FACTORS AFFECTING STAKEHOLDER'S MANAGEMENT IN CONSTRUCTION OF HYDROPOWER PROJECTS OF PAKISTAN

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Abstract- Hydropower projects are usually not completed within stipulated time due to several factors like size of project, tough working environment of project locality, poor access to project site, land settlement issues, stakeholders issues, improper planning of contractor and lack of experience and competency. Pakistan is severely suffering from energy crisis dilemma. Keeping the importance of hydropower sector in current Pakistani environments, significance of stakeholder's management in hydropower projects and lack of research in the said field, this research study was carried out. This research is aimed at exploring the critical success factors for stakeholder's management in hydropower projects in Pakistan. Factors affecting needs and expectations of stakeholders in hydropower projects of Pakistan were also investigated and ranked. Critical factors for this research have been extracted from literature review regarding this topic in other parts of the world. Those factors were analyzed in environment of Pakistan. Questionnaire survey methodology has been utilized for collection of data or response from professionals of construction industry and particularly hydropower projects of Pakistan. Two sets of questionnaires were developed to analyze factors affecting needs and expectations of stakeholders and critical success factors for stakeholder's management in hydropower projects of Pakistan. Critical factors were ranked using relative index value. Top three critical success factors were found to be "Proper coordination among stake holders", "Identifying and comprehending needs of stake holders", and "Transparency of information among stake holders Based on the study results and analysis, appropriate conclusions were proffered for successful stakeholder's management in construction industry in general and hydropower projects of Pakistan in particular.

RESEARCH OBJECTIVES

- To ascertain current status of stakeholders management in hydropower projects of Pakistan.
- To identify and analyze the factors affecting needs and expectations of stakeholders in hydropower project.
- Identify and rank critical success factors for stakeholder's management in hydropower projects of Pakistan.

I. INTRODUCTION

Role of Construction industry is extremely vital for economic development of any nation or country. This industry provide employment opportunities, promote skills in a community, enhance standard of life, facilitates the community by providing attractive life style, technology transfer from other nations. This industry earns lots of revenue. It helps in increasing GDP of a country. In construction industry of Pakistan stakeholder's management is now gaining attention and improvement is observed day by day. The economic growth of any nation can be measured by infrastructure in their country. Construction industry utilize huge amount of investment which is usually provided by investors/donors. Stakeholders are the backbone of a project and without them a project can never come into existence. Versatility is burgeoning in this industry regarding stakeholders management, meeting their needs and expectations, key performance indicators for successful stakeholders management, analysis of stakeholders, recognition of stakeholders and coordination among stakeholders.

In Construction industry of Pakistan and especially in hydropower sector, stakeholders management has been ignored previously; but now, after the appearance of some critical issues, the importance of stakeholders management is being realized in this sector in particular and construction industry in general. It has been revealed from literature that no detailed research has been undertaken on this field in Pakistan. The level of success in carrying out construction project development heavily depends on the quality of the managerial, financial, technical and organizational performance of the respective parties.

Every stakeholder in a construction project has some interest and therefore needs and expectations of every stakeholder need to be understood. Stakeholder's management has got a pivotal role in implementation of a construction project successfully. Stakeholder's management is not an easy task and it requires proper attention for successful implementation of hydropower project.

II. LITERATURE REVIEW

Stakeholders are preferably considered as people, groups, or institutions, which are influenced by a project in positive way or negative or those which impact the end product of a project. The basic definition explains that stakeholder is an individual or party that influences the objectives of a project. Hence stakeholders are all relevant groups of people who are important for party as their input is vital for the party's success.

To identifying the essentials of stakeholder management, Critical Success Factors (CSFs) approach is used in this study. CSFs can be defined as "areas, in which results, if they are satisfactory, will ensure successful competitive performance for the organization". It has been explained that critical areas of managerial planning and action that must be practiced in order to achieve effectiveness.

Managing stakeholders with social responsibilities, "assessing the stakeholders' needs and constraints to the project", and "communicating with stakeholders properly and frequently" were the three main factors affecting Stakeholder's management in construction projects. These are the factors which are of prime importance for successful execution of a project. Different scholars have extracted factors which are critical for a construction project success. Project has different phases through which it goes till completion. Success factors are extracted from past experience, articles regarding critical success factors for stakeholder's management and books written by well learned scholars.

Detailed literature review has revealed that there are several critical success factors to be recognized as vital for successful implementation of stakeholder's management.

Author grouped critical success factors under seven main categories: project management factors, procurement-related factors, client-related factors, design team related factors, contractor-related factors, project manager related factors, business and work environment-related factors.

It was identified that 2 aspects of improvements for managing stakeholders, which are: "communication with stakeholders and setting common goals, objectives and project priorities.

It was considered by the authors that "the long term performance of any construction and its ability to satisfy stakeholders" depends on decisions made and the care taken by decision-makers in stakeholder communication.

Satisfying the needs of the client, users and others stakeholders is one of the criteria for project success, and failure to manage their needs and expectations may contribute to project failure.

The legitimate and most imperative stakeholders are Client, Consultant and Contractor. These three stakeholders guarantee delivering of a successful project. Endeavors should be undertaken to strengthen coordination among these stakeholders and summarize the whole project to a successful completion. The problem is that every stakeholder is more eager to maximize his benefits without caring for other stakeholders which often leads to conflicts.

It was also that for improvement of stakeholders' management the significant factors are project priorities, communication, common goals, aims and objectives. These factors are to be planned before initiating a project. sometimes project coalition is really effective because it helps firms in private sector to frame the strategy and mitigate conflicts.

The review of the literature recommended that there are numerous CSFs that can be recognized as being critical to the flourishing implementation of stakeholder management. 28 Critical Success factors are shown in Table 1:

Sr.No.	Description of Factor
1	Transparency of information among all stakeholders
2	Identifying needs of stakeholders
3	Promoting healthy and frank environment and relationship among stakeholders
4	Declaring occasion and venue of stakeholders meeting
5	Proper Coordination among stakeholders
6	Facilitation of Stakeholders
7	Foreseeing issues expected to be arisen later.
8	Recognizing expectations of stakeholders
9	Stakeholders coordination
10	Defining shared/combined objectives of a project.
11	Identifying a committee to be established in case of any dispute/conflict.
12	Identification of stakeholders
13	Identification of communication channel to be adopted by each stakeholder.
14	Devising strategy to manage stakeholder's responsibilities.
15	Frequent communication among stakeholders
16	Building trust among stakeholders
17	Obtaining confidence of stake holders while giving any approval of change
18	Involvement of relevant stakeholders in planning phase of project.
19	Developing a framework which describes the relationships among stakeholders
20	Encouraging stakeholders
21	Forecasting the consequence of mismanagement of stakeholders.
22	Ensuring Bonds/Bank guarantees from stakeholders which can assure that no
23	Rewards for best performance
24	Managing proper negotiations among stakeholders in case of any disagreement.
25	Assessment of previous endeavors made by stakeholders.
26	Satisfaction of stakeholders at the activities of project.
27	Assessment of social and legal responsibilities of stakeholders.
28	Strong relationship among stakeholders

III. METHODOLOGY

Measures:
Several factors having direct and indirect effect on the Stakeholder's management in construction of Hydropower projects were identified from literature research. Those factors were then filtered to 20 most relevant factors through interviews held with the experienced professionals having construction project management experience of over 20 years. The filtered factors highly influence the Stakeholder's management in construction of Hydropower projects.

Development of questionnaire and data collection:

The identified factors were transformed into research questionnaire to gather the data from Client, Consultant and Contractor. DifferentHydropower projects were visited for the purpose of onsite feed-back and to get the required data from the professional engineers working at different projects. Questionnaires were sent to different professional engineers working with construction firms by post, through email and through engineers working on different Hydropower

Projects. The respondents were asked to encircle the appropriate item according to their projects. Quantitative data analysis of 63 responses of the professionals engaged in construction projects for 20 different factors were analyzed on Likert's scale. "1" described as strongly disagrees, whereas "5" strongly agree.

Data Analysis Technique:

Following tests were carried out for data analysis:

- Cronbach's alpha
- Relative Importance Index

IV. RESULTS AND DISCUSSIONS

Cronbach's alpha:
For internal reliability, Cronbach's alpha was calculated for each scale. Cronbach's alpha for 63 samples was collected as 0.734. Thus the results indicate internal construct consistency and reliability of the data. Cronbach's alpha value range from 0 to 1 with 0.75 being considered the most sensible value.
RII Ranking Results:

The data included 20 factors that were to be analyzed. Strength of index familiarity, frequencies and agreements were computed through the technique of Relative Importance index (RII). Ranking carried out through the Likert's Scale and top five factors were identified.

$$RII = \frac{\sum PiUi}{N(n)} \quad (1)$$

Where N is the total number of respondents for a particular factor. Pi is a constant showing the weight of the ith response, Ui is the frequency of ith response, i is response category index where n = highest score of material managing factors order. The importance of the indices and overall ranking the factors calculated are shown in table 2.

Table2: RII and Ranking of factors affecting Stakeholder's Management

Rank	Description of Factor	RII
1	Proper Coordination among stakeholders	**0.79**
2	Identifying and understanding needs of stakeholders	**0.75**
3	Transparency of information among all stakeholders.	**0.702**
4	Promoting healthy and frank environment and relationship among stakeholders	**0.682**
5	Foreseeing issues expected to be arisen later.	**0.66**
6	Obtaining consent of stake holders while giving any approval of change order.	**0.63**
7	Involvement of relevant stakeholders in planning phase of project.	**0.63**
8	Assessment of previous endeavors made by stakeholders.	**0.59**
9	Satisfaction of stakeholders at the activities of project.	**0.57**
10	Forecasting the consequence of mismanagement of stakeholders	**0.55**
11	Recognizing/comprehending expectations of stakeholders.	**0.53**
12	Identification of communication channel to be adopted by each stakeholder.	**0.52**
13	Devising strategy to manage stakeholder's responsibilities.	**0.51**
14	Assessment of social and legal responsibilities of stakeholders.	**0.50**
15	Defining shared/combined objectives of a project.	**0.50**
16	Managing proper negotiations among stakeholders in case of any conflict.	**0.48**
17	Identifying a committee to be established in case of any dispute/conflict.	**0.47**
18	Declaring occasion and venue of stakeholders meeting	**0.45**
19	Ensuring Bonds/Bank guarantees from stakeholders who can assure that no violation of the declared rules will be made.	**0.43**
20	Developing a framework which describes the relationships among stakeholders.	**0.40**

The three most important factors identified are discussed below:

(i) Proper Coordination among Stakeholders

The above mentioned factor has got highest value for relative index (0.79) and ranked 1st in the priority factors list. All stakeholders should frequently arrange meeting/gatherings and strategy should be formed for working together. Stakeholders should maintain

cooperative environment among each other and in this manner conflicts will be mitigated. The example referred in case study was about lack of coordination between Client and Contractor that is why issues like extension of time to contractor, cost overrun, escalations and revenue loss occurred to client and project got delayed.

Respondents have given highest ranking to this factor due to its utmost importance. Professionals in construction industry and especially in hydropower projects have got the opinion that coordination among stakeholders should be kept at priority basis. This factor is recommended for stakeholders in hydropower projects to keep better coordination among each other to avoid conflicts.

(ii) Identifying and Comprehending Needs of Stakeholders

This factor has prime importance and base for successful stakeholder's management. This factor got 0.75 value of relative index and ranked as 2nd in the priority list of factors.

Importance of this factor has been clarified from issue arise due to mismanagement of needs of stakeholders. Client didn't understand to fulfill needs of contractor due to which issue of delay in project occurred. Client was compelled to award extension of time to contractor because client had not fulfilled their responsibility. In addition client has to pay escalation to the contractor for the extended time.

If the project would have been completed then revenue could have been earned in the 16 months delay, this loss has also been faced by client. This factor is ranked 2nd and recommended to stakeholders in hydropower projects to keep in mind while implementing a successful project.

(iii) Transparency of Information among Stakeholders

This factor got 3rd highest relative index value of 0.70 and hence ranked as 3rd in the list. Oral decisions are sometimes made at site and later not acceptable because of any written proof. Stakeholders before working on an activity which is not included in scope should take written approval from concerned authority to avoid disputes at later stages. Sometimes in hurry employer/consultant direct contractor to execute a particular work and when contractor submits his claim then either employer/consultant does not entertain that claim by quoting a clause that the said work was deemed to be included in the contract or contractor submits claim for such activities which are not clear in contract and concurrence from employer/consultant is not obtained. Both these cases lead to a dispute because of non-concurrence from stakeholders. This factor is of really critical in nature and all the stakeholders of hydropower projects should emphasize on transparency of information among each other. Ambiguities/discrepancies should be clarified whenever considered necessary.

V. RESCOMMENDATIONS

- A communication strategy should be developed that would enhance information sharing, increase knowledge, build support for the implementation of project and address new and existing concerns among other related government departments, and various institutions involved. Stakeholders should maintain proper coordination, team work and cooperative environment among each other and in this manner conflicts will be mitigated.
- Transparency of information among stakeholders should be maintained between Client, Consultant and Contractor which are the most critical stakeholders. Healthy and Frank environment among stakeholders should be developed to avoid conflicts
- Compensation should be given to stakeholders affected community in the shape of money or land or some other form to ensure smooth flow of the project. Trainings and workshops should be conducted for educating stakeholders regarding needs and expectations of stakeholders. Trust among stakeholders should be built for maintaining good stakeholder relationships which will help in implementation of a successful project.
- Stakeholders should be vigilant, sharp and their foreseeing power should be improved. Negotiation among stakeholders should be made in most appropriate way to involve affected stakeholders and unite them on a plate form to listen their grievances and then convince them with positive outcome.

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