

Amelioration of Decision Making

Harsh Thakur, M. Balasubramanian

Abstract: Decision making is a perusal focus and an endeavour to stipulate it overall. The course of events throughout which the choice maker has to proffer with the necessity to settle with one possibility out of multiple accessible choices is termed "Decision making". For any investment project effective decision making is imperative. The total work of the study is based on the questionnaire survey, which individuals at the highest management level will respond to from Construction sector. This paper provides imperative information and knowledge about the process of decision-making that helps to understand the various problems and difficulties that arise during decision-making. Results of the study narrates the order in which different technical factors influence decision-making.

Keywords: Decision Making, Questionnaire Survey, Construction Sector, Factors Affecting.

I. INTRODUCTION

Decision making is debatably the most important component of the work of a manager. Decision making is a sagacious, contemplative, objective action, starting with the evolution of a decision plan for action and the execution and evaluation of results. Decision making can also be outlined as exploitation of important thinking skills to optimize a choice. The decision making process is more complex and nuanced than cogent models simply accept. Decision making plays a key role in updating the strategic paradigm of the organization. Decision making is a common piece of unstated and undisputed knowledge. The iniquitousness of the term 'decision' makes it look common. Decisions are often laborious to set forth and aren't as diagnosable and discernible as assumed. Not all choices are discretely noticeable, there should always be a clear point and a defined area for decision. Decision making is incumbent for any investment project throughout the entire development cycle. The pre-investment part needs selections with relevancy practicableness, investment location or design selection. In the implementation phase, decisions are made to address technical and other work related problems and to optimize the use of accessible resources. Decisions made in the operational phase relate to possible restoration, renovation or extension work. It ought to be unbroken in mind that nearly every decision has both desirable and unwanted effects. A significant contributor to the national economy of our country is the construction industry which is a complex, and unpredictable business.

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Construction Industry is a field in which making decisions suitably can mean the polarity between failure and success. Moreover, most of the operations belonging to this sector hinder

management as a large number of conflicting aspects are involved. To avoid any serious buffering in schedule decision making skills are required for a project manager in every step. The very high pressure to make the right decision makes it more challenging. Not only making the right decisions but also making decisions in a timely manner economically is important in construction sector. Decision making is a crucial factor in achieving success in any field, particularly in an area that requires the managing of huge amount of information and knowledge such as Construction sector and since decision-making processes determine the efficiency and effectiveness of the project, the way in which decision makers takes decision is important.

A. Scope and Need of Study

Construction industry which requires managing of huge amount of information and knowledge, decision making is a crucial factor in achieving success. Failure and success of any firm largely depends upon the decisions taken by them. Most of the time making decision is not an easy task because of the different problems related to it and sometimes best possible solution is also unknown. Thus, there is a need to have a study which deals with the problems coming while decision making. This research work provides a meticulous knowledge and information about the decision making process which will help to understand the different problems and difficulties that arises during decision making and factors influencing the decision making in construction industry.

II. METHODOLOGY

The work in this study is very extensive. It is both qualitative as well as quantitative. For this reason it was important to choose a method in which the work could be done in a systematic way so that there is no lack of certainty, crash of thoughts and work can be done with a clear mind-set and approach. The total work of the study relies on the questionnaire survey, response of which will be gathered from the top management level people working in construction industry. Figure 1 describes the procedure followed in the whole study. In the very beginning, a study of previous research works associated to decision making is carried out from which the major technical factors affecting the decision making is sorted out. The questionnaire survey here is designed to know the major technical factors influencing the decision making in construction industry. There are two parts of a questionnaire survey.

One part is composed of general information such as name of respondent, age, company working in, current project supervising, designation of the respondent, etc. The second part is composed of the factors influencing the decision making for evaluation purpose. For the survey Likert Scale of 1-5 was used, which is a psychometric response scale and respondents were asked to mark the relative effectiveness. For taking response, first the respondents were made clear about the idea of study, what exactly is needed from them and the main focus of this study. If any respondent had any doubt, the matter was made clear to them then and there itself. Only when the respondents were clear with the picture of aim of this study, the questionnaire was distributed to them.

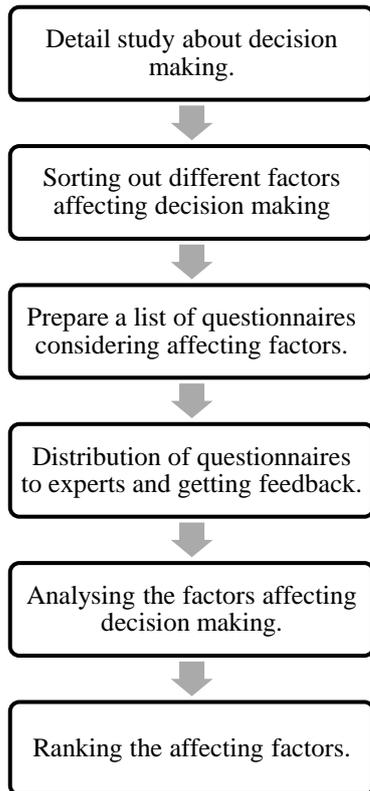


Fig 1: Flowchart of Methodology

III. FACTORS INFLUENCING DECISION MAKING

After studying previous research works it is easily concluded that there are many factors that influence the decision making in construction industry. The extent to which they affect may vary from project to project, place to place, work to work, etc. These factors are multi faced, i.e. having dual nature. This is because they can affect decision making in both positive and negative way. Most of the time these factors influencing decision making directly affect the profitability of the company or affects the royalty because any hindrance or delay in decision making will cause increased duration of the scheduled project work, which in turn will increase the cost, thereby reducing the profit and decreasing royalty.

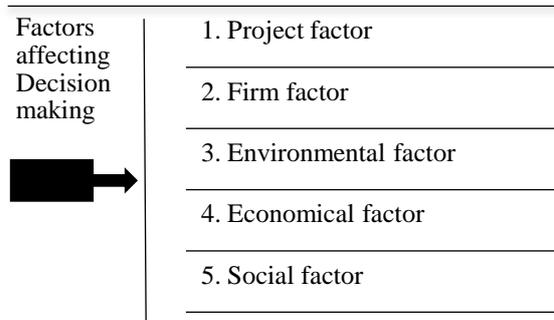


Fig 2: Technical Factors affecting Decision Making in Construction Industry

A. Project Factor

Those factors which influence the decision making with respect to the general constraints of the project is termed as “Project Factor”. Constraints related to project factor are project size, experience in similar project, project type, site condition, technological difficulty of project, project location, duration of project, availability of other projects, flexibility of Project.

B. Firm Factor

Those factors which influence the decision making with respect to the capability, quality and productivity of the firm/company is termed as “Firm Factor”. Constraints related to firm factor are capital investment, need for work, risk involved in investment, project’s possible contribution to breaking into new markets, creating change, current workload, value of liquidated damages, portion sub-contracted to others, organisation policies and procedures.

C. Environmental Factor

In any company there are certain work and procedures that has some relation with our environment. These work affect the decision making and are termed as “Environmental Factor”. Constraints related to environmental factor are degree of hazard/safety, pollution related to project, waste related to project, waste treatment, waste disposal, uncertainty due to weather conditions.

D. Economic Factor

For any investment project people will definitely work for the maximum profit that they can earn from the work that they do. This affects the decision making process and are termed as “Economic Factor”. Constraints related to economic factor are financial capability of the client, profitability, risk involved in investment, value of liquidated damages, company’s economic strength, external economy, local labour cost, maintenance cost.

E. Social Factor

Very firm works in a certain society or area which have local people involved in it, who already have their culture and values. All this things affect the decision making process and are termed as “Social Factor”. Constraints related to social factor are public disorder, local body

compulsions, objectives of local authorities, historic site, endangered species present, unanticipated change in priorities.

IV. DESCRIPTION OF ANALYSIS METHOD

The factors considered were analysed in a systematic so that there is no scope of error. ANOVA Test was performed in order to know whether the factors considered had any difference as a whole in the way they affect decision making. ANOVA Test is omnibus in nature, i.e., it considers all the means of samples at once and can be termed as ‘For all Test’. Result of ANOVA Test indicates that there are groups which differ from each other, but it does not highlight exactly which groups differ. To have a deeper knowledge of exactly which groups differ, Tukey Test was performed to see pairwise difference. Tukey Test is also known as ‘Honest Significance Difference Test’ because it ascertains the difference between various sample groups. Formula used in Tukey Test is outlined in equation 1. After knowing the polarity between different factors, ranking was given using Relative Importance Index criteria, formula used in it is outlined in equation 2.

$$Q = \frac{(x_a - x_b)}{\sqrt{\frac{S}{n}}}, \quad \text{Eq 1..}$$

where, x_a and x_b is the difference between the pair of means, S is the Mean Square of Group, and, n is the number of group.

$$RII = \frac{\sum W}{n \times A}, \quad \text{Eq 2..}$$

where, W is the weighting given to each factor, A is the highest weight (i.e. 5 in this case), &, n is the total number of respondents (i.e. 200 in this case),

V. RESULTS & DISCUSSION

Table 1 describes the results obtained from ANOVA Test. The p-value corresponding to the F-statistic of one-way ANOVA is lower than 0.05, suggesting that there is significant difference between the factors.

Table 1: ANOVA Test Results

Source	Sum of squares	Degrees of freedom	Mean square	F statistic	p-value
Groups	10.1788	4	2.5447	3.9340	0.0097

Error	22.6397	35	0.6468		
Total	32.8184	39			

Table 2 narrates the results of Tukey Test. The Q-value of Tukey HSD Test for each pair of factors is greater than the critical value, $Q_{critical} = 4.0659$ (for $\alpha=0.05$, $k=5$, $v=35$), suggesting that there is a significant difference between each of the factors.

Table 2: Tukey Test Results

Pair	Tukey Q-value	Tukey Inference
Project vs Environmental	4.7247	Significant
Project vs Firm	4.4849	Significant
Project vs Economic	4.5217	Significant
Project vs Social	4.4962	Significant
Environmental vs Firm	4.1584	Significant
Environmental vs Economic	4.3196	Significant
Environmental vs Social	4.2370	Significant
Firm vs Economic	5.0066	Significant
Firm vs Social	4.9498	Significant
Economic vs Social	4.7334	Significant

Table 3 narrates the results obtained from RII ranking method which states that out of all the factors ‘Economic Factor’ affects the decision making the most in construction industry, whereas, ‘Social Factor’ is the least affecting one.

Table 3: Ranking Of Factors

DESCRIPTION	RII	RANK
Project Factor	0.3139	2
Environment Factor	0.2352	4
Firm Factor	0.3124	3
Economic Factor	0.4177	1
Social Factor	0.2198	5

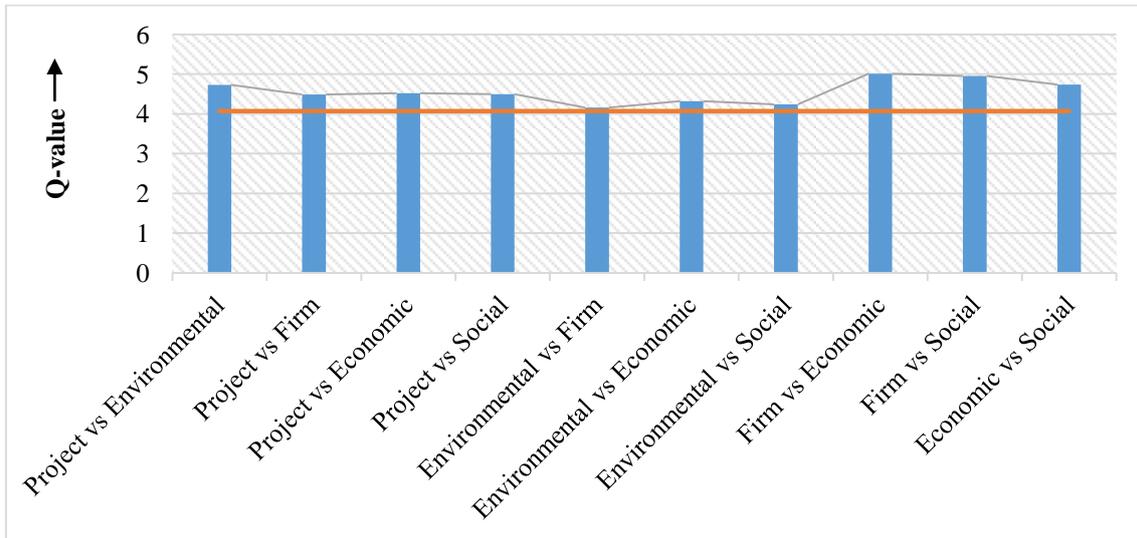


Fig 2: Graphical Representation of Tukey Test Result

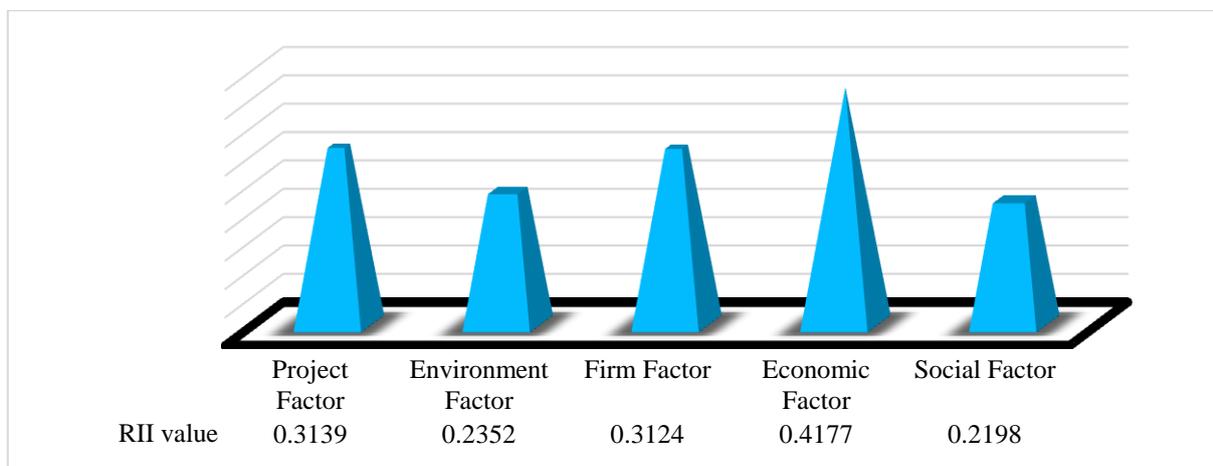


Fig 3: Graphical Presentation of RII Results

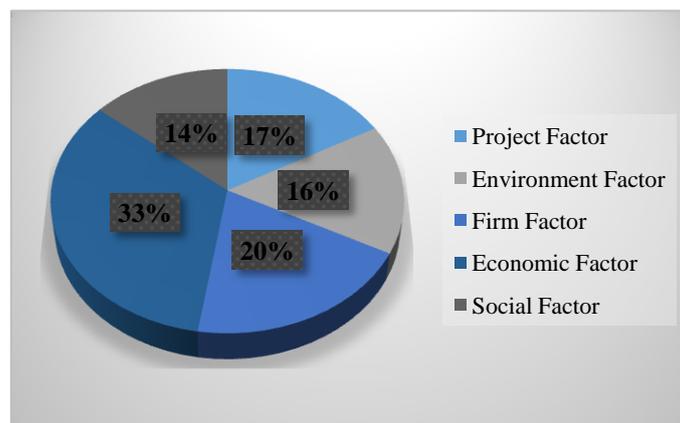


Fig 4: Effect of different Factors on Decision Making (in %)

VI. CONCLUSION

Good decisions can be taken when the effect of various available options is well known when implemented. In a sector like construction industry which is carrying colossal data and information it becomes very difficult to take decision, thereby hindering managerial work. The main aim of this study was to provide knowledge to the decision makers about the factors most affecting decision making in

our construction industry which will in turn make it easy for them to take quality decisions, since bad decisions can collapse the whole business. According to the study following points are recommended for taking supreme decisions:

- 1) An in-depth knowledge should be gained regarding the economic aspect of things related to decision such as, profitability, risk involved in investment, company's economic strength, external economy, etc., before taking decisions.
- 2) All the facets of project such as project size, type & location, site condition, duration of project, flexibility of project, etc., should be appositely studied.
- 3) Outlook of expertise having great amount of experience in construction field is always recommended before taking decisions because there is always uncertainty due to unknown conditions and scenarios.
- 4) It is important for an individual to keep in mind its company's need of work, workload, organisational policies & procedures and have comprehensive notion about the company while taking decisions.
- 5) One must do an extensive research of the surrounding environment about degree of hazard/safety, pollution,

- waste treatment, waste disposal, etc., while taking decisions because any damage to environment may bring severe unwanted circumstances.
- 6) While making decisions one must keep in mind the objectives of localities, local disorder & dispute, etc., for a smooth working system.

VII. LIMITATIONS OF STUDY

1. The study is depended on questionnaire survey and response of individuals are considered to be reliable, accurate and veracious.
2. The whole work of study is limited to 200 samples only, which is conducted only in Southern part of India (Chennai), for further diversification one can amplify the work by conducting survey in different divisions of India.

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