

# Management of Stakeholder in Infrastructure Projects

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**Abstract - Stakeholder management has long been acknowledged as a means of increasing the propensity for successful delivery of construction projects, the full benefits of stakeholder management have yet to be tapped. Previous research efforts indicate lack of comprehensive stakeholder management process since the existing frameworks in construction is focusing on a particular construction stage and failing to incorporate important considerations such as the impact of procurement routes, internal stakeholder collaboration.**

**One of the major concerns coming forth in the management of construction projects is the recognition and management of project stakeholders since the stakeholders are a major source of uncertainty in construction project. The successful construction project management can be carried out only when the responsible managers take into account the potential influence of the project's stakeholders. A literature reviews on the topic related to the stakeholder management was conducted. A questionnaire survey was carried out among professionals in the construction industry. The main factors affecting the stakeholder management process are hiring a project manager with high competency, transparent evaluation of the alternative solution, ensuring effective communication between the project and its stakeholder, setting common goal and objective of the project, and exploring the stakeholder need and expectation.**

**Keywords - stakeholders, relationship, construction, factors, affecting.**

## I. INTRODUCTION

Construction projects are traditionally divided into series of activities or operations undertaken by different individuals or groups who may have different levels of interest and involvement in the project. It has complexity in its nature because it contains a large number of stakeholders as clients, contractors, consultants, regulators and others. Disagreement among parties participating during the implementation of projects which adversely impacted the ability of the management teams to deliver the construction project within the allocated time, budget and expected degree of quality. These disagreements are often caused by inappropriate identification and management of the different stakeholders involved in a project amongst other factors.

Construction projects are generally unique in nature based on their fragmentation, processes and interaction with numerous parties and just like any other venture, are constrained by time and resources. Therefore, the lengthy process of design and execution of construction projects constitutes a complex system which involves collaboration and negotiations among many stakeholders which may include but not limited to the clients, designers, contractors, local authorities and the general project environment.

A stakeholder is either an individual, group or organization who is impacted by the outcome of a project. They have an interest in the success of the project, and can be within or outside the organization that is sponsoring the project. They can have a positive or negative influence on the project. The checklist of stakeholders in a construction project is often large and would include the owners and users of facilities, project managers, designers, shareholders, legal authorities, employees, subcontractors, suppliers, process and service providers, competitors, banks, insurance companies, media, community representatives, neighbours, general public, government establishments, visitors, customers, regional development agencies, the natural environment, the press, pressure groups, civic institutions, etc. The number of stakeholders involved or interested in the project can dramatically increase the complexity and uncertainty of the situation. Each stakeholder usually has different interests and priorities that can place them in conflict or disagreements with the project.

Each of these would influence the course of a project at some stage. Some bring their influence to bear more often than others. If diverse stakeholders are present in construction undertakings, then the construction industry should be able to manage its stakeholders. If diverse stakeholders are present in construction undertakings, then the construction industry should be able to manage its stakeholders. Stakeholders can be divided in to internal and external, internal stakeholders being those directly involved in an organization's decision making process and external stakeholders being those affected by the organization's activities in a significant way. In construction, there had traditionally been a strong emphasis on the internal stakeholder relationship such as procurement and its site management, while the external stakeholder relationships to some extent have been considered a task for public officials via the rules and legislation that concern facility development. Effective

management of relationships with stakeholders is called stakeholder management.

## II. LITERATURE REVIEW

Goodenough D. Oppong et al. (2017)<sup>[2]</sup> discussed that Construction stakeholder management (SM) engages a lot of attention in project management research domain and industry. This is because construction SM has attained poor industrial feat in the past decades. There is lack of an elaborative tool to manage SM performance in construction projects. This paper fills the gap by presenting the conceptual model of SM performance attributes comprising performance objectives, success factors and performance indicators that could be engaged to manage the performance of construction. The outcome will benefit professionals and researchers due to the flexibility of selecting a number of attributes that can fit the nature, type and stage of projects in order to ensure effective management. It therefore provides a better means of measuring project success in the industry by objectively and subjectively evaluating the level of stakeholder organizational satisfaction in construction project delivery. Jing Yang et al. (2010)<sup>[3]</sup> discussed that identifying gaps in the scope of previous studies on stakeholder management, and starting to address those gaps by conducting an empirical study. To complete these research objectives, literature review, interviews, questionnaire survey, and a case study were used in this study. Four gaps regarding critical success factors, stakeholder management process, methods for stakeholder management and stakeholder relationship management were identified. Based on an empirical study, a framework for effective stakeholder management is proposed, and the application of a Social Network Analysis technique, as a means of determining the influence of stakeholders on decision making, is illustrated and validated by a case study. These findings can serve as initial references towards a more systematic approach for stakeholder management. Since the empirical study was conducted only in Hong Kong and Australia, further studies should be conducted in other regions to validate and compare with the finding in this paper.

Joseph Ignatius Teye Buertey et al. (2016)<sup>[4]</sup> discussed that Participation is now an international agenda for ensuring full representation of people in terms of their ideas, feeling and decision on matters concerning their development. It has been observed that most projects fail after implementation not due to poor execution but rather due poor stakeholder consultation and engagement. The purpose of this study was to determine the barriers to stakeholder involvement in developmental projects at the grassroots level and examine the impact of stakeholder involvement on the success of projects implemented. Data was gathered through structured questionnaires distributed to ordinary citizens, community leaders and local authority staff in selected district assemblies in

Ghana. Analysis of structured questionnaires revealed that there was inadequate explanation of the background, technical and material justification for the project to the stakeholders prior to project initiation. Stakeholders held that they had difficulty in participating in technical discussions and there was the perceived unwillingness of project implementers to involve them during decision making, to this end, the impact of stakeholders towards project success was significant. To overcome the challenge of stakeholder involvement and meaningful impact to projects, stakeholders must develop capacities to contribute meaning fully in discussions or delegate their concerns to professional representatives. To this end, projects implementers must acknowledge the value of stakeholders and embark on stakeholder outreach to solicit their involvement for enhanced project success.

Stefan Olander (2007)<sup>[5]</sup> discussed that Construction projects attract interest from various stakeholders who express needs and expectations about the project. These are often in conflict with each other and it is unlikely that all of them can be fulfilled. The stakeholder management process involves evaluating the needs and expectations of stakeholders in relation to the main objectives of the project. An important basis for this evaluation is stakeholder analysis. The approach is based upon established theory, knowledge of stakeholder management and empirical data. The analysis consists of a stakeholder impact index to determine the nature and impact of stakeholder influence, the probability of stakeholders exercising their influence and each stakeholder's position in relation to the project. The analysis of the stakeholder impact index can help project managers to formalize a stakeholder management process.

Geoffrey Qiping Shen et al. (2014)<sup>[1]</sup> discussed that the complex and uncertain nature of mega construction projects (MCP) require an effective stakeholder management (SM) approach to accommodate conflicting stakeholder interests. Previous reviews regarding SM in construction sector are generic as their attentions have been placed on relatively small scale projects. A systematic review on SM studies in relation to MCP seems to be lacking. This paper analyses the latest research development of this domain by reviewing selected articles published from 1997 to 2014. Four major research topics are identified "stakeholder interests and influences", "stakeholder management process", "stakeholder analysis methods" and "stakeholder engagement". This study reveals that SM approaches in MCP are subject to national context of the project, indicating a need to identify the impact of national culture on this discipline. Moreover, traditional stakeholder analysis techniques are widely adopted in MCP notwithstanding their weaknesses; therefore a social network approach for managing stakeholder interrelationships in these projects is needed.

### III. METHODOLOGY

Methodology was constructed in the form of a flow diagram, consisting of all the tasks to be performed in a sequential order, starting from the problem identification, literature survey, through various stages involving collection and analysis of data from the study area, up to the stage when the results are obtained and useful information could be inferred from the obtained results. This is shown in Figure 3.1

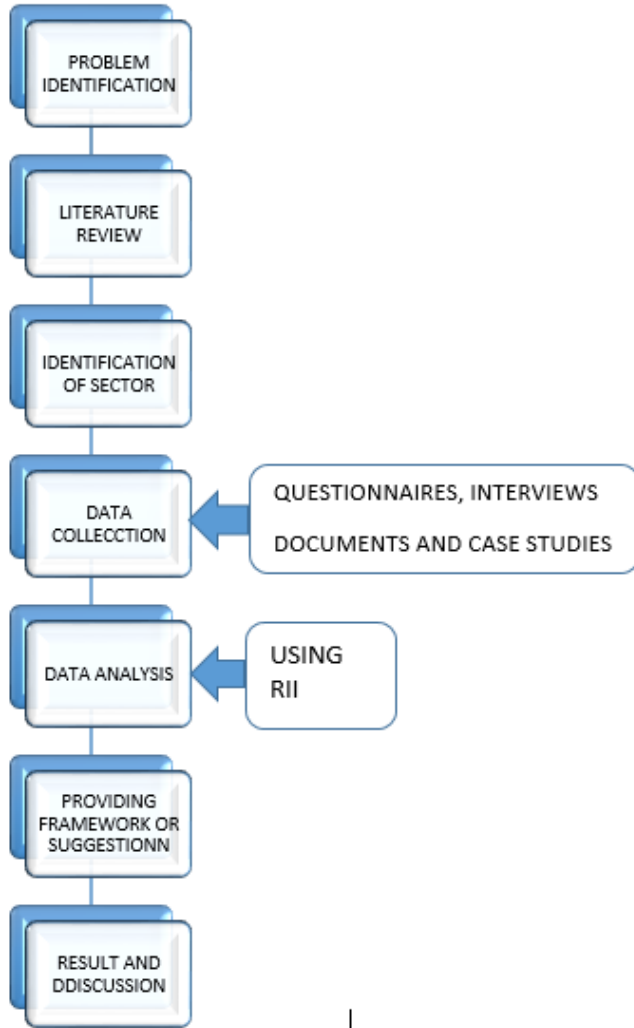


Fig. 1 Project Methodology

### IV. RESEARCH STRATEGY

Research strategy can be defined as the way in which the research objectives can be questioned, and there are two types of research strategies, quantitative and qualitative research. Quantitative approaches seek to gather factual data and to study relationships between facts and how such facts and relationships accord with theories and the findings of any research executed previously, where qualitative approaches seek to gain insights and to understand people's perception of "the

world" whether as individuals or groups. In this research, a quantitative approach is selected to understand the factor affecting the stakeholder management in infrastructure projects.

#### DATA COLLECTION

The questionnaire was chosen to be the method of collecting data in this research, since the questionnaire is probably the most widely used data collection technique for conducting surveys. Questionnaires have been widely used for descriptive and analytical surveys in order to find out the facts, opinions and views. It enhances confidentiality, supports internal and external validity, facilitates analysis, and saves resources. Data are collected in a standardized form from samples of the population. The standardized form allows the researcher to carry out statistical inferences on the data, often with the help of computers.

#### Questionnaire design

The questionnaire comprised of four parts to accomplish the objectives of this research, as follows:

1) Part I: General information about the population.

This part mainly designed to provide general information about the respondents in terms of the type of institutions, position and experience of the respondent.

2) Part II: factors affecting the stakeholder management process.

One of the objectives of this research is to investigate factors affecting the stakeholder management process in construction project. So, the previous studies were used to build a comprehensive list of critical success factors affecting the stakeholder management process. 30 factors affecting stakeholder management process in construction projects are selected. These factors are grouped into 6 groups based on literature review. The factors, which are considered in the questionnaire, are summarized and collected according to previous studies.

3) Part III: Approaches for stakeholder management.

One of the objectives of this research is to evaluate the current practice approaches of stakeholder management in the infrastructure project. So, the previous studies were used to build a comprehensive list of practical approaches of stakeholder management, and three questions were designed to investigate the most effective approach that project manager frequently used in managing the stakeholders.

- What are the effective methods for analyzing stakeholders' concern and need?
- What are the effective methods for engaging the stakeholders?
- What are the effective response strategies to deal with the stakeholder claims?

4) Part IV: Evaluating the attributes of the stakeholders.

To identify the stakeholders' influence in the infrastructure project and the engagement level to deal with them. Seven attributes of stakeholder were put in the designed questionnaire, in order to achieve this objective. Power, proximity, legitimacy, urgency, knowledge, vested interest, and attitude were evaluated by respondents in Likert scale, and the obtained results will be used in calculating the following indicators: (i) stakeholder impact, (ii) stakeholder vested interest-impact index, and (iii) stakeholder influence index. These indicators demonstrate the level of stakeholders' influence on the project.

*Relative important index*

The approach used for data analysis was Relative Importance Index Technique. It is used to rank the peak factors. This method is based on the evaluation of peak factors from the respondents (Owners, Project managers, Planning Engineers, Senior Engineers). The five point scale ranged from 5 (Highly agreed factors) to 1 (Highly disagreed factors) was adopted and transformed to relative importance indices (RII) for each factor as follows

$$RII = (P_i * U_i) / (N * n)$$

Where

P<sub>i</sub> = Respondents Rating

U<sub>i</sub> = Number of Respondents placing identical rating

N = Sample Size

n = Highest value on Likert scale

SECTION	PEAK FACTOR	RII
Management Support	Corporate Social Responsibilities	0.857
Information Input	Setting goal & objective	0.857
	Stakeholder need & expectation.	0.857
Stakeholder Assessment	Determining stakeholder Knowledge.	0.885
Decision Making	Effective communication.	0.914
Action and evaluation	Implementing schedule plans.	0.914
Continuous support	Communicating engaging stakeholder.	0.942
Stakeholder concern & needs	Interviews	0.742

Engagement methods	Meetings	0.8
Response strategy	Compromising strategy	0.828
	Influence strategy	0.828
Attitude	Client	0.914
Vested Impact	Client	0.914
Power	Beneficiary / end user	0.914
Proximity	Client	0.857
Legitimacy	Client	0.828
Urgency	Consultant	0.828
Knowledge	Consultant	0.857

Table 1. Major factors

V. ANALYSIS AND RESULT

*Management support group*

Top level or management support from the implementing agencies, is essential for effective stakeholder engagement (Yang *et al.* 2009b). In some projects, certain individuals at director level are tasked with the responsibility of overseeing their stakeholder management activities. Top management must endorse the principle of stakeholder consistently and wholeheartedly to guarantee successful stakeholder participants. Willingness to share power and resource that would benefit overall organization's goal is necessary.

*Information input*

Freeman *et al.* (2007) believe that identifying stakeholder information is an important task for assessing stakeholders as this is the backbone of project success. Before undertaking any management activities, information about the project and its stakeholders, extensive research and analysis is required. The information includes project missions, full list of stakeholder, area of stakeholders' interests, and their needs and constraints to the project (Yang *et al.* 2009b). The stakeholders commitments, interest and power should be fully assessed so that the project manager can tackle the key problems in the stakeholder management process and the potential impact on success in the project.

*Stakeholder assessment*

In real world, stakeholders have influenced projects in a variety of complex ways. In order to analyze the impact of stakeholders upon projects, it is necessary to identify and include the factors by which they do so. To enhance the understanding of project managers on stakeholders, their attributes, behavior, and potential influence need to be

assessed and estimated. The conflicts and coalitions among stakeholders also could be analyzed based on information about stakeholders (Yang *et al.* 2009b). Once the information about the stakeholder is prioritized, the assessment of stakeholder on the basis of their impact and vested interested in the project could be done. This requires an accurate understanding of the stakeholder attributes in order to categorize them according to their attitude classification.

#### *Decision making factor*

Based on the outcomes in 'information input', and the outcomes in 'stakeholder assessment', the project management team has the responsibility to compromise conflicts among stakeholders by choosing the transparent evaluation of the alternative solution based on stakeholders' concern, and to decide on the levels of stakeholders' engagement in order to ensure effective communication, and formulate appropriate strategies to deal with the issues raised at this stage.

#### *Action and evaluation factor*

The action and evaluation group is the final management activity group in the process of stakeholder management. The inputs required are the formulated strategies, and the level of stakeholder engagement to ensure effective communication.

#### *Continous support*

Construction projects are transient (Bourne, 2005), and organizations are correspondingly permanent. Since many stakeholders, such as government, local communities and media, would be involved in the project at a later stage of the process or in future projects, the change of their influence needs to be realized in order to promote a steady relationship with them in order to continuously communicate with them properly and frequently (Yang *et al.*, 2009a). Continuous support group also includes the activities which should be carried out to support the management activities. Continuous support comes from the activities within, and can be used for accumulating the experiences and knowledge of the project management team in the long term

#### *Stakeholders power*

Broune (2010) defied the power as an individual or group that may have to permanently change or stop the project or other work, The power as a factor is considered to be a key driver of stakeholder-manager relations for several reasons, since the definitions of stakeholders undoubtedly imply that relationships between stakeholders and the project reflect social-business exchanges, and power means the ability to "control resources, create dependencies, and support the interests of some organization members or groups over others"

(Mitchell *et al.*, 1997). Bourne and Walker (2005) believe that successful project managers should have the ability to understand the "invisible power" among stakeholders.

#### *Stakeholders' legitimacy*

The legitimacy of a stakeholder is a prerequisite for the success of transactions with stakeholders (Freeman *et al.*, 2007). Mitchell *et al.* (1997) indicate that many scholars define stakeholders as those who have such legitimate relationships with the project (including contracts, moral, and legal rights). Mitchell *et al.* (1997) conclude that legitimacy is a social good something larger and more shared than mere self-perception that may be defined and negotiated differently at various levels of social organization. Legitimate stakeholders are those whose actions and claims must be accounted for by managers, due to their potential effects upon normative stakeholders. The legitimacy of a stakeholder gives a sense that legitimacy reflects the contractual relations, legal and moral rights in relationships between stakeholders and a project (Nguyen, 2009).

#### *Stakeholders' urgency*

Urgency is described by Mitchell *et al.* (1997) as the "degree to which stakeholder claims call for immediate attention." They argue that urgency only exists when two conditions are met:

- (1) When a relationship or a claim is of a time-sensitive nature.
- (2) Why that relationship or claim is important or critical to the stakeholder.

They also state that urgency has two attributes: time-sensitive and critical. The urgency attributes of stakeholders decides the extent to which they exert pressure on a project manager by calling for emergency action.

#### *Stakeholders' proximity*

Proximity, according to Bourne (2005) implies the extent to which a stakeholder is involved in the project. She uses proximity as a criterion to prioritize project stakeholders by rating them on a scale of 1-4 where 1 is relatively remote from the project (does not have direct involvement with the processes) and 4 been directly working on the project (most of the time). Bourne and Walker (2005) argue the need to take proximity into account stakeholder analysis by stating that stakeholders who may have strong power and influence but are relatively far from the project core may seem transparent / invisible. Therefore their potential impact may be underestimated.

#### *Stakeholder' knowledge*

Yang *et al.* (2007) found in their research that automation and integration technology may contribute significantly to project performance in terms of stakeholder success. They

argue that due to technological development, stakeholders can seek a variety of information from numerous sources. Undoubtedly, the more knowledge a stakeholder has about the project, the more he/she is able to influence it observe that today, Walker *et al.* (2008) pointed out to the importance of the receptiveness of each stakeholder to gain the a knowledge about the project, and McElroy and Mills (2000) suggest stakeholder knowledge ranges from full awareness up total ignorance. The former refers to the intention of stakeholders to gain knowledge of the project by finding the facts to help them achieve their own objectives. The latter, on the other hand, refers to the fact that stakeholders have knowledge of the project by hearsay and assumptions rather than facts. Additionally, it may be argued that although the stakeholder may have a strong salience to, and great interest in, the project, it hardly accounts for influence if the stakeholder lacks sufficient knowledge. As such, stakeholder knowledge is considered a driver, affecting stakeholder impact on projects.

#### VI. SUMMARY AND CONCLUSION

The objective of the overall research process of this thesis is to enhance the understanding of stakeholder relationship. There is a strong need for internal stakeholders to collaborate in understanding stakeholder management in infrastructure projects. From the journals and expert opinions it is understood that the stakeholders in infrastructure projects affects the completion of the projects. The risk factors that affects project completion due to stakeholder conflicts and improper relationships between them are listed and then questionnaire survey is conducted on Industry experts and various respondents so that the top risks factors are identified from the real time projects. The risk factors identified from the projects are to be managed by suitable implementation relationship building strategies.

From this study, it is focused on internal stakeholder management in infrastructure projects and their interrelationships between stakeholders. There is a strong need for internal stakeholders to collaborate in undertaking stakeholder management in infrastructure projects. Ideally, infrastructure organizations need to provide stakeholder management support to their project teams by maintaining long-term stakeholder relationships. In this phase the factors are found through questionnaire and in the next phase a infrastructure project is selected and the internal and external stakeholder relationship in that project is found out and the suggestion will be given for the improvement of the relationships.

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