

Review Paper on Stakeholder Identification and Analysis in Construction Industry: A Strategic Approach

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Abstract- Construction is carried out in highly demanding and complicated build environments where projects carried out by coalitions of numerous stakeholders with varying interests, objectives and socio-cultural background. Although stakeholder management recognised as a means of increasing the propensity for successful delivery of construction projects, its full potential has yet to be realised. Previous research has shown that the existing frameworks focus on the overall stakeholder management process or their corresponding challenges and lack a detailed process for stakeholder identification and analysis. Stakeholder management begins with stakeholder identification and builds on stakeholder analysis. Therefore, this study aims to develop a conceptual framework for stakeholder identification and analysis in construction projects in order to enhance the stakeholder management process. A comprehensive study is carried out on prior works on stakeholder management to achieve the aim. Current practices of stakeholder identification, classification and analysis methods; knowledge assets referred; factors taken into account for stakeholder identification and analysis are investigated using semi-structured interviews and questionnaire surveys. After data analysis, it is found that brainstorming in group meetings, stakeholder role classification and Stakeholder Salience Model are the preferred methods for stakeholder identification, classification and analysis respectively.

Indexed Terms- Stakeholder management, Stakeholder identification, Stakeholder Analysis, Success factors, Knowledge Assets, Framework.

I. INTRODUCTION

This chapter delivers a summary for this project that involves a background for research and brief idea about stakeholder management. Moreover, this chapter will demonstrate about research objectives and the requirement of a systematic framework for stakeholder identification and analysis in construction industry. Stakeholders need to be managed in order to attenuate their negative impacts and ensure that they do not hinder the achievement of project goals. Stakeholder management is about relationships between a corporation and its stakeholders (Olomolaiye, 2010). These relationships impact on individuals and organizations both positively and negatively. A report by IFC (2007), singled out, a lack of understanding of the assorted interest groups, the drivers of their actions and their influence potential during the project lifecycle on the part of management, as a significant challenge in international projects in terms of time schedule of project delivery, budget line and quality of the project since some of the project stakeholders might not be satisfied. This suggests that stakeholders may disagree on some key project milestones and actions hence affecting project delivery because the project may lag behind the schedule, delivered outside the initial project architectural plan and budget line.

1.1 Research Aim and Objectives:

The overall aim of this study is to generate a framework for stakeholder identification and analysis, which will ease the stakeholder management process in construction industry with demanding issues

(Projects with multiple and diverse stakeholders and interests).

In pursuing this aim, the subsequent objectives are set;

1. Literature review on stakeholder management process and challenges in performing the same in construction projects.
2. To analyse this current practise of stakeholder identification and analysis tools & techniques in construction industry.
3. To accumulate information about factors considered in stakeholder identification, the key sources of data for stakeholder identification and analysis.
4. To develop a conceptual framework for stakeholder identification and analysis in construction projects.
5. To validate/evaluate the framework.

II. LITERATURE REVIEW

2.1 Definitions of Stakeholders and Construction Project Stakeholders: The Stakeholder concept was first brought up in 1963 by researchers in an internal memorandum at the Stanford Research Institute. They defined stakeholder as ‘those groups without whose support the organization would cease to exist’ (cited in freeman (2010)). Later, Freeman (1984) introduced a strategic management process i.e., a stakeholder approach that has been extensively conceded as a turning point in advancement of SM research, where stakeholders are defined as a party “who can affect or is affected by the achievement of the firm’s objectives”.

Project Management Institute (PMI®), 1996) proposed a formal definition of a stakeholder that is “individuals and organizations who are actively involved in the project, or whose interests may be positively or negatively affected as a result of project execution or successful project completion”. ISO 26000 defines a stakeholder as an “individual or group that has an interest in any decision or activity of an organization”.

According to Bourne (2009), stakeholders are those individuals or groups that are generally either affected by or can influence the organisation’s success or failure as it relates to the organisation’s activities.

Advancing towards construction project stakeholder, McElroy and Mills (2000) defined a construction project stakeholder as “An individual or coalition of individuals who possess a vested interest in the successful implementation of a project”. The list of stakeholders in a construction project is usually endless and may include the project team (client, contractor, architect, engineer, quantity surveyor, project manager), end-users of the project, facilities manager, shareholders, employees, subcontractors, suppliers, competitors, bankers, media, neighbours, the general public, various levels of government and its agent, and the unborn generation (Smith and Love, 2004; Yang et al., 2011).

Eyiah-Botwel (2015) cited that clients, site personnel, communities, project managers, subcontractors, professional bodies, local governments, contractors, media, politicians, political parties and members of parliament are major construction stakeholders.

Olatunde (2019) identified stakeholders on private corporate organisation building projects to include clients, project contractors, project managers, project architects, project civil/structural engineers, project service engineers, project quantity surveyors, project subcontractors, project material suppliers, facility management teams, project land surveyors, local residents, local landowners, environmental miscreants, company shareholders, customers, company staff, financial institutions and contractor workmen. Others are the town-planning authority, conservationists, environmentalists, environmental impact assessors, the media, state government, passers-by, civil organisations, regulatory agencies, local government authorities and federal government. By looking on citation of numerous scholars, there is no clear definition of stakeholders as project stakeholders have been defined in different ways. While some definitions of project stakeholders are criticized for being too narrow, others suffer criticism for being too board. Therefore, the following definition has been coined out of the different definitions for the purpose of this study:

“Construction project stakeholders are individuals or groups/organizations who have some aspects of right or ownership in the project and will incur benefit or

loss as a result of either activities performed during the project or the outcome of the project.”

2.2 Stakeholder Management Models:

Researchers have proposed stakeholder management approaches highlighting different actions that need to be involved in this process. The stakeholder management models proposed by the researchers are illustrated below;

2.2.1 Project Stakeholder Management:

Jan Terje Karlsen conducted one survey to find out key stakeholders that need to be addressed in a project and described a formal and systematic stakeholder management process. The author introduced problems and uncertainty caused by stakeholders that include poor communication, inadequate resources assigned to the project, changes in the scope of work, unfavourable news about the project in the press, and negative community reactions to the project.

The survey conducted results in following,

- Clients and End users are significantly more important than other stakeholders. Working with these stakeholders is a key to success, since it is the clients who define and finance the project and the end users who decide the usefulness of project results.
- When it comes to causing problems and uncertainty to projects all stakeholders are equal.
- Areas such as creating visions, objectives, tools, methods, routines and evaluations should get developed and improved to add value to stakeholder management process.

2.2.3 A project Stakeholder Management Process:

Author found that there is a need for formal and systematic management process containing well-functioning strategies, plans and methods. As a result of this, a six-step stakeholder management process is developed.

2.3 Freeman, R. A. (1984). Strategic Management: a stakeholder approach:

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organization would cease to exist’ (cited in Freeman (2010)). Later, Freeman (1984) introduced a strategic management process i.e., a stakeholder approach that has been extensively conceded as a turning point in advancement of SM research, where stakeholders are defined as a party “who can affect or is affected by the achievement of the firm’s objectives”.

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2.5 Preble, J. F. (2005). Towards a comprehensive model of stakeholder management. *Business and Society Review*, 110(4), 407-431. The author introduced a comprehensive stakeholder management model by implementing numerous conceptual, theoretical, and empirical studies of stakeholder approach into process models for actual practice of stakeholder management. This model and approach can greatly facilitate the task of introducing a stakeholder perspective into an ongoing organization. Author described step by step process of this model as follows;

- Step 01- Stakeholder Identification: Author used Clarkson’s typology to identify stakeholders and classified them as Primary Stakeholders, Public Stakeholders and Secondary Stakeholders.
- Step 02- General Nature of Stakeholder Claims: It is an initial assessment of expectations that these stakeholders might have on the firm. These stakes help to define what type of power a stakeholder possesses and what kind of responses should be planned. The nature of stake is not limited to financial or equity stake, it went up to market stake possessed by influencers. For effective

management plan, this analysis must be pushed forward to examine the precise expectations of stakeholders and to what extent these goals and needs are being met by the organization.

- Step 03- Determine Performance Gaps: This step involves assessing each stakeholder's expectations, needs, and/or demands on various issues and comparing them to an organization's behavior on these dimensions to measure the performance gap. Once gaps are identified, strategies can be devised to reduce these gaps and therefore minimize the potential conflict that could result in disruptive and costly stakeholder actions against the firm.
- Step 04- Prioritize Stakeholder Demands: This step is focused on ways to sort out which stakeholder groups will command or deserve managerial attention at different points in time, i.e., perceived as having priority status. Stakeholder demands can be prioritized by using salience model proposed by Mitchell, Agle & Wood. Furthermore, author explained how stakeholders are considered to be strategically important to the extent that they can influence the amount of environmental uncertainty faced by the firm.
- Step 05- Develop Organizational Responses: After successfully identifying the gap and prioritizing stakeholders, organizations need to develop responses such as policies, strategies etc. to minimize advisal effects.
- Step 06- Monitoring and Control: Stakeholder positions on issues likely to change. Hence, continuous monitoring of stakeholder's expectation let the organization to catch off-guard or no relevant stakeholder strategies. Social and environmental audits should be employed as part of the monitoring and control process.

2.6 Colle, S. D. (2005). A stakeholder management model for ethical decision-making. *International Journal of Management and Decision Making*.

The 10-step model to design and implement an effective stakeholder management approach is described as follows

- Identify and map all stakeholders: The starting point for the organization is to identify all its stakeholders, including both stakeholders in the

strict sense (those who have an interest at stake because they have made specific investments in the firm in the form of human, financial capital or social capital) and stakeholders in the broad sense (those individuals or groups whose interest is involved because they undergo the 'external effects', positive or negative, of corporate activity).

- Assess issues at stake: The legitimate claims of each stakeholder groups should be identified and assessed, by understanding the nature of their relationship with the firm
- Identify corporate values and existing commitments: Stakeholder management is a way for the corporation to define its own stance with respect to conflicting stakeholder claims. To reach this aim, it is important that the management demonstrate that corporate values and existing commitments underpin the whole stakeholder engagement process.
- Priority Issues: At this stage, the 'strategic' element of stakeholder management for ethical decision making comes into place: the management has to decide on the base of which criteria stakeholder claims should be prioritized, in order to provide the best response to the most urgent issues at stake. The author suggested Power/Interest grid for prioritizing stakeholder's claims.
- Review/Develop Policies: The author pointed to findings of Wheeler and Sillanpaa, which involves different policies for different stakeholders.
- Set Objectives: As with any other management process, stakeholder engagement is objectives that are more effective if specific are identified in relation to the stakeholder issues that are at stake in a particular decision-making process of the organisation. When initiating the dialogue with a specific stakeholder group, the management should clarify from the beginning what the intended objectives of the dialogue are.
- Measuring Performance: The corporation should be able to tell how well its stakeholder management processes are going, which of course depends on what objectives the firm has set for a specific stakeholder engagement process. In general, measures in this area relate on the one side to the quality of information that the stakeholder consultation delivers to the management i.e. how

useful it is for the decision-making process involved – and on the other, on the increase of stakeholder trust and confidence towards the firm generated by the process.

- Communicate and report: A crucial element for achieving the benefits of stakeholder management is communication and reporting activities, both internally, to provide the management with useful information on stakeholder views and interests, and externally, to demonstrate to stakeholders that the firm ‘walks the talk’.
- Review commitments and policies: The initial position of the organisation on a specific issue that has been the focus of a stakeholder consultation process should be reviewed because of the views expressed by stakeholders during the consultation. Similarly, corporate policies should be reviewed to develop the most appropriate company response to issues raised by the stakeholders during the consultation process.
- Continuous engagement: This final step of the model is an element concerning the whole process of stakeholder management. It refers in fact to the need of engaging with stakeholders as an ongoing approach, to allow managers to consider stakeholder views in every decision-making process.

III. RESEARCH METHODOLOGY

3.1 Chapter Overview:

This chapter defines the research methodology that used to achieve the aim and objectives as defined in the above chapter. It starts by giving the research process design and then detailed explanation for phases of the research in order to clarify the process adopted for this study.

3.2 Research Process Overview:

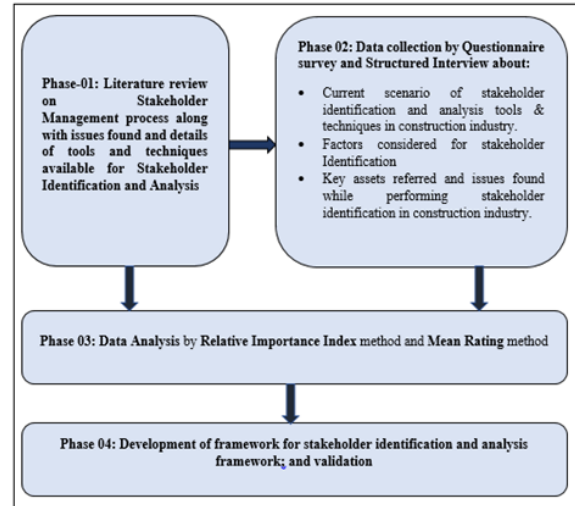


Fig 3. 1: Research Process Design

The first phase of this research is to review previous studies on Stakeholder management and challenges encountered in order to identify research gaps and define the focus of the study. The second stage is to gather detailed insights on current practices of stakeholder identification and analysis methods along with some additional information. The third phase of the study intended to analyse the data by using Relative Importance Index method and descriptive statistics. The fourth stage is to develop a framework for stakeholder identification and analysis based on the outcome of the preceding stages and validating the framework.

3.3 Literature Review:

The research process commenced with literature review on stakeholder management in construction. Key among the outcome of the literature review include proposed stakeholder management process and challenges in applying the same in construction field, stakeholder identification process, tools and techniques available for stakeholder identification and analysis, factors taken into account for stakeholder identification, knowledge assets referred for stakeholder identification and analysis. Based on these the research focus is set and a questionnaire designed for data collection to address the succeeding objectives of the study.

3.4 Data Collection:

The data collection techniques adopted are Questionnaire survey and Semi-structure Interview among experienced construction professionals practicing in the Indian construction industry.

3.4.1 Semi-structured Interview:

The purpose of the semi-structured interview is to learn more about stakeholder identification and analysis in construction industry. This interview is consisting of 12 questions, three of which are binary questions and the rest are open-ended questions.

These questions are designed aimed to gather data on sub-activities performed in stakeholder identification and analysis; major sources of information used for stakeholder identification and analysis; issues encountered by professionals performing stakeholder identification and analysis methods; and factors need to be considered before doing stakeholder identification. Interviewees must have a minimum of 5 years of professional experience and a thorough understanding of stakeholder management. During this phase, eight interviews conducted online and over the phone.

3.4.2 Questionnaire Survey:

This survey is designed to collect data for this study and it is utilised a close ended questionnaire with an opportunity provided for respondents to make comment freely. To elicit responses from construction professionals, a questionnaire survey is designed in four sections which covers research goals. The first section collected background information of the respondents; the second section gathered information about the relative importance of stakeholder identification methods when used in the construction field; the third section collected data on preferred stakeholder classification methods; and the fourth section collected information about the performance of stakeholder analysis tools and techniques in construction field. The five-point Likert's scale used for rating the methods and techniques.

- **Content Validity Test:** A content validity test is undertaken after the questionnaire developed to check that the questionnaire's comprehension is proper, and a pilot survey is conducted with the help of experienced construction professionals.

The survey is sent out for data collection after the appropriate revisions were made.

- **Sampling Method and Sample Size Determination:** A minimum of two years relevant professional experience is set for sampling the respondents to ensure they have participated in some projects. For the purpose of sampling, purposive sampling i.e., a non-parametric method of sampling is selected among all sampling methods. The required sample size is calculated by using equation 01.

$$n = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \frac{z^2 \times p(1-p)}{e^2 N}}$$

Where,

n = Sample size,

N = Population size

e = Margin of error (Percentage of decimal form)

z = z-score (Depends on desired confidence level)

The sample size calculated by taking population size of 70, confidence limit 95% and margin of error 5% is 60. A sum of 83 responses is collected and only 72 responses are considered for further analysis.

3.5 Data Analysis:

3.5.1 Reliability Analysis:

Reliability analysis is crucial for studying properties of measurement scales. It provides information associated with consistency of test results, if measurements are repetitive. Cronbach's alpha value is employed for checking internal consistency of the information within the groups and also represents reliability of scale. Higher value of alpha signifies greater internal consistency of knowledge among the groups. As a thumb rule, $\alpha > 0.7$ is appropriate for further analysis.

3.5.2 Mean rating and RII analysis:

For analysing the data, mean rating and relative importance index method are adopted. Mean rating method uses the numerical values assigned to factors or propositions to calculate their mean scores by all the respondents of the survey. This statistical technique is used to analyse respondents' rating in different questions included in the questionnaire.

Relative Importance Index (RII) is used to determine the relative significance of quality factors involved. The points of Likert scale used is equal to the value of

W, weighting given to each factor by the respondents. The RII value is determined by adopting the following formula;

$$\sum_{n=1}^{n=i} \frac{W_i X_i}{AN}$$

Where, W= weight assigned by respondents;
 X = frequency of each weight;
 A = highest weight; and
 N = number of respondents

3.6 Framework Development and Validation:

The framework development based on the outcome of the survey data analysis. The results of the data analysis combined with important findings from literature review to form the components and structure of the framework. This conceptual framework developed based on entity relationship diagram (ERD) and explained relationship between sub activities performed in stakeholder identification and analysis. For validating the framework, the developed framework compared with existing frameworks on basis of some significant parameters.

3.7 Questionnaire Survey Analysis:

A questionnaire survey is conducted to collect information about performance of stakeholder identification methods and stakeholder analysis tools and techniques in construction industry of India. The outcome after analysing data collected from questionnaire survey is listed below;

3.7.1 Data Reliability Test:

Cronbach's alpha test was conducted by using SPSS version 26 software to test reliability of data. The α test is performed on data collected for 4 stakeholder identification methods, 4 stakeholder classification system and 3 stakeholder analysis methods. The α value obtained is 0.712, which is greater than 0.7, therefore the data is considered for further analysis.

3.7.2 Relative Importance Index Analysis:

In order find most important stakeholder identification and analysis methods, RII analysis is carried out to find rank of each stakeholder identification method, classification system and analysis techniques. Mean rating method is also carried out to obtain mean and standard deviation of the same. SPSS version 26 software is used to perform statistical analysis. If RII

values of Stakeholder identification and analysis methods become identical, then the methods with less standard deviation value shall be ranked higher. RII values are obtained by calculated manually by using the equation 02.

3.7.3 RII Analysis of Stakeholder Identification Methods:

In first section, respondents are asked to rate stakeholder identification methods in order of importance. Among four methods, brainstorming in-group meeting got the first rank with RII value of 0.88 and mean of 4.41. Subsequently oral and written accounts oof major events and interview with experts are ranked in second and third position with RII of 0.86 and 0.85, and mean value of 4.27 and 4.23 respectively. Self-selection for stakeholder identification got the last rank with RII of 0.74 and mean of 3.7 based on rating of respondents.

3.7.4 RII Analysis of Stakeholder Classification Systems:

In the further section respondents rate stakeholder classification system based on their preference in work field. After analysing the data, classification based on stakeholder roles becomes the preferred stakeholder classification method among other four methods by having RII 0.76 and mean value 3.77. Thereafter, classification system such as primary and secondary stakeholder; and external and internal stakeholder got second and third rank with RII 0.74 and 0.72; and mean value 3.68 and 3.59 respectively.

3.7.5 RII Analysis of Stakeholder Analysis Methods:

Respondents are given chance to rank most popular stakeholder analysis methods such as power-interest grid, stakeholder cube and stakeholder salience model based on their level of performance for generating appropriate strategies. Stakeholder salience model got the first rank as the appropriate technique to analyse stakeholders with RII 0.69 and mean value 3.44.

Table 3.2: Relative Importance Index Analysis

Sl. No	Activity	Methods and Techniques	RII Values	Mean	Std. Deviation	Rank
01	Stakeholder Identification	Self-selection	0.74	3.70	1.114	4
02		Interview with Experts	0.85	4.23	0.755	3
03		Brainstorming in group meeting	0.88	4.41	0.814	1
04		Oral and written accounts of major events	0.86	4.27	0.768	2
05	Stakeholder Classification	Primary and secondary stakeholder	0.74	3.68	1.235	2
06		Internal and External stakeholder	0.72	3.59	1.091	3
07		Classification by stakeholder roles	0.76	3.77	1.1	1
08		Classification by functions	0.61	3.03	1.13	4
09	Stakeholder Analysis	Power-Interest Grid	0.64	3.22	1.181	3
10		Stakeholder Cube	0.65	3.27	0.976	2
11		Stakeholder salience Model	0.69	3.44	1.118	1

CONCLUSION

1. Research showed that there is a poor record of stakeholder management in the construction industry and the significant challenges associated with it are inadequate/inefficient stakeholder identification; difficulty in discovering potential impact and influence of stakeholders on the project and its outcomes; poor stakeholder analysis.
2. The framework developed in this report focused on improving stakeholder management in construction projects by developing a comprehensive framework for stakeholder identification and analysis, and considering the challenges found.
3. The literature review helped in identifying definition of stakeholder and construction project stakeholders; stakeholder management process and models; details of stakeholder identification methods and stakeholder analysis techniques as well as the preferred knowledge assets and factors that taken into account.
4. The literature review identified four stakeholder management models and two stakeholder identification frameworks.

5. A semi-structured interview conducted to investigate the current scenario of stakeholder identification and analysis in the construction industry.
6. Professionals have demonstrated the sub-activities performed in stakeholder identification and analysis along with some additional knowledge assets to referred and factors considered for effective stakeholder management.
7. In addition to this, a questionnaire survey conducted among respondents of construction industry to find out the preferences of stakeholder identification methods, classification systems and analysis techniques. Respondents chose brainstorming in-group meeting as better stakeholder identification method over other methods. Furthermore, professionals suggested classifying stakeholders based on their roles and stakeholder salience model to analyse the stakeholders.
8. By reviewing the results of literature, semi-structured interviews and questionnaire surveys, a systematic framework developed. The new framework considered factors such as contractual factors, management factors, project environmental factors and government regulatory factors when identifying stakeholders and recommended to refer knowledge assets such as project documents and organisational process assets.
9. To validate the framework, it was compared with prior frameworks proposed by researchers on the basis of important parameters such as objective of the research, method of stakeholder identification, classification system adapted, attributes considered, Stakeholder analysis technique used, factors taken into account for stakeholder identification, knowledge assets referred, strengths and limitations.
10. This research attempted to develop a framework to value every stakeholder and to overcome the constraints found in prior frameworks.

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