power, legitimate power, referent power, and expert power. Reward power can be defined as stakeholders that have the capability for rewarding desirable behaviour (Hales, 2001), implementing successful change in projects (Newcombe, 2003) and offer approval, instruction, and financial resources (French and Raven, 1959). Coercive power refers to physical resources such as force, violence, and threats (e.g., the use of a gun) (Etzioni, 1964). Legitimate power refers to the perception and ability of a legitimate right to induce others (Hinkin and Schriesheim, 1994). Government and local councils

are characterised by their legal power to implement the regulations and bring main issues to the agenda (Leung et al., 2013). Regarding referent power, it refers to a sense of identification and attraction to others (persons or groups) (French and Raven, 1959). Expert power refers to skill, knowledge, and ability (Hinkin and Schriesheim, 1994).

Rahim et al. (2001) found that legitimate power might negatively affect job performance through referent power and bargaining style. Coercive power might have a negative indirect effect on job performance through expert power, referent power, and bargaining style (Rahim et al., 2001). Bargaining style refers to a party's pursuit of their own or others' concerns (Rahim et al., 2001). Leung et al. (2013) found that reward power has a significant and positive relationship with public engagement satisfaction.

Parent and Deephouse (2007) noted that power is the main characteristic of stakeholder salience and decision-making. In an empirical study of construction projects, Yang et al. (2014) found that stakeholder power is positively correlated with stakeholder management strategies, such as *compromise* and *adaptation*—if stakeholders have high levels of power, managers should apply gentle strategies. Therefore, stakeholder power in projects can be seen as the capability that affects the execution and outcomes of the projects.

In summary, the power of stakeholders can appear in different forms depending on stakeholder positions in the project. Power is one of the most important stakeholders' characteristics, and a project manager should pay more attention to this characteristic to achieve project objectives.

2.1.2. Stakeholder interests

Olander and Landin (2005) defined SI as an interest of a stakeholder group in expressing their demands regarding project decision-making, including when, how and why a stakeholder is engaged or considered to be engaged (Caniato et al., 2014). Interests can have different forms, including expectations, demands, needs, reasons and value (Leung et al., 2013). A stakeholder might have different kinds of interests, for instance, the expectation of project returns, interpersonal support, social impact, and group support (Leung et al., 2013). Leung et al. (2013) reported several different kinds of interests, such as political, physical, information and ethical interests.

Political interests related to concerns regarding the distribution and allocation of power among all internal and external stakeholders (Reichart, 2003). Physical interests are the basic demands of stakeholders and potential gains and losses such as physical health, financial benefits, wealth, convenience, and comfort (Cragg and Greenbaum, 2002). Also, physical interests negatively affect public engagement satisfaction (Leung et al., 2013). Information interests result in stakeholders obtaining information, data and news to improve their knowledge and understanding and thereby monitor the project's execution (Lodge, 1986). Ethical interests refer to perceptions of fairness, justice, environmental and corporate social responsibility (Blodgett et al., 2001).

To achieve project success, project managers must be skilled in managing the interests of multi-stakeholders throughout the project management process (Sutterfield et al., 2006). Managers must identify the significance and legitimacy of stakeholders and pay attention and respond to stakeholders' interests and concerns (Post et al., 2002).

Similar to power, stakeholders have different interests in projects, and SI is another important characteristic of stakeholders. Managers are required to understand SI to engage and manage different or even conflicting interests in projects.

2.2. Stakeholder Management

A SM strategy is used by a project management team and can be referred to as activities that may change the stakeholders' salience level or position of stakeholders towards the projects (Aaltonen et al., 2015). Olander and Landin (2005) suggested that managers should differentiate their SM strategies depend on the stakeholders' positions. Several SM strategies can be listed: inform (Schepper et al., 2014), involve, collaborate (Schepper et al., 2014; Pacagnella Júnior et al., 2015), monitor, defend (Pacagnella Júnior et al., 2015), and even ignore (Schepper et al., 2014). It can be concluded that SM strategies encompass different techniques, such as informing, involving a stakeholder by sharing information and maintaining satisfaction, adapting, collaborating and proactive influencing (Nguyen et al., 2018).

Stakeholders can be informed via open houses, newsletters, information kiosks, and websites (El-Gohary et al., 2006; Schepper et al., 2014). Regarding involvement strategy, it is suggested that a manager should prove the benefits of the project to a stakeholder, and then encourage the stakeholders for active engagement (Pacagnella Júnior et al., 2015). The involvement may include activities like surveys, opinions polls, meetings with landowners and community leaders, and organising working groups with stakeholders (El-Gohary et al., 2006; Morsing and Schultz, 2006; Schepper et al., 2014). In the collaboration strategy, it is suggested that collaboration with definitive stakeholders is necessary (Schepper et al., 2014); and a manager should work with a stakeholder to eliminate potential disadvantages and obtain support for the project (Pacagnella Júnior et al., 2015). Regarding the monitor strategy, it is suggested that a manager needs to observe a stakeholder during the project and verify its changes (Pacagnella Júnior et al., 2015). In the defense strategy, a manager should be done in advance to eliminate or reduce a negative effect that might originate from a stakeholder (Pacagnella Júnior et al., 2015). Therefore, engaging with stakeholders play a critical role to implement these above-mentioned strategies.

Stakeholder engagement includes communicating with and involving stakeholders, improving relationships with stakeholders (Chinyio and Akintoye, 2008) and encouraging stakeholder participation in the decision-making process during all stages of the projects (Cascetta et al., 2015). Involvement and participation are two main levels of stakeholder engagement. Involvement refers to informing and consulting for increasing stakeholders' knowledge about the project, whereas participation refers to a higher level of engagement to eliminate stakeholder conflicts (Deegan and Parkin, 2011). Stakeholder engagement enables stakeholders to voice their opinions, influence project plans and stay informed on the execution of projects (Turner and Zolin, 2012).

Stakeholder engagement plays a critical role in project success (Turner and Zolin, 2012). The early participation of both internal and external stakeholders is highly significant (Zidane et al., 2015). The early engagement of interested parties avoids, or at least diminishes, drawbacks

brought about by a stakeholder. Openness, active engagement, and dialogue, especially in the initial phases of projects may mitigate the potential conflicts in the later project phases (Aaltonen, 2011).

There are five levels of stakeholder involvement—information, consultation, collaboration, empowerment and co-decision—should be a priority for implementation (Luyet et al., 2012). The information refers to explaining the project to stakeholders. The consultation presents the project to stakeholders, collects their suggestions and may incorporate stakeholder input into decision-making. The collaboration presents the project to stakeholders, a collection of their suggestions, and *then decision-making, taking into account the input of stakeholders*. The co-decision refers to cooperating with a stakeholder to reach an agreement on solutions and execution. The empowerment delegates decision-making regarding project development and execution to a stakeholder (Luyet et al., 2012).

Furthermore, Park et al. (2017) found that ESM may allow a project team to respond to any changes, and it plays a critical role in dealing with stakeholders to improve PP. Agile response to change, adaptive scoping, and stakeholder engagement have been identified as key dimensions of ESM framework (Park et al., 2017). Interestingly, agile methods are highly dependent on early and continuous stakeholder involvement in terms of both providing feedback and establishing goals for projects during their life cycle (Serrador and Pinto, 2015). Moreover, Olsson (2006) found a strong relationship between key stakeholders and project flexibility. Therefore, agile response to change, adaptive scoping, and stakeholder engagement are expected to be essential constructs of ESM implementation.

Agile response to change refers to the ability of the project team to respond to any changes. In traditional approaches, control and management are the main processes; however, the agile method is people-oriented and focuses on leadership (Lappi and Aaltonen, 2017). The agile method empowers project teams with self-organising power and flexibility in the implementation of their duty (Cooper, 2016).

Agile methods have become more common in a technology project because they directly address problems relating to dynamic projects in the context of changing environments (Serrador and Pinto, 2015). A changing environment can be caused by internal and/or external changes. Internal changes may include technology changes and rapidly changing tasks in the project. External changes may include political changes, policy changes, economic changes and social value changes that affect projects (Park et al., 2017).

Adaptive scoping relates to the abilities of the project manager/team to manage the project scope; and it refers to the ability to adjust and prepare project strategies in response to various attempts by key stakeholders to revisit the project mission to suit their interests. Adaptive scoping was part of the project management framework for long-term complex projects (Park et al., 2017) and had the aim of improving PP. Park et al. (2017) defined two factors in their framework regarding adaptive scoping: formulation of strategies and preparation of alternatives for project missions. In an uncertain environment, preparing alternative options for project missions should be done for

ensuring a proper revision of a project mission (Park et al., 2017). Effective strategies may improve outcomes when persuading stakeholders, while the lack of an effective strategy may force a project manager to engage in difficult situations (Olander and Landin, 2008).

Moreover, a clear definition of the project mission assists the project team members to understand what should be done and whether their requirements will be met (Nguyen and Mohamed, 2018). Additionally, Olsson (2006) emphasises that a clear project definition is a critical factor in the success of projects. Stakeholder engagement, as well as preparing alternative options for a project’s mission, also plays a critical role in developing a clear project definition (Nguyen et al., 2018). Therefore, project management teams should collaborate with core project stakeholders. Targets should be established for stakeholder involvement and satisfaction to support project managers to work effectively with core stakeholders and prevent a waste of resources.

2.3. Project Performance

The criteria for project success are well defined, including time, cost and performance outcomes. Also, the project success can be assessed through time, budget, quality, scope and customer satisfaction (PMI, 2004), which is widely known as the ‘triple constraint’. According to Ika (2009), project success is determined to depend on completing the objectives of the project within the constraints of budget, time, quality, and other requirements. Thus, the project’s schedule, budget, quality and objectives, as well as stakeholder satisfaction may be adopted to evaluate PP.

2.4. Research Problems

As discussed, the literature shows that both stakeholder power and conflicting interests affect PP (Leung et al., 2013). Agile response to change, adaptive scoping, and stakeholder engagement are the main dimensions of ESM (Park et al., 2017). ESM plays a critical role in dealing with stakeholders to improve PP (Park et al., 2017).

In addition, Bear (2015) argued that agile response to change may help to overcome issues involving a lack of critical skills as well as knowledge gaps among key personnel, whereas adaptive scoping could be the best option for overcoming challenges relating to poor conceptual planning and insufficient implementation of project strategies. Bear (2015) added that stakeholder engagement may enable a communication system to tackle problems regarding a lack of communication among stakeholders and participants. It should be noted that critical skills and knowledge gaps among key personnel, poor conceptual planning, insufficient implementation of project controls and risk management, and a lack of communication among stakeholders and participants are key reasons for the failure of projects (Bear, 2015). Interestingly, agile methods are highly dependent on early and continuous stakeholder involvement in terms of both providing feedback and establishing goals for projects during their life cycle (Serrador and Pinto, 2015). Moreover, Olsson (2006) found a strong relationship between key stakeholders and project flexibility. Therefore, agile response to change, adaptive scoping, and stakeholder engagement are expected to be essential constructs of ESM implementation.

It can be seen that the influences of stakeholder power, conflicting interests as well as ESM on PP have been discussed in the literature; however, research gaps exist in terms of empirical testing of these key aspects.

3. Research Methodology

3.1. Conceptual Model and Hypothesis Development

As mentioned in the last section, testing has not been conducted of (1) relationship(s) between SC and PP and (2) the mediation effect of ESM on the above-mentioned relationship(s). Figure 1 depicts the research model used in this paper. In this paper, the direct effects of stakeholder power and conflicting interests on PP, as well as the indirect effect of stakeholder power and conflicting interests on PP through ESM, are empirically tested.

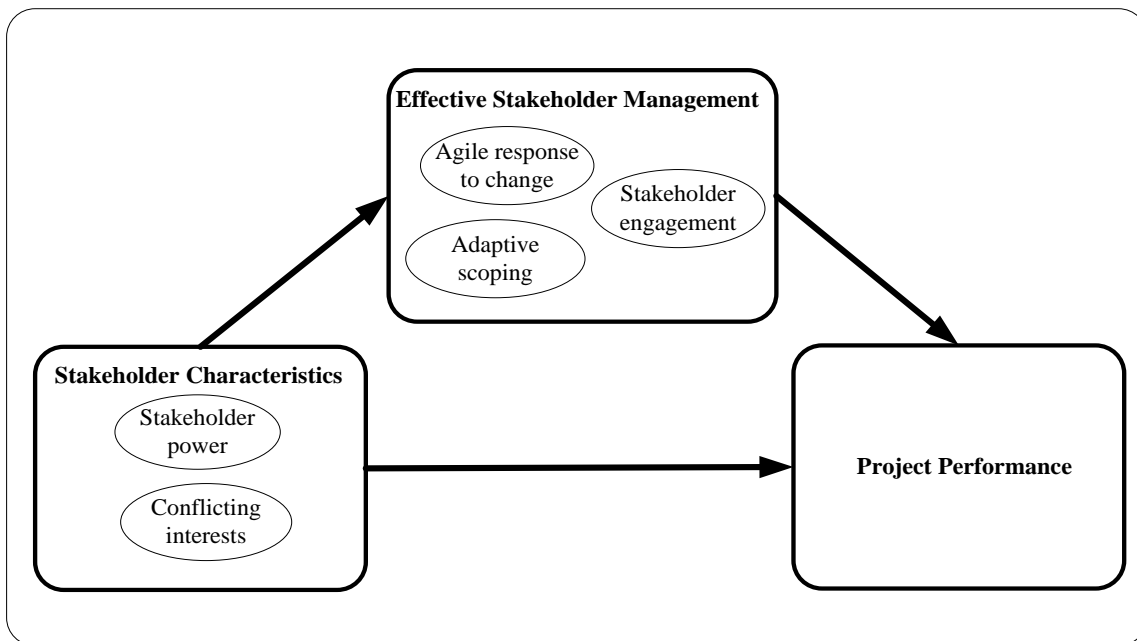


Fig. 1. Research model

The literature indicates that both stakeholder power and conflicting interests influence PP (Leung et al., 2013). ESM plays a critical role in dealing with stakeholders to improve PP (Park et al., 2017). Therefore, it should be expected that ESM may mediate the relationship between stakeholder power and conflicting interests and PP. The following hypotheses are formed:

Hypothesis 1: Stakeholder power affects the abilities to achieve PP measures.

Hypothesis 2: Conflicting SI affects the abilities to achieve PP measures.

Hypothesis 3: ESM mediates the relationships between stakeholder power and the abilities to achieve PP measures.

Hypothesis 4: ESM mediates the relationships between conflicting SI and the abilities to achieve PP measures.

3.2. Design

The present study is a cross-sectional design to investigate the existence of a relationship between two or more aspects of a situation (Bryman and Bell, 2015). The study adopted a quantitative approach to test these relationships. A quantitative research strategy was chosen because it focuses on the quantification of data collection and analysis to conduct a deductive approach to the testing of theories (Bryman and Bell, 2015).

3.3. Data Collection Instrument

3.3.1. Stakeholder characteristics

This study utilised eight items to operationalise stakeholder power (see Appendix). These items were adopted from Agle et al. (1999), Parent and Deephouse (2007), and Leung et al. (2013). The SI was measured by adopting six items from Leung et al. (2013), Havard et al. (2015), and Olander and Landin (2005). Responses were provided according to a 5-point response scale (from 1-strongly disagree to 5- strongly agree).

3.3.2. Effective stakeholder management

Based on the literature review, the concept of ESM can be explained by an agile response to change, adaptive scoping, and stakeholder engagement. This study utilised two items to operationalise the agile response to change (Baccarini, 1996; Vidal et al., 2011; Floricel et al., 2016). The adaptive scoping was measured by adopting four items from Park et al. (2017). The stakeholder engagement was measured using seven items, four of which were used from Park et al. (2017) and three of which were developed with consideration to the level of stakeholder engagement, including information, consultation, collaboration, co-decision and empowerment (Luyet et al., 2012; Nguyen et al., 2018). Responses were provided according to a 5 Likert scale.

3.3.3. Project performance

PP measurement variables included cost, time, quality, scope and stakeholder satisfaction (Bond, 2015). PP variables had two sub-factors, including quantitative and qualitative PP. Quantitative performance variables included project cost and time, while qualitative performance variables included quality, scope and stakeholder satisfaction. A 5-point Likert scale was used for each item, with higher scores reflecting better PP.

3.3.4. Sample and Project Information

An online survey was used for data collection. Target respondents were either project managers or project team members of any recently completed projects. The sampling frame was based on participants from Vietnam and Australia. Links to the online survey were delivered via email, social media, the Australian Institute of Project Management and the Project Management Institute network. Thus, the research was randomised and cross-sectional in nature and the data collection method was similar to that of other studies (Oliveira and Rabechini Jr, 2019) for which it was not possible to identify the overall population sample pool. Respondents were asked to answer survey questions regarding PP, SC, and ESM based on their recently completed projects. In total, 436 respondents accessed the survey over a five-month period, with 234 surveys answered and 159 submitted. Of these, 136 were considered sufficiently valid for data analysis.

The project information provided by the respondents provided useful information regarding project location, total project budget, project duration, and industrial sectors to which the project belongs. The project location was distributed across more than 20 countries, including Australia, Vietnam, US, United Arab Emirates (UAE), Pakistan, India, New Zealand, Canada, Myanmar, Germany, Japan, Laos, Thailand, Qatar, Iran, Bangladesh, South Africa, Singapore, Colombia, Denmark, Philippines and the United Kingdom. Most projects were located in Vietnam (51%) and Australia (20%), followed by the US (4%), India (3%), Canada (3%) and the UAE (2%). More than two-thirds of the projects (70%) had a budget of more than \$1 million dollars, with a few (4%) costing more than one billion dollars. Almost half (46%) of the projects were completed within 2–5 years, nearly one in five projects (20%) were completed within five years and some (2%) took more than 10 years to finish. Further, there was a diverse range of project industry sectors. Most projects (31%) were in the construction, infrastructure and engineering industries, followed by information technology and telecommunication (16%) and the government sector (12%).

To examine whether there was a significant difference in perceptions between the Australian and Vietnamese groups, one-way ANOVA was undertaken. By considering the F – ratio and the Eta-squared (η^2) indexes, none of the variables had a large effect size ($\eta^2 = 0.138$). Therefore, the results of the one-way ANOVA proved that the dataset could be considered an individual sample.

3.4. Data Analysis Method

The author used Structural Equation Modelling (SEM) (Kline, 2015) for data analysis. Confirmatory factor analysis (CFA) (Kline, 2015) was used for the measurement model to confirm the reliability and fitness of the factor structures of latent variables. SEM was applied to test the structural model for the mediation effect of ESM on the relationship between SC and PP. Model fit using CFA and SEM was determined according to the following indicators: a chi-squared test (χ^2), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) (Kline, 2015)

4. Results

4.1. Validity and Reliability Analysis

Factor analysis (Allen et al., 2014) was used to investigate the underlying structure of PP, stakeholder power,

conflicting SI, agile response to change, adaptive scoping, and stakeholder engagement. Factors were subjected to principal factor analysis using the Promax rotation (Allen et al., 2014). Eigenvalues higher than 1 were used for determining the number of sub-constructs in the data set, as suggested by Allen et al. (2014). Two sub-constructs were identified for PP (quantitative PP [PP_{qn}] and qualitative PP [PP_{ql}]) and three sub-constructs were identified for stakeholder power (legitimate behaviour [LB], supportive behaviour [SB], and opposing behaviour [OB] (see Appendix).

CFA was conducted on each construct using IBM SPSS AMOS Graphics version 25. The factor loading, t-value, significance level and squared multiple correlations (SMC)–R² value of the individual indicator was used for convergent validity. The correlation value was used to assess discriminant validity. The average variance extracted (AVE) score and its square root score were also used to further assess the convergent and discriminant validity.

The appendix presents the composite reliability of the constructs and sub-constructs. Results of convergent validity show that all calculated CR scores exceeded 0.7, as suggested by Bryman and Bell (2015).

As presented in the literature review, ESM reflects an agile response to change (AR), adaptive scoping (AS), and stakeholder engagement (SE). To determine whether the concept of ESM can be measured and examined under these three constructs, CFA was performed. The model is shown in Figure 2, and the testing results are presented in Table 1. As shown, the CR for AR, AS and SE was above 0.70 (0.743–0.882), which indicated reliability. The AVE values were around 0.50 (0.492–0.592), which confirmed convergent validity. Although the square roots of the AVE of AS (0.702) and SE (0.721) were lower than its correlation (0.888), discriminant validity was not a concern because AS and SE were measured totally different concepts from each other.

4.2. Mediation Effect of ESM

The relationship between SC and PP as well as the mediation role of ESM on the relationship between SC and PP were examined. Bootstrapping in AMOS was performed to access the statistical significance of the mediation effect. The bootstrapping test has a 95% confidence interval, and the indirect effect is obtained with 1,000 bootstrap re-samples.

4.2.1. Legitimate behaviour

Figure 3 presents a model for testing the mediation of ESM on the relationship between LB and PP. The model shows the direct relationships between LB and both quantitative and qualitative PP measures as well as indirect relationships through ESM. The direct regression weights

among LB, ESM, PP_{qn}, PP_{ql} are shown in Figure 3. LB is positively correlated with ESM; whereas LB negatively affects both PP_{qn} and PP_{ql}. ESM positively affects PP_{ql}; however, no significant evidence was observed between ESM and PP_{qn}.

Table 2 outlines the mediation testing results for ESM. The results indicate that LB negatively affects both PP_{qn} ($\beta = -0.329, p = 0.023$) and PP_{ql} ($\beta = -0.295, p = 0.027$). Therefore, the hypothesis H₁ should be revised:

H_{1a}: LB negatively affects the abilities to achieve both quantitative and qualitative PP measures.

The results in Table 2 also indicate that no significant indirect effect was observed between LB and PP_{qn} through ESM ($\beta = 0.012, p = 0.786$). Therefore, the null hypothesis—namely, that ESM mediates the relationship between LB and PP_{qn}—was rejected.

However, the results indicate that there is a significant and positive indirect effect between LB and PP_{ql} through ESM ($\beta = 0.235, BCa\ 95\% CI [0.078 \div 0.650], p = 0.002$). Further, there is a significant and negative direct effect between LB and PP_{ql} ($\beta = -0.295, BCa\ 95\% CI [-1.00 \div -0.048], p = 0.027$). Therefore, the null hypothesis was supported:

H_{3a}: ESM partially mediates the relationship between LB and the abilities to achieve qualitative PP measures.

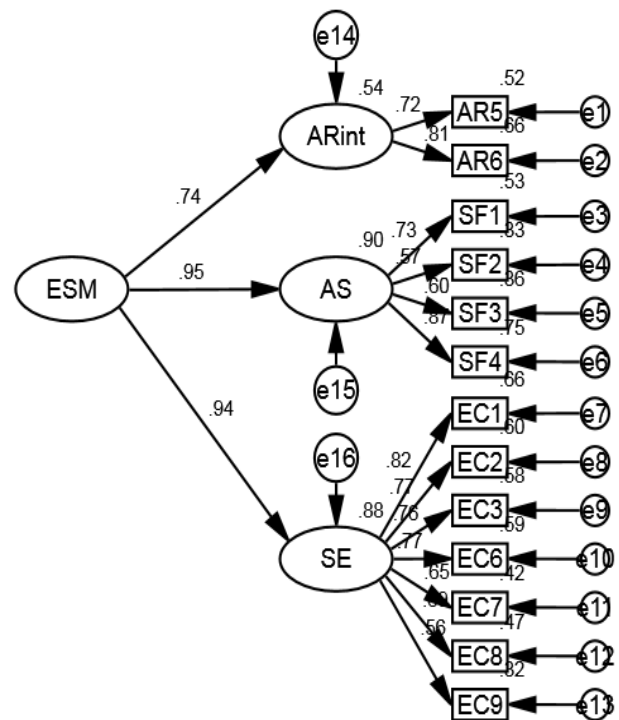
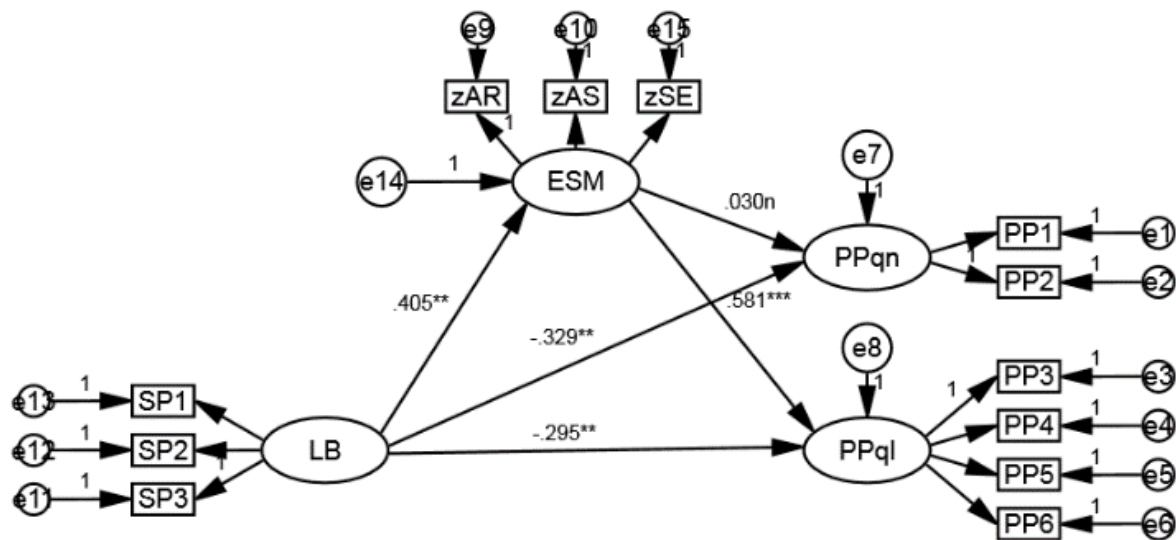


Fig. 2. Effective stakeholder management model

Table 1. CFA result of the ESM Model

Model Validity Measures	CR	AVE	AR	AS	SE
AR	0.743	0.592	0.770		
AS	0.790	0.492	0.697***	0.702	
SE	0.882	0.520	0.691***	0.888***	0.721

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$. Model fit indices: $\chi^2 = 112.809, df = 62, p = 0.000, \chi^2/df = 1.820, CFI = 0.940, RMSEA = 0.070$.



Note: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$; n: non-significant.

Fig. 3. Mediation effect of ESM on the relationship between LB and PP

Table 2. Mediation testing results for ESM

Hypotheses	Direct effect			Indirect effect			Results
	β	p	95% CI	β	p	95% CI	
LB→ESM→PPqn	-.329**	.023	-.773 ÷ -.030	.012n	.786	-.123 ÷ .240	Not supported
LB→ESM→PPql	-.295**	.027	-1.00 ÷ -.048	.235**	.002	.078 ÷ .650	Partial mediation
SB→ESM→PPqn	.055n	.865	.000 ÷ .186	-.013n	.691	-.142 ÷ .079	Not supported
SB→ESM→PPql	.021n	.990	-.168 ÷ .200	.099**	.013	.024 ÷ .274	Full mediation
OB→ESM→PPqn	-.322**	.006	-1.15 ÷ -.031	.037n	.110	-.012 ÷ .668	Not supported
OB→ESM→PPql	-.177n	.189	-.557 ÷ .068	-.082**	.028	-.314 ÷ -.009	Full mediation
SI→ESM→PPqn	-.304**	.038	-.677 ÷ -.007	.001n	.947	-.077 ÷ .143	Not supported
SI→ESM→PPql	-.199**	.036	-.431 ÷ -.009	.098*	.099	-.020 ÷ .299	Partial mediation

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$, n: non-significant.

4.2.2. Supportive behaviour

Figure 4 presents a model for testing the mediation of ESM on the relationship between SB and PP.

The model shows the direct relationships between SB and both quantitative and qualitative PP measures as well as indirect relationships through ESM. The direct regression weights among SB, ESM, PP_{qn}, PP_{ql} are shown in Figure 4. No significant relationship was observed between SB and both PP_{qn} and PP_{ql}. SB is positively correlated with ESM. ESM positively affects PP_{ql}; however, no statistically significant evidence was observed between ESM and PP_{qn}.

The results in Table 2 indicate that no significant indirect effect was observed between SB and PP_{qn} through ESM ($\beta = -0.013$, $p = 0.691$). Therefore, the null hypothesis—namely, that ESM mediates the relationship between SB and PP_{qn}—was rejected.

However, the results indicate that there is a significant and positive indirect effect between SB and PP_{ql} through ESM ($\beta = 0.099$, *BCa* 95% CI [0.024÷0.274], $p = 0.013$), whereas no significant direct effect was observed between SB and PP_{ql} ($\beta = 0.021$, $p = 0.990$). Therefore, the null hypothesis was supported:

H_{3b}: ESM fully mediates the relationship between SB and abilities to achieve qualitative PP measures.

4.2.3. Opposing behaviour

Figure 5 presents a model for testing the mediation of ESM on the relationship between OB and PP.

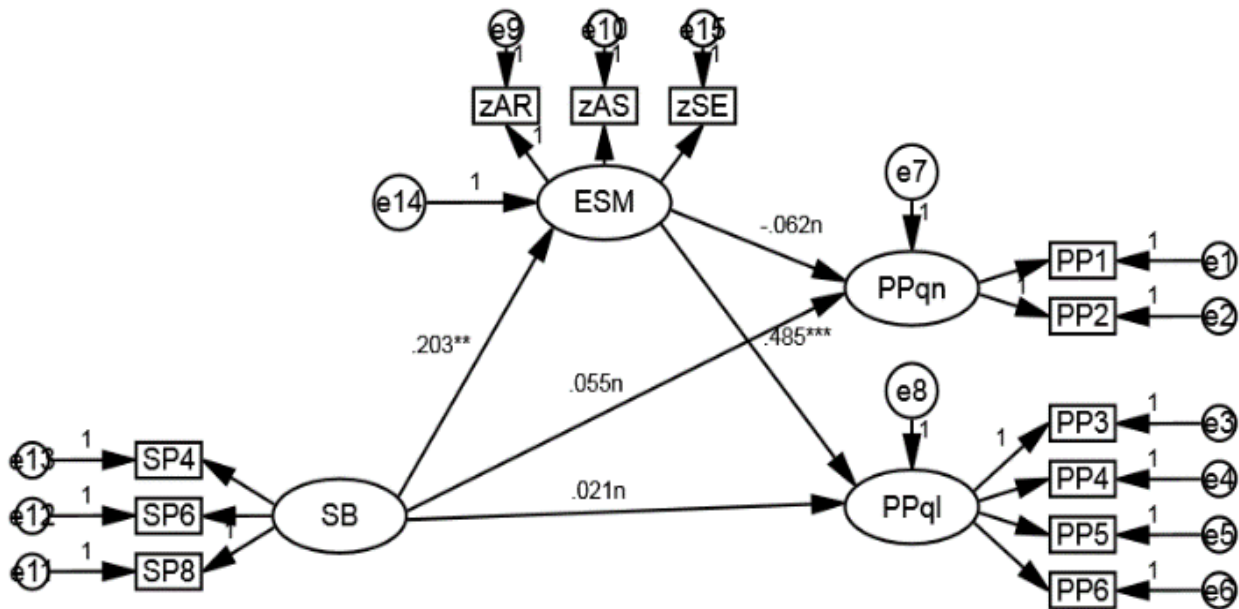
The results indicate that OB negatively affects quantitative PP (see Fig. 5 and Table 2). Therefore, the hypothesis H₁ should be revised:

H_{1b}: OB negatively affects the abilities to achieve quantitative PP measures.

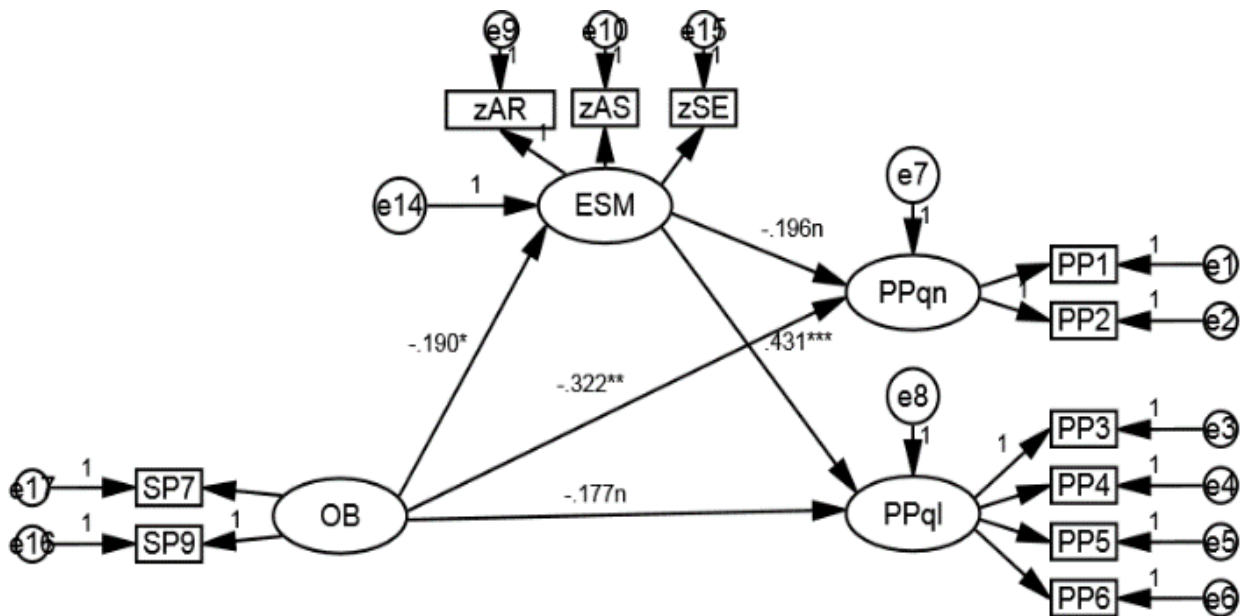
The results in Table 2 also indicate that no significant indirect effect was observed between OB and PP_{qn} through ESM ($\beta = 0.037$, $p = 0.110$). Therefore, the null hypothesis—namely, that ESM mediates the relationship between OB and PP_{qn}—was rejected.

However, the results indicate that there is a significant and negative indirect effect between OB and PP_{ql} through ESM ($\beta = -0.082$, *BCa* 95% CI [-0.314÷-0.009], $p = 0.028$), whereas no significant direct effect was observed between OB and PP_{ql} ($\beta = -0.177$, $p = 0.189$). Therefore, the null hypothesis was supported: ($\beta = -0.082$, *BCa* 95% CI [-0.314÷-0.009], $p = 0.028$).

H_{3c}: ESM fully mediates the relationship between OB and qualitative PP measures.



Note: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$, n: non-significant.
Fig. 4. Mediation effect of ESM on the relationships between SB and PP.



Note: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$, n: non-significant.
Fig. 5. Mediation effect of ESM on the relationships between OB and PP.

4.2.4. Conflicting stakeholder interests

Figure 6 presents a model for testing the mediation of ESM on the link between SI and PP. As can be seen from Figure 6, the results indicate that conflicting SI negatively affects both quantitative and qualitative PP. Therefore, the hypothesis H_2 should be revised:

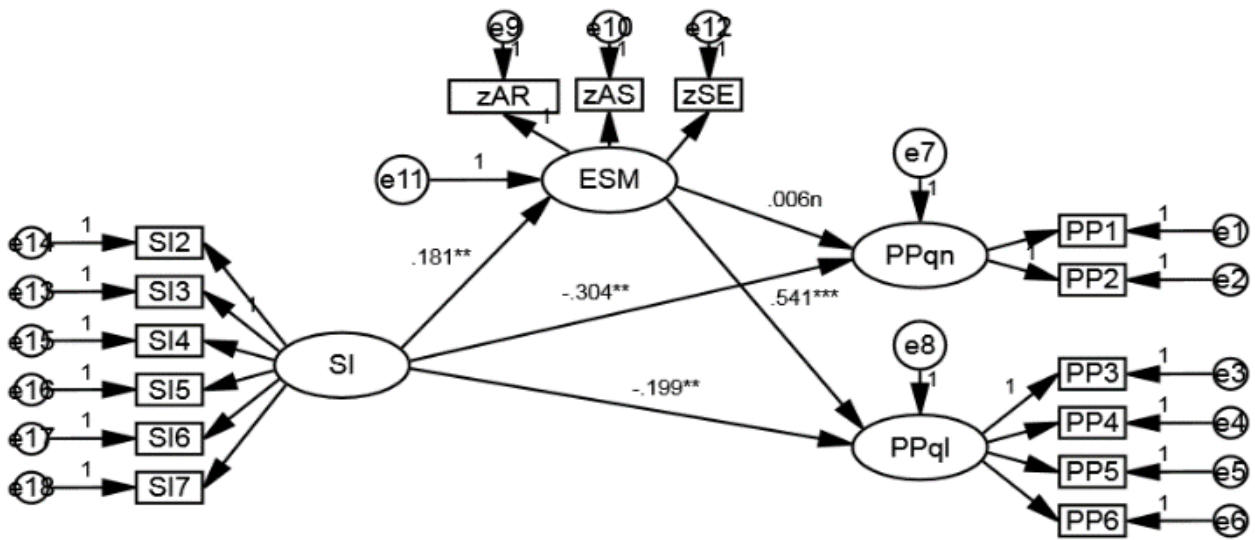
H_2 : Conflicting SI negatively affects the abilities to achieve both quantitative and qualitative PP measures.

The results in Table 2 also indicate that no significant indirect effect was found between conflicting SI and PP_{qn} through ESM ($\beta = 0.001, p = 0.947$). Therefore, the null

hypothesis—namely, that ESM mediates the relationship between SI and PP_{qn} —was rejected.

However, the results indicate that there is a significant and positive indirect effect between conflicting SI and PP_{ql} through ESM ($\beta = 0.098, Bca\ 95\% CI [-0.020 \div 0.299], p = 0.099$). There is also a significant and negative direct effect between conflicting SI and PP_{ql} ($\beta = -0.199, Bca\ 95\% CI [-0.431 \div -0.009], p = 0.036$). Therefore, the null hypothesis was supported:

H_4 : ESM partially mediates the relationship between conflicting SI and the abilities to achieve qualitative PP measures.



Note: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$, n: non-significant.
Fig. 6. Mediation effect of ESM on the relationships between SI and PP.

5. Discussion

5.1. Quantitative vs Qualitative Performance

It is critical to separate quantitative and qualitative criteria in evaluating PP. As mentioned above, through factor analysis, two sub-constructs were extracted for PP, namely quantitative PP and qualitative PP. Quantitative performance includes time and cost criteria and qualitative PP includes project scope expectations, project’s quality objectives, organisational satisfaction, and stakeholder satisfaction. There are several reasons why placing quantitative and qualitative criteria into a single construct PP should be avoided. Quantitative criteria, such as time and cost, are simple, easy to gather, and easy to apply, while not placing a heavy burden on-field personnel, whereas qualitative performance criteria are subjective and perceived difficulty to be measured (Cox et al., 2003). Furthermore, meeting quality requirements, delivering the project on time and within the planned budget are three critical requirements. However, Wang et al. (2019) stated that these objectives are interrelated, integrated and conflicting. Minimising project cost and duration may jeopardise quality, whereas increasing quality often leads to additional cost and time (Wang et al., 2019).

5.2. Stakeholder Power

Table 3 presents a summary of the research finding. As anticipated in H_{1a}, this study found that LB negatively affects both quantitative and qualitative PP measures. This result suggests that the high level of the LB of stakeholders may lead to a decrease in PP measures. In some situations, the approval of higher-level stakeholders who have authority might take time. This may, in turn, negatively affect budget performance measures. This finding is slightly in line with Rahim et al. (2001) research, whereby legitimate power may negatively affect job performance through referent power and bargaining style.

As seen in H_{1b}, the results of the current study found that OB affects both quantitative PP measures negatively. These results indicate that stakeholders who use their power to make things difficult may have a negative result in the PP in terms of time, cost, quality, objectives, and stakeholder satisfaction. OB can be referred to as coercive power, which is related to the capability to exert punishment (Rahim et al., 2001) and decrease expected outcomes (Hinkin and Schriesheim, 1994). The finding is slightly in line with Rahim et al. (2001) research, whereby coercive power might have a negative indirect effect on job performance through expert power, referent power and bargaining style.

Table 3. Summary of the research finding

Hypotheses	Description	Interpretation
H _{1a}	LB negatively affects the abilities to achieve both quantitative and qualitative PP measures	Supported
H _{1b}	OB negatively affects the abilities to achieve quantitative PP measures.	Supported
H ₂	Conflicting SI negatively affects the abilities to achieve both quantitative and qualitative PP measures.	Supported
H _{3a}	ESM partially mediates the relationship between LB and the abilities to achieve qualitative PP measures.	Supported
H _{3b}	ESM fully mediates the relationship between SB and abilities to achieve qualitative PP measures.	Supported
H _{3c}	ESM fully mediates the relationship between OB and qualitative PP measures.	Supported
H ₄	ESM partially mediates the relationship between conflicting SI and the abilities to achieve qualitative PP measures	Supported

5.3. Conflicting Stakeholder Interests

As anticipated in H₂, conflicting SI negatively affects both quantitative PP measures. Naturally, stakeholders have different interests in the same project. Some are interested in the project's information while others may demand to be participated in the decision-making process to protect their benefits or raise concerns about their demands. This result substantiates the previous finding in the literature that potential gains or losses of stakeholders have a negative effect on public engagement satisfaction (Leung et al., 2013). Stakeholders, who have physical interests, for example, local residents, companies and representatives, are those who are directly affected by the project (Leung et al., 2013). Conflicts might be triggered as a result of incompatible physical interests during the implementation of the projects. Further, it is challenging to balance conflicts; thus, stakeholders might disagree with the process as well as the project outcomes (Carpini et al., 2004). The current research finding extends our knowledge of the influence of conflicting interests on PP. Although previous studies have only examined the effect of physical interests on public engagement satisfaction (Leung et al. (2013), the current study shows that an increase in the level of conflicting SI may cause the project to be over budget and delayed. In this study, SI was characterised by diverse items—not only physical interests.

5.4. Mediation Effect of Effective SM

The mediation effect is commonly defined as an indirect effect whereby the effect of the independent variable (IV) on the dependent variable (DV) goes through a mediator (M) (Cheung and Lau, 2008). The mediation effect is frequently referred to as a reduction in the regression coefficient of the IV on the DV when the effect of the M is controlled for (Judd and Kenny, 1981; Baron and Kenny, 1986).

For convenience, the results of the mediation effect of ESM on the relationship between SC and PP are summarised in Figure 7. The results in Figure 7 show that ESM mediates the influence of (1) LB (partial mediation), SB (full mediation), OB (full mediation) and conflicting SI (partial mediation) on (2) qualitative PP measures. These results replicate the research model whereby ESM plays a mediation role in the relationship between SC and PP. To the best of the author's knowledge, this is the first study that examines the mediation role of ESM (including agile response to change, adaptive coping, and stakeholder engagement) on the above-mentioned relationships.

These findings support the role of ESM. This means that the ability of the project management team to respond to changes, embrace adaptive scoping, and implement stakeholder engagement may contribute to reducing the negative effect of LB, OB, and any negative effect of conflicting SI on project outcome. The findings have further strengthened our confidence in using these practice strategies in project execution because they may help to mitigate the negative aspects of stakeholders who are not fully supportive of the project.

The results of this study share several similarities in the role of ESM on project success (Fowler and Highsmith, 2001; Park et al., 2017). Park et al. (2017) proposed a framework of SM in complex construction projects with 31 critical success factors. Regarding the agile response to change, responding to change over the following plan is

one of the four central values of the agile development method (Fowler and Highsmith, 2001). Regarding adaptive coping, Brozovic (2018) found that strategic flexibility increased customer satisfaction, internal efficiency, the reputation of the firm and perceived service quality. In addition, Mok et al. (2018) stated that stakeholder engagement and management of project stakeholders are essential in a project, which attains the greatest environmental, economic and social values for everyone involved.

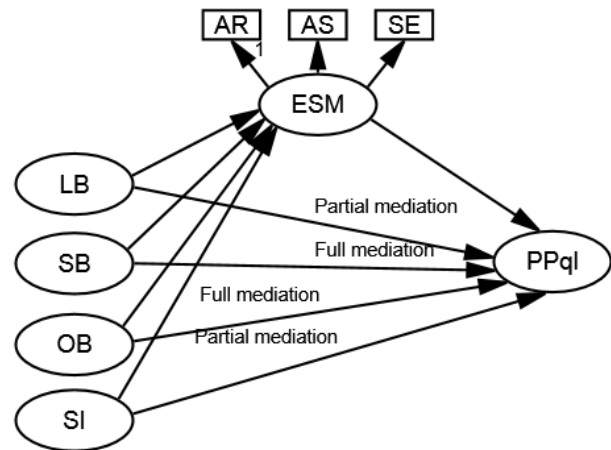


Fig. 7. Mediation Effect of ESM

However, in the current study, the mediation effect of ESM was not statistically significantly observed between SC and quantitative PP measures. There are several reasons to explain these findings. First, as can be seen from Figure 3 to 6, no significant relationship was observed between ESM and quantitative PP. Second, there was a difference in PP of collected projects in relation to quantitative and qualitative performance. The mean values of PP variables compared with 3.0 (neutral scale) were mixed. The mean values of quantitative PP items (PP1 and PP2 – cost and time) (Appendix) were statistically significantly lower than 3.0, which represented 'on schedule' and 'on budget', respectively. Therefore, the reported projects were slightly behind schedule and over budget. However, the mean values of qualitative PP (PP3, PP4, PP5, and PP6) (Appendix) were higher than 3.0 representing 'achieved expectation'. This shows that the qualitative performance of collected projects was not only met but were beyond expectation. The differences in quantitative and qualitative PP results can be explained by Wang et al. (2019) where increasing quality (beyond expectation) often leads to additional cost and time, which means decreasing quantitative performance (over budget and behind schedule). These results can also be used to explain why the extent of negative effects of stakeholder LB, OB, and conflicting interests on quantitative PP is greater than qualitative PP (see Figure 3 through to 6).

5.5. Managerial Implications

Apart from theoretical contributions, this study has several implications that could help guide project management teams to devise custom strategies that serve to enhance success rates in projects. The findings on the correlation between SC and PP suggest a list of implications.

Given that LB negatively affects the ability to achieve both quantitative and qualitative PP, it is highly recommended that a project management team should pay more attention to the approval of higher-level stakeholders

who have authority because it may take time. This may, in turn, negatively affect PP measures. To work with stakeholders who have legitimate power, project management teams need to clearly explain and articulate project objectives to them. Their opinions and views on the project should be considered carefully. Further, time and energy should be invested to build a good relationship with stakeholders, considering their interests throughout the project's life cycle, and facilitating their participation in the decision-making process. It is also suggested that for those stakeholders, gentle engagement strategies should be used because stakeholders with relatively high power are more likely to affect projects either negatively or positively. A number of gentle strategies may be enlisted, such as adaptation, compromise and monitoring (Aaltonen and Sivonen, 2009).

OB affects quantitative PP measures negatively. The results in this study provide additional support for managing stakeholders who do not fully support the project by having an agile response to change, adaptive scoping, and stakeholder engagement. Thus, it is suggested that a project management team should pay even more attention to managing stakeholders who make it more difficult for them to deliver the project. OB is based on the belief of project team members that a stakeholder acts against them—for example, by withdrawing a critical resource or making it difficult for them to deliver the project. The option for managing these stakeholders is to try to turn their opposing actions to support the project or be neutral. Effective stakeholder engagement should be the best option. Further, project management teams should attempt reconciliation and offer compensation, where applicable, with opposing stakeholders. Sometimes, the disagreement may occur between stakeholders; in those cases, project management teams should try to work out an acceptable compromise.

Project management teams also need to identify and manage SI because an increase in the level of SI may negatively affect the capability to achieve both quantitative and qualitative PP measures. SI includes regular up-to-date project information, expecting their requirements to be considered a priority, demanding to involve in the decision-making process actively and stakeholder benefits. Given that stakeholders often use their power to protect their interests, it is necessary to identify the interests of stakeholders along with their power and attitudes towards projects. In doing so, project management teams may undertake appropriate actions to manage stakeholders.

ESM mediates the relationship between (1) LB, OB and SI and (2) qualitative PP. ESM involves agile response to change, adaptive scoping, and stakeholder engagement. These results have further strengthened our confidence in applying these key practices. For mediation to be present, the strength of the relationship between the IV and the DV will decrease when the mediator is included in the model (Hayes, 2018). Thus, in theory, the negative influence of stakeholders who act against a project to achieve its scope, quality, objectives and stakeholder satisfaction may decrease when project management teams have the abilities to respond to technological changes and rapidly changing requirements. This negative influence may also be mitigated if a project has a clear project mission statement, alternatives to the project mission, a target level of stakeholder satisfaction and a proper decision-making

process to ensure appropriate strategies are used to execute the projects.

Given that agile response to change, adaptive scoping, and stakeholder engagement positively contribute to ESM, performing these key project team practices should be a primary concern for managers. To implement an agile response to change, a project management team should focus on their ability to respond to technological changes and rapidly changing tasks. Regarding adaptive scoping, it was operationalised using four measurement items: the project mission (SF1), having alternatives to the project mission (SF2), stakeholder satisfaction level (SF3) and having strategies for executing the project (SF4). The project challenges may be overcome by defining rules, planning ahead for flexibility and creating problem-solving teams to deal with uncertainties overlooked by project management teams. In addition, properly adopting work break down structure techniques for projects, maintaining a real-time view of all activities and flexible contracting may be used by project management teams. In addition, the project mission statement should be developed as a clear definition of the project mission can help a stakeholder understand what should be done and whether their demands will be met. Moreover, alternative options should be made for ensuring the appropriate revision of the project mission.

Stakeholder engagement was characterised by seven measurement indicators: explained project objectives (EC1), considered stakeholders' opinions (EC2), built a good relationship (EC3), operated an effective communication system (EC6), implemented a governance system (EC7), SI were carefully considered (EC8) and empowered to participate in the decision-making process (EC9). Therefore, establishing a communication system and ensuring stakeholder engagement at all levels may play an essential role in improving qualitative PP measures. Additionally, project management teams should enable stakeholders to actively participate in projects to minimise their dissatisfaction. Five levels of stakeholder involvement—information, consultation, collaboration, empowerment and co-decision—should be a priority for implementation.

6. Conclusion

A critical literature review was conducted to identify the research gaps, develop the research question and propose a research model. The review focused on SC, stakeholder management, and PP. It suggested that there could be a correlation among these key aspects. Research gaps exist in terms of empirical testing of the key aspects. Testing has not been conducted of relationship(s) between SC and PP, and the mediation effect of ESM on the relationship(s) between SC and PP.

Consequently, the two research questions were formed. To answer the research questions, a research model was developed. It consists of three main elements: SC, ESM, and PP. Within the element of SC, the model proposed two constructs: stakeholder power and SI. The ESM is represented by three constructs: agile response to change, adaptive scoping and stakeholder engagement. PP consists of two constructs: quantitative PP and qualitative PP.

Several key points have been found in the current study. SC has been demonstrated affecting PP. For example, both legitimate power and SI affect the ability to

achieve both quantitative and qualitative PP negatively, while OB affects quantitative PP negatively. However, ESM mediates the relationship between 1) LB, OB, and SI and 2) qualitative PP measures. These findings suggest that the negative effect of LB, OB, and SI on the ability to achieve qualitative PP measures (i.e., project quality, project objectives, and stakeholder satisfaction) can be eliminated by implementing an agile response to change, adaptive scoping, and stakeholder engagement.

There were several limitations to this study. First, as with any similar research type, study findings could be impacted or influenced by the sample size. Second, as theoretical testing was focused on the quantitative approach; the study may not capture all changing of social reality. As a result, current project management strategies may differ slightly from theories.

There are some directions for future studies. First, the authors conducted this study across diverse industries. Future studies could adopt this framework for a specific industry. Second, there are many dimensions that may contribute to ESM. Other studies could explore different aspects of ESM, such as stakeholder analysis and stakeholder influence strategies.

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Dr. Tuan Son Nguyen received his PhD in Project Management from Griffith University, Australia in 2019. His research interests are in project management and smart cities. He focuses on the development of theoretical knowledge and operational tools needed for effective management of supply chain and stakeholder

management in the context of decision making, process improvement, and project feasibility.



Professor Sherif Mohamed is Head of the School of Engineering and Built Environment at Griffith University, Australia. He is actively engaged in scholarly research focusing on the development of theoretical knowledge and operational tools needed for effective implementation and evaluation of process improvement

initiatives. He has supervised more than 20 successful Ph.D. completions addressing a variety of topics related to project management and construction safety.

Appendix: Measurement Items

Sub-factors	CR	Measures	Mean	Reference
<i>Project performance (PP)</i>				
Quantitative PP		PP1: Extent to which the project was delivered on schedule	2.63	(Shenhar et al., 2001; PMI, 2008; Bond, 2015)
		PP2: Extent to which the project was delivered on budget	2.70	
Qualitative PP	0.726	PP3: Extent to which the project scope expectations were met	3.03	
		PP4: Extent to which the project's quality objectives were met	3.12	
		PP5: Extent to which my organisation achieved its desired project outcomes	2.92	
		PP6: Number of project stakeholders that achieved their desired project outcomes	3.82	
<i>Agile response to change (AR)</i>				
	0.709	AR5: Project management team had the abilities to respond to technology changes that affected the project	3.78	(Baccarini, 1996; Vidal et al., 2011; Floricel et al., 2016)
		AR6: Project management team had the abilities to respond to rapidly changing tasks in the project	3.83	
<i>Adaptive scoping (AS)</i>				
	0.789	SF1: The project mission statement was clearly developed	3.86	(Park et al., 2017)
		SF2: Project management team's approach sought possible alternatives to project mission	3.53	
		SF3: Project management team's approach aimed to establish the target stakeholders' satisfaction level	3.84	
		SF4: Strategies were carefully formulated for executing the project	3.79	
<i>Stakeholder engagement (SE)</i>				
	0.884	EC1: Project management team explained project objectives and implications to all stakeholders	3.93	(Luyet et al., 2012; Park et al., 2017; Nguyen et al., 2018)
		EC2: Project management team carefully considered stakeholders' opinions and views	3.94	
		EC3: Project management team actively built a good relationship with stakeholders	4.02	
		EC6: Project management team operated an effective communication system	3.80	
		EC7: Project management team implemented a governance system for the project	3.82	
		EC8: Stakeholder interests were carefully considered throughout the project lifecycle	4.04	
		EC9: Key stakeholders were empowered to participate in the decision-making process	3.85	
<i>Stakeholder power (SP)</i>				
Legitimate behaviour	0.777	SP1: Stakeholder had the right to expect the project management team would protect his/her interests	3.89	(Agle et al., 1999; Parent and Deephouse, 2007; Leung et al., 2013)
		SP2: Stakeholder's approval was important for project execution	4.12	
		SP3: Stakeholder attempted to influence the project	3.92	
Supportive behaviour	0.798	SP4: Stakeholder provided critical resources to the project	3.49	
		SP6: Stakeholder regularly supported the project management team	3.57	
		SP8: Stakeholder made things easy for the project management team to deliver the project	3.40	
Opposing behaviour	0.859	SP7: Project management team regularly found themselves confronted by the stakeholder	2.90	
		SP9: Stakeholder made things difficult for the project management team to deliver the project	2.94	

Sub-factors	CR	Measures	Mean	Reference
<i>Stakeholder interests (SI)</i>				
0.840		SI2: Stakeholder was interested in receiving regular up-to-date project information	3.91	(Olander and Landin, 2005; Leung et al., 2013; Havard et al., 2015)
		SI3: Stakeholder always expected their demands to be considered as a priority during the project	3.69	
		SI4: Stakeholder demanded to actively participate in the decision-making process	3.64	
		SI5: Stakeholder's benefits were potentially influenced by the project	3.76	
		SI6: Stakeholder was concerned with the distribution of power among all stakeholders	3.22	
		SI7: Stakeholder continued to protect their interests, in the decision-making process	3.67	

Note: CR: Composite reliability. AVE: Average variance extracted