STAKEHOLDER MANAGEMENT IN COMPLEX PROJECTS

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ABSTRACT

Effective stakeholder management is a critical success factor for all types of projects. The increasing complexity in construction projects makes the management of project stakeholder management increasingly challenging due to their diverse characteristics, including power, interests and attitudes. It appears that much of the literature has focused on stakeholder management with very limited or no regard to either the level of project complexity or the extent of meeting project success measures. The objective of this paper is, therefore, to fill these research gaps by: (1) critically reviewing relevant literature; (2) briefly presenting key effective stakeholder management strategies; and (3) developing a conceptual framework for empirical testing. The paper provides a concise description of the framework and its constructs, and outlines the proposed methodology for testing its relevant hypotheses.

Keywords: *Complex Projects; Project Success; Stakeholder Management.*

1. INTRODUCTION

Stakeholder management (SM) is a key factor affecting project performance in complex projects (CPs) (Beringer et al., 2012). SM considers not only individual stakeholders but also how stakeholders influence one another in complex interactions (Beringer et al., 2012); stakeholder interrelationships are themselves a cause of project complexity (Yang, 2014).

It is widely recognised in the literature that many projects fail (Damoah and Akwei, 2017). There are many causes of failure, one of which is project complexity, which creates difficulty in completing projects and requires extra effort to overcome (Dao et al., 2016). CPs demand systematic approaches and efficient management skills in managing stakeholders to attain the best outcomes in terms of project performance (Mok et al., 2015).

The literature demonstrates that stakeholder characteristics play a critical role in effective SM, as project managers select appropriate SM strategies to deal with issues arising from specific stakeholder characteristics. Clear project objectives, agile response to change and effective communication are important components of an effective SM framework in mega-construction CPs (Park et al., 2017). A complex mega-construction project requires a more specialised approach to manage stakeholders (Park et al., 2017). Also, the uncertain and complex nature of mega-construction projects requires an effective stakeholder management approach to resolve conflicting stakeholder interests (Mok et al., 2015).

An investigation into SM in CPs is necessary (Nguyen et al., 2018). In particular, research into the relationship between stakeholder characteristics and perceived project success in CPs, as well as the mediating effects of effective SM (including having clear project objectives, agile response to change and effective communication) on the relationship between stakeholder characteristics and perceived project success in CPs, is of vital importance. Therefore, the objective of this paper is to 1) critically review the relevant literature, 2) briefly present the key effective SM strategies, and 3) develop a conceptual framework for empirical testing. Figure 1 depicts the initial research model for this study.

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Specifically, this research is guided by the following questions:

- What is the relationship between stakeholder characteristics and perceived project success in CPs?
- How does effective stakeholder management mediate the relationship between stakeholder characteristics and perceived project success in CPs?

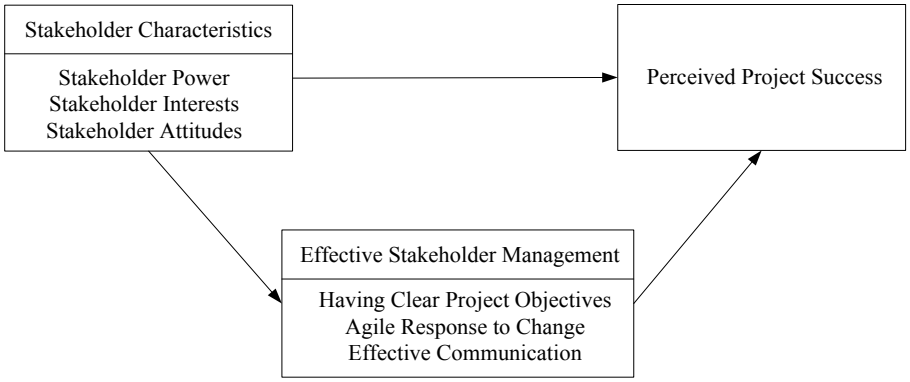

Figure 1: Initial Research Model

2. LITERATURE REVIEW

Literature reviews support researchers to better understand the research topic, and assist in identifying the boundaries of the current body of knowledge and research trends and shaping future research. This section analyses the latest research developments on stakeholder characteristics and effective SM in the context of CPs. Findings on project complexity and project success, as relevant to the research topic, are also discussed.

2.1. STAKEHOLDER CHARACTERISTICS

This sub-section discusses three stakeholder characteristics, namely stakeholder power, stakeholder interests and stakeholder attitudes.

2.1.1. STAKEHOLDER POWER

Stakeholder power can be defined as 'the ability of those who possess power to bring about the outcomes they desire' (Salancik and Pfeffer, 1974). Etzioni (1964) proposed three types of power: coercive power, based on physical resources such as force, violence or threats (for example, the use of a gun); utilitarian power, based on material or financial resources (for example, possession of goods, services and money); and normative/social power, based on symbolic resources (for example, prestige, esteem, love and acceptance). Power is obtained by supplying or withholding material, financial, symbolic or physical resources (Aaltonen et al., 2015). Power might be increased by gaining political support from local and national authorities (Aaltonen and Sivonen, 2009). According to Freeman and Reed (1983), stakeholders have formal, economic and political power. Parent and Deephouse (2007) noted that power is primary in stakeholder salience and decision-making. In an empirical study of construction projects, Yang et al. (2014) found that stakeholder power is positively and highly correlated with 'compromise' and 'adaptation' strategies - if stakeholders have high levels of power, managers should apply gentle strategies. Therefore, stakeholder power in a project can be seen as the ability to affect the implementation and/or outcomes of the project.

Power is one of the main stakeholder characteristics used to classify stakeholders. It is an important characteristic in the stakeholder salience model and stakeholder matrices. The stakeholder salience model was proposed by Mitchell et al. (1997) for characterising and classifying stakeholders according to the power, legitimacy and urgency of their claims. This model provides managers with a vital tool to determine the degree and type of attention stakeholders should receive from management (Mitchell et al., 1997). This approach is helpful in identifying stakeholder influence on project decision-making in global projects (Aaltonen et al., 2008), as stakeholders have differing levels of influence over decision-making processes and project phases (Herazo & Lizarralde, 2016). The stakeholder salience model has been applied to identify stakeholder attributes. Herazo and Lizarralde (2016) used stakeholder salience to identify stakeholder attributes in the planning and execution phases of a sustainable building project, while Aaltonen et al. (2015) applied the

stakeholder salience model to propose a salience/position matrix for analysing changes in stakeholders' importance and positions on nuclear projects.

The first stakeholder matrix was the power/dynamism matrix proposed by Mendelow (1981), in which four quadrants were formed by dividing each axis into two portions: high versus low on the power axis and dynamic versus static on the dynamism axis (see Figure 2).

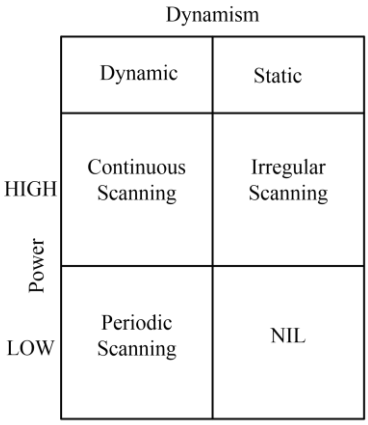

Figure 2: Power Dynamism Matrix (Mendelow, 1981)

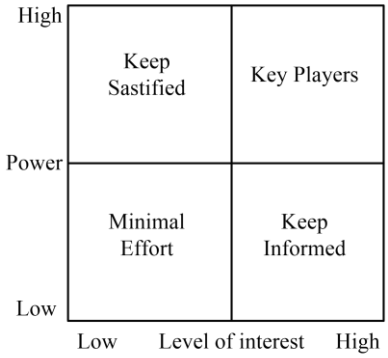

Figure 3: Power/ Interest Matrix (Johnson and Scholes, 1999)

Johnson and Scholes (1999) simplified and adapted the Mendelow (1981) model, proposing a power/interest matrix, in which the interest axis replaced the dynamism axis (see Figure 3). In classifying stakeholders in the power/interest matrix, project managers obtain a better understanding of how communication and relationships among stakeholders affect the project and its operation (Olander & Landin, 2005).

Building on Johnson and Scholes (1999), the power/interest matrix was further modified by Olander and Landin (2005), who developed a scale from 1 to 10 to estimate relative power and stakeholder interest in a project. Pacagnella Júnior et al. (2015) applied Olander and Landin's model to classify and describe the main stakeholders with regard to their power and interest in the implementation of CPs. The stakeholder influences identification matrix was proposed by examining the power and the urgency of stakeholders (De Schepper et al., 2014).

Stakeholder power can be classed into different levels, such as weak, medium and strong power positions (Blokhuis et al., 2012) and none, low, medium and high levels of power (Jepsen & Eskerod, 2009). Luyet et al. (2012) suggested that stakeholders be characterised to understand the power relations between them and their specific interest in projects.

2.1.2. STAKEHOLDER INTERESTS

Stakeholder interests can be defined as the interests of each stakeholder group in impressing its expectations on project decisions (Olander & Landin, 2005), including when, why and how stakeholders are involved or perceived to be involved (Caniato et al., 2014).

Stakeholders have different levels of interest in projects (Yang & Shen, 2014). Understanding stakeholder interests is a critical success factor in construction projects (Yang & Shen, 2014) and CPs (Park et al., 2017). Understanding stakeholder interests, roles and expectations has become a critical topic of analysis and research (Pandi-Perumal et al., 2015), essential for identifying and analysing the positions and interests of stakeholders involved in projects (Elias, 2012). Identifying stakeholders regarding potential interests in projects is an important part of stakeholder analysis (Pan, 2005). Further, the purpose of stakeholder analysis is to indicate whose interests should be taken into consideration in decision-making processes and why (Aaltonen & Sivonen, 2009).

To achieve project success, project managers must be skilled in managing the interests of multi-stakeholders throughout the whole project management process (Sutterfield et al., 2006). Managers must identify the

significance and legitimacy of stakeholders and pay attention to, and respond to, stakeholders' interests and concerns (Post et al., 2002).

It is of interest to note that the stakeholder matrix usually concerns two characteristics, for instance, power/interest, influence/interest and power/urgency. In particular, combining power and interest is widely applied (Johnson & Scholes, 1999, Newcombe, 2003, Olander & Landin, 2005, Yang, 2014).

Stakeholder interests can be classed into different levels, based on linguistic terms, such as low to high (Johnson & Scholes, 1999), or via a number scale, such as 1 to 10 (Olander & Landin, 2005).

2.1.3. STAKEHOLDER ATTITUDES

Stakeholder attitudes towards projects can be defined as the perception stakeholders have of the project, be it supportive or non-supportive. Attitude has been used to classify stakeholders into groups. Stakeholder attitude and behaviour are critical factors that influence decision-making strategies and processes (Yang et al., 2014).

The classification model of stakeholder positions proposed by Savage et al. (1991) identifies whether there is potential for cooperation or threat. Stakeholders are classified into four types - supportive, marginal, non-supportive and mixed-blessing - to help managers select generic strategies for managing stakeholders with differing levels of potential for cooperation or threat. The associated SM strategies suggest involving the supportive stakeholder, monitoring the marginal stakeholder and defending against the non-supportive stakeholder. By involving supportive stakeholders in relevant issues, managers can increase stakeholders' cooperative potential. Monitoring helps to manage marginal stakeholders whose potential for both cooperation and threat is low. Non-supportive stakeholders are initially managed best by applying a defensive strategy. Mixed-blessing stakeholders, who rate highly on both potential for cooperation and potential for threat, are best managed through collaboration (Savage et al., 1991). Another classification model, based on stakeholder position on a project, has been proposed by McElroy and Mills (2000). In this model, five levels of stakeholder attitude are presented: active opposition, passive opposition, noncommittal, passive support and active support.

Stakeholder attitude is one of characteristics that Aaltonen et al. (2015) used to develop the salience/position matrix to analyse changes in stakeholders' importance and position on complex nuclear projects. Stakeholders are classified by degree of salience (low versus high) and degree of supportiveness (non-supportive versus supportive). By applying the salience/position model, a manager can recognise stakeholders' power and attitude, providing an understanding of stakeholders and can thus choose an effective SM strategy for each stakeholder group.

Yang (2014) reported on an instance in which stakeholder attitudes towards a project were examined during a project management team workshop. The conclusion was that stakeholders with non-supportive positions and who are highly ranked should take priority, and that project managers tend to engage more with high-priority stakeholders with opposing attitudes (Yang, 2014).

Jepsen and Eskerod (2009) considered positive attitudes towards projects to be a contribution, where contributions take the form of specific deliverables, a positive attitude or a specific behaviour, such as making a supportive decision. Yang et al. (2014) found that there are correlations between stakeholder attitudes (cooperative potential, competitive threat and opposing position) and decision-making strategies in SM in construction projects.

2.2. EFFECTIVE STAKEHOLDER MANAGEMENT

This section discusses three elements of effective stakeholder management strategies; namely (1) having clear project objectives, (2) agile response to change and (3) effective communication.

2.2.1. HAVING CLEAR PROJECT OBJECTIVES

Having clear project objectives are one of five criteria for effective SM in complex mega construction projects (Park et al., 2017). Project managers who clearly understand project objectives perform better in SM. Common goals and strategic flexibility are the two main factors in clear project objectives (Park et al., 2017). A clear definition of the project mission supports stakeholders to understand what should be done and whether their requirements will be met. Setting a target level of stakeholder satisfaction and involvement may help prevent wasting of resources. Alternative options should be prepared to ensure the proper revision of the project

mission. Effective strategies bring about different outcomes for persuading stakeholders, while a lack of a clear strategy may lead project managers to apply defensive action (Olander & Landin, 2008).

2.2.2. AGILE RESPONSE TO CHANGE

In the context of CPs, the research trend is to focus on environmental project complexity that involves multiple stakeholders and changes in policy, regulation, technology, economy and nature. Park et al. (2017) found that responding to environmental changes is one of five important agendas for an SM framework for CPs. Responding to political and economic change, responding to policy change and responding to social values change are three components of responding to environmental changes (Park et al., 2017). Managers of CPs should identify potential changes to the project environment, how these changes might affect projects and stakeholders and how to respond appropriately and with agility to these changes (Park et al., 2017).

2.2.3. EFFECTIVE COMMUNICATION

Effective communication and a clear definition of the project are other important factors in the SM framework for CPs (Park et al., 2017). Two-way communication, minimisation of dissatisfaction and active stakeholder participation are the main factors comprising effective communication (Park et al., 2017). Two-way communication includes sharing information with stakeholders, allowing sufficient opportunities to appeal and building trust with stakeholders. Minimisation of dissatisfaction includes compromising to overcome conflicts among stakeholders, keeping balance among stakeholders and reasonable compensation for private loss. Active stakeholder participation includes operating communication system, operating governance system and monitoring, evaluation and feedback.

2.3. COMPLEX PROJECTS

CPs have received much attention from researchers and project managers because of an increase in the number of complex projects worldwide across many fields (Floricel et al., 2016), and project failure as a result of this complexity (Vidal et al., 2011). As projects become increasingly complex, there are increasing concerns about the complexity of project concepts and its effect on the project management process (Baccarini, 1996).

Research on project complexity measurement has been conducted for many years. The Crawford-Ishikura seven-factor table for evaluating roles (CIFTER) is one of main project classification methods used by institutions in the project management field (Bosch-Rekveldt, 2011). CIFTER takes into consideration technical project management aspects that broadly focus on the interaction between the project and business environment (Bosch-Rekveldt, 2011). Each of the seven factors is assessed using linguistic terms that relate to scores from 1 to 4. The total score of these factors determines the level of project complexity.

Aitken and Crawford (2007) conducted a study across a broad range of project fields to test CIFTER as a tool for categorising projects with regard to project management complexity. They concluded that CIFTER is a valid instrument for assessing and categorising projects by complexity. There was a positive correlation between the assessments by project managers and independent assessors (Aitken & Crawford, 2007). CIFTER was also applied by Harvett (2013) to evaluate project complexity levels.

For the objectives of this study, CIFTER was selected as an appropriate framework for evaluating CPs. It is part of a global standard that is based on perceptions of project complexity. Practitioners and researchers use this method, and it has been deemed to have a good level of consistency of assessment by project managers and independent assessors.

2.4. PROJECT SUCCESS

Criteria for project success are well established, and include time, budget and performance goals (Shenhar et al., 2001). The project management body of knowledge refers to project success in terms of time, cost, scope, quality and customer satisfaction (PMI, 2004) - widely known as the 'triple constraint'. According to Ika (2009), project success is determined based on completing the project objectives within the constraints of time, cost and quality, plus other project achievements, for instance, meeting the strategic objectives of the client organisation and business success, client satisfaction, advantages for stakeholders and project personnel and

other business value achievements. Yang et al. (2011) also suggested using stakeholder satisfaction as a criterion for project success in addition to the traditional measurement of time, cost and quality.

Stakeholders have differing views of success, and these might vary over different timescales (Turner, 2009). Project managers can use critical success factors (CSFs) to identify the necessary factors to meet customer requirements (Bond, 2015). Kerzner (2009) noted that project managers can use both primary and secondary CSFs. Shenhar et al. (2001) extended the notion of project success by adding criteria, such as initial commercial/business success of the products and potential for future business growth.

Time, cost, quality, project objectives and stakeholder satisfaction can all be used as criteria for evaluating project success.

3. RESEARCH METHODOLOGY

This section presents a conceptual research model that will be empirically tested using structural equation modelling (SEM) to determine the role effective SM have on the relationship between stakeholder characteristics and perceive project success in the context of CPs.

3.1. RESEARCH DESIGN

This study is a non-experimental descriptive and correlation research study using SEM to investigate the relationship between stakeholder characteristics and perceived project success, and explore the mediating effects of having clear project objectives, agile responses to change and effective communication on the relationship between stakeholder characteristics and perceived project success in CPs. Figure 4 depicts the conceptual research model for this study.

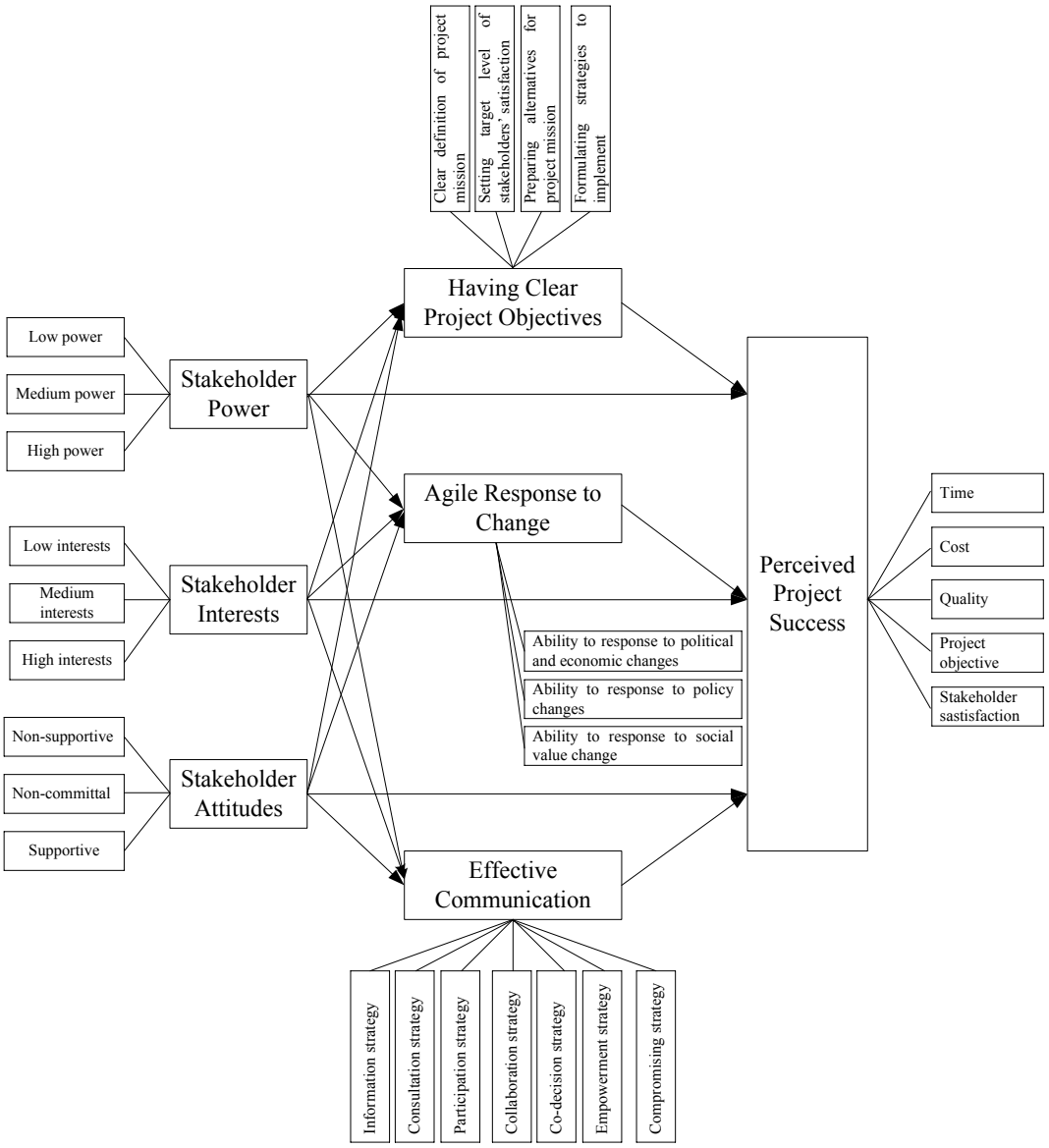

Figure 4: Conceptual Research Model

A research design is a plan that researchers follow to answer research questions as validly, objectively, accurately and economically as possible Kumar (2014). In this study, a quantitative method is selected, as the objective is to test the theory rather than develop it. In quantitative methods, a researcher tests or verifies a theory by examining hypotheses or related questions (Creswell, 2014).

A survey design is applied to collect data capable of providing a quantitative description of trends and opinions of a population by studying a sample of the population to draw inferences (Creswell, 2014). The research population and the target sample for this study consists of project managers based in Australia across various industries. Projects from the survey will be classified based on CIFTER scores. The perceived complexity of projects will be classified into 'low' and 'high'. Only data from the projects that have a high level of project complexity will be used for analysis.

3.2. HYPOTHESIS

Based on the research questions, the following hypotheses are formed:

H1 Stakeholder power negatively affects perceived project success in CPs.

H1a Having clear project objectives enhances the relationship between stakeholder power and perceived project success in CPs.

H1b Agile response to change enhances the relationship between stakeholder power and perceived project success in CPs.

H1c Effective communication enhances the relationship between stakeholder power and perceived project success in CPs.

H2 Stakeholder interests negatively affect perceived project success in CPs.
H2a Having clear project objectives enhances the relationship between stakeholder interests and perceived project success in CPs.
H2b Agile response to change enhances the relationship between stakeholder interests and perceived project success in CPs.
H2c Effective communication enhances the relationship between stakeholder interests and perceived project success in CPs.

H3 Stakeholder attitudes positively affect perceived project success in CPs,
H3a Having clear project objectives enhances the relationship between stakeholder attitudes and perceived project success in CPs.
H3b Agile response to change enhances the relationship between stakeholder attitudes and perceived project success in CPs.
H3c Effective communication enhances the relationship between stakeholder attitudes and perceived project success in CPs.

3.3. RESEARCH TOOLS

SEM is a well-known technique for estimating, analysing and testing models that specify relationships among observed and latent variables (Kline, 2015). It uses different types of models to represent relationships among observed variables, with the basic goal of providing a quantitative test of the theoretical model hypothesised by the researcher (Lomax and Schumacker, 2012). More specifically, different theoretical models that hypothesise how sets of variables are defined as constructs and how these constructs are related to each other can be tested (Lomax and Schumacker, 2012).

The purpose of SEM is to determine the extent to which the theoretical model is supported by sample data. In the case that the sample data support the theoretical model, more complex theoretical models can be hypothesised. However, if the sample data do not support the theoretical model, the original model can be modified and retested, or an alternative model can be developed and tested. In essence, SEM tests theoretical models using the scientific method of hypothesis testing to advance our understanding of the complex relationships among constructs (Lomax and Schumacker, 2012).

There are three main factors supporting the application of SEM in research. First, scholars are becoming more aware of the benefits of using multiple observed variables to better understand their area of scientific inquiry. Second, it involves greater recognition for the validity and reliability of observed scores from measurement instruments. Third, SEM software programs are becoming increasingly user friendly (Lomax and Schumacker, 2012).

In this study, SEM will be applied to statistically analyse the data, test hypotheses and evaluate the model fit.

4. CONCLUSIONS

This research contributes insights into the understanding of the relationship between stakeholder characteristics and perceived project success in the context of CPs. It will present the effects of having clear project objectives, agile response to change and effective stakeholder communication on the relationship between stakeholder characteristics and perceived project success in CPs. The study will contribute to the body of knowledge on SM in CPs. The results of the study might allow for an improvement in project success rates and the effectiveness of SM in the context of CPs.

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