"Assessment & Quantitative analysis of Social Cost-Benefit Analysis of the Real Estate Sector in Nashik Region"

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Abstract— The construction sector is one of the major contributors for the increase of pollution and environmental degradation. The uncontrolled increase on the consumption of natural resources, the way they are used and the high emissions they arise, are impelling the study and implementation of policies and procedures which ensure a sustainable future for construction and for the sustainability of the planet. The objective of this paper is to present the work developed in order to assess and optimize the sustainability of a residential building at the design stage.

The paper based on the relevance of Cost Benefit Analysis (CBA) to the evaluation of proposals on public project executions with a view to restraining resources from undesirable projects especially at the grassroots levels in the developing countries. Further importance and the strength of CBA as a prescriptive method of comparative analysis in determining the most feasible project in a bid to avoiding functional obsolescence (even when newly completed) were elicited through comparison analysis of two (2) public projects proposed Government. The tools employed in determining the most desired project are; Cost-Benefit Ratio in consideration of the tangible costs and benefits while Preference Technique was adopted for the analysis of intangible social costs and benefits. The paper concluded that the application of CBA to the development project proposals will enhance "value for money" in the aspect of good governance, and as well as curtailing wastage of resources that do emanate many at times from undesirability of some public projects. Simulation was used in order to support the optimization of the thermal performance and the indoor thermal comfort.

A Social cost benefit analysis, also known as economic analysis, is a decision-making strategy which helps in assessing the impact of investment business projects on the society as a complete. It is also the 101st largest city in the world, by population and is considered one of the fastest growing cities in the Asia-Pacific region. The main difficulty in the most public projects appraisal is their uneconomic nature and impossibility to measure such data, like as turnover and current costs. Standard appraisal methods based on projected profits and investment expenditures are not applicable because of intangible nature of pure public projects. In such cases Cost-Benefit Analysis (CBA) has been applied. The purpose of CBA is to ensure that the public sector allocates scarce re-sources efficiently to competing public sector projects. A basic assumption of CBA is an identification the crucial benefits effected from a project and their valuation to conduct project appraisal in terms of its effectiveness. The aim of this study will be achieved through quantitative analysis by performing survey and conducting interviews with the small scale enterprise holders, the real estate business professionals and the staff at construction sites. The questionnaire will be analyzed with Relative importance index method. The results of this survey will be presented through a SWOT framework and recommendations will be made to overcome the negative impacts obtained from the findings.

I. INTRODUCTION

Investment, is an art of giving up capital for anticipated return, is a conscious decision embarked upon by individuals, corporate bodies and governments. Underlining a typical private investor's motive is profit measured in terms of money meaning that expected gain must exceed aggregate cost. However, investment decisions by the governments i.e. the public bodies do exhibit converse attention. The main tasks of public projects are to provide public services to community – most often of non-profit profile. The main problem is to choose the best project among others in certain needs and terms. In this view, an appraisal of economic efficiency, as a measure of the net contribution of a project to overall social welfare should be conducted to each single case. Standard appraisal methods based on projected profits and investment expenditures are not applicable because of intangible nature of pure public projects. Consequently, the basic method of public project assessment is the Cost-Benefit Analysis (CBA). It is the technique, which chooses the best project that achieves the specified goal with the smallest loss in social wellbeing. It is also a tool which tests the socioeconomic viability of an existing or proposed project or compares two or more ways of executing a project. Holistically, CBA is considered as a useful technique at the appraisal of environmental, infrastructure, health care, cultural and sport projects amongst others. The basic rule of CBA is that project should be performed only then, when discounted benefits would be higher than discounted investment expenditures. As the investment expenditures are treated exact cost of investment and operation costs after project putting into life.

A. Relative Important Index and Mean Score Method Calculate Mean Score and the Relative Importance Index (RII)

Evaluate the mean score and relative importance of the identified factors by collecting the group perspectives of three Phase, viz. clients, contractors, Nashik .Second, the opinions of the were sought to quantify "qualitative" variables. These were recorded, using a scale of 1 to5, where 1 is the lowest perceived factor, and 5 is the highest perceived factor.

- ☐ Strongly agree S.=5
- ☐ Agree A.=4
- ☐ Undecided UD.=3
- ☐ Disagree DA. =2
- ☐ Strongly Disagree SD.=1

Based upon the data from the PIPs, the rankings of factors were generated by evaluating their relative importance across each group of respond.

Evaluating Factors Using the Mean Score and the Relative Importance Index

Keywords— Cost-Benefit Analysis, Real Estate sector, Financial benefits, Socio-economic Benefits.

The MS for each factor is computed by the following formula

$$\frac{\Sigma FxS}{N}$$

$$RII = \frac{Tot-al\ point\ score}{5}$$

Where *S*=score given to each the respondents, ranging from and "5" is "Strongly agree;" 1to5 for each factor; and *N* is factor. In addition to the MS, Relative importance indices technique to determine the evaluation by the MS. The formula:

factor by 1 to 5 where "1" is "Strongly Disagree" *F*=frequency of responses to each rating total number of client respondents for that the five-point scale was transformed to RII using the relative index ranking the rankings of the factors and verify RII were calculated using the following

Criteria	Ranking
S agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

1). Introduction.
Questionnaire Purpose

The questionnaire was prepared to analyze the level of CBA implementation in medium scale residential projects. A list of suppliers, contractors, client and consultants was searched from the internet. The persons were contacted through email, phone and mobile. The questions from the questionnaire were asked face to face and relevant questions were studied.

Medium scale residential projects industry is flooded with number of project organizations playing a smaller to bigger role in mega project completion. For the sake of convenience, we divided these players from the point of view of their role in the supply chain. From this point we divided them into:

⌐ Vise contractor

⌐ Most Contractor

⌐ Customer

⌐Project Consultant

☐ Equipment Supplier

Questionnaire was prepared considering their role in the project supply chain, and attempt was made to address the issues related to each of the value chain partner. The questionnaire was sent to more than 25 different organizations in the medium scale residential projects and four responses were received from them. The companies those selected were combination of client, contractor, consultant, equipment and material supplier and subcontractor. The persons those were contacted were from lower management level to higher management level in the organizations.

Questionnaire Interview Sample
Interview Purpose:

For dissertation work selected "Construction approach of supply chain management in medium scale residential projects" topic for the successful completion of dissertation work. I need to conduct interview of different leading company contractors, sub-contractors, clients, and consultant. To find the factors this effects on supply chain management. For this reason I have prepared a questionnaire so, please allow me to conduct interview of your company. The questionnaire based on rating system. This information will be strictly use for academic purpose only.

1) **Satisfaction Level of your Business is much satisfied due to this criteria?**

Response	1	2	3	4	5	RII
Finance Point of view	0	2	3	4	8	0.53
Authorities of Government	1	5	4	8	1	0.82
Aims of business	0	0	5	7	5	0.67
Advertising	1	1	6	7	5	0.52
Enterpriunships	1	4	3	8	8	0.85
Other beverages	0	1	6	7	3	0.91

This question was asked to know effects of criteria on business level for a RERA project. We wanted to know that whether the client/contractor likes to go for known Financial Condition, Government Services, Fulfillment of Objectives, Means of Marketing/Advertising, Entrepreneurial Problems, and Provided Space. The RII of all the options shows that the **Fulfillment of Objectives** criteria that effects on business level for a project.

2) **How you rate the overall success of your Business on following Rating?**

Response	1	2	3	4	5	RII
E Unsuccessful	3	4	3	1	8	0.64
Unsucc.	3	5	4	6	1	0.54
M Unsuccessful	2	2	5	5	5	0.66
Neither Succ. or Unsucc.	2	3	6	3	5	0.63
M Successful	5	4	4	3	2	0.78
Succ.	2	3	6	5	3	0.61
E Successful	3	2	2	5	6	0.60

This question was asked to know the overall success of your Business on given Rating. The RII of all the options shows that the business is **Moderately Successful**.

We wanted to know that whether the client/contractor likes to go for given criteria's.

3) **Please indicate to what extent following factors affect the growth of Real estate sector in Nashik (Human Resources)**

Response	1	2	3	4	5	RII
Experience factor	1	5	2	6	5	0.69
Confusion and all things	1	3	5	7	3	0.68
Laborers Misunderstanding	3	2	5	5	4	0.62
Laborers competition	0	2	6	6	5	0.75
Age factors	1	2	7	5	3	0.68
Personal Issue.	2	1	6	7	3	0.68
No training	2	2	6	4	5	0.68
Education	2	2	7	5	3	0.75

This question was asked to know the extent following factors affect the growth of Real estate sector. We wanted to know that whether the client/contractor likes to go for given criteria's. The RII of all the options shows that the factors affect the growth of Real estate sector are **Laborers & Lack of Education**

4) **Please indicate to what extent following factors affect the growth of Real estate sector in Nashik (External)**

Response	1	2	3	4	5	RII
Implementation of government laws.	2	3	4	7	3	0.66
Rework	2	3	6	3	5	0.66
Supervision delays	2	2	7	5	2	0.63
Inspection delays from The authorities.	2	2	6	6	3	0.83
Variations in the drawings.	2	4	2	5	5	0.76
Complex designs in the provided	2	3	6	5	3	0.83
Incomplete drawings	2	2	5	6	4	0.76
Payment delays	1	3	7	5	3	0.72
Training sessions.	3	2	6	5	3	0.69
Design Changes.	3	5	2	4	5	0.71

This question was asked to know the extent following factors affect the growth of Real estate sector. We wanted to know that whether the client/contractor likes to go for given criteria's.

The RII of all the options shows that the factors affect the growth of Real estate sector are **Complex designs in the provided & Complex designs in the provided.**

5) **Please indicate to what extent following factors affect the growth of Real estate sector in Nashik (Communication)**

Response	1	2	3	4	5	RII
communication.	1	3	4	7	4	0.71
Remote site places.	2	1	6	5	5	0.71
Disputes with owner.	1	1	5	10	2	0.72
Disputes with designer.	3	3	7	4	2	0.85
Misunderstanding between the owners, the contractor.	1	4	2	6	5	0.81

This question was asked to know the extent following factors affect the growth of Real estate sector. We wanted to know that whether the client/contractor likes to go for given criteria's.

The RII of all the options shows that the factors affect the growth of Real estate sector are **Disputes with designer.**

6) **Please indicate to what extent following factors affect the growth of Real estate sector in Nashik (Resources)** adopted by households and did not include

Response	1	2	3	4	5	RII
Lack of required construction materials.	3	3	4	6	3	0.63
Increase in the price of materials.	3	2	6	3	5	0.65
Lack of required tools and/or equipment's.	2	3	7	4	2	0.61
Poor site conditions	2	3	6	5	3	0.82
Differing site conditions from the plan	3	4	2	4	5	0.73
Poor access within construction job site	2	3	6	5	3	0.82
Violations of safety laws.	2	2	5	6	4	0.72
Insufficient lighting.	3	3	7	3	3	0.65
Inadequate construction method	3	2	6	5	3	0.68
Inadequate transportation facilities for workers.	3	5	2	4	5	0.68
Material storage location	2	1	6	7	3	0.95
Quality of required work.	3	5	2	4	5	0.83

Response	1	2	3	4	5	RII
Shortage of water and/or power supply.	4	3	5	4	3	0.59
Working overtime.	3	4	5	2	5	0.62
Weather conditions	2	4	7	4	1	0.58
Accidents during construction	2	3	6	4	3	0.77
Project objective is not well defined	3	4	2	4	5	0.76

This question was asked to know the extent following factors

affect the growth of Real estate sector. We wanted to know that

whether the client/contractor likes to go for given criteria's.

The RII of all the options shows that the factors affect the growth of Real estate sector are **Material storage location**
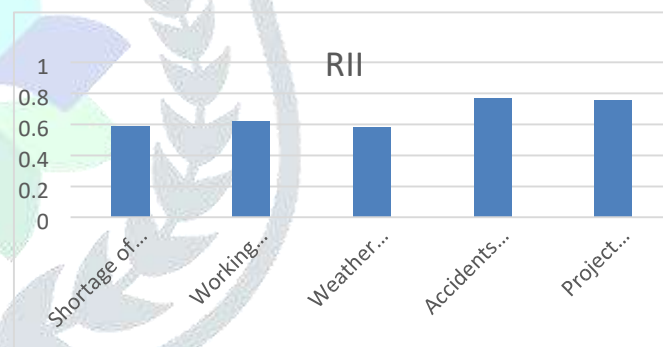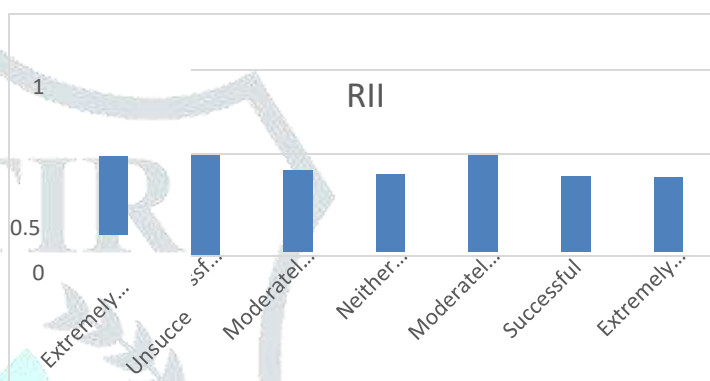
7) Please indicate to what extent following factors affect the growth of Real estate sector in Nashik **(Miscellaneous)**

This question was asked to know the extent following factors Affect the growth of Real estate sector. We wanted to know that whether the client/contractor likes to go for given criteria's.

The RII of all the options shows that the factors affect the growth of Real estate sector are **Accidents during construction**

II. RESULTS AND DISCUSSION

This research has focused exclusively on DRR measures that can be adopted by households and did not include measures that can be implemented only or most effectively at the community or national levels, such as early warning systems or school safety programs. The focus on a single structure or household is not appropriate for DRR measures that have a public good character and protect assets and lives at the community or national scales. Nor is the single household perspective convincing for governments or donors considering support for these onehousehold-based structural measures across a wide area.

III. CONCLUSION

We have examined the benefits and costs of improving or retrofitting residential structures.

2.   The structures and risks chosen for this study are typical for low-, middle- and high-income persons.

3.   The cases demonstrate many challenges in providing fully integrated benefit-cost estimates: valuing mortality/morbidity risk, taking account of climate change, risk aversion, multiple hazards and indirect losses, and giving a full account of the uncertainties in the analysis.

CBA is required for twofold reasons-first, that must be shown that the project is viable from economic point of view, and secondly as an evidence of necessary availability of funds to make such project economically viable. CBA is also required in PPP (Public-Private Partnership) projects as a base to present that a private partner involvement into public project should bring more benefits from social point of view than other solutions. In the quest for making the application of CBA effective, the Estate Surveyors and Valuers who are mostly the "custodian" of executing projects evaluation/feasibility studies should embark on skills acquisition with a view to analyzing the cumbersome variables involved in the use of CBA. This will assist in discharging resourceful services to the tiers of government and non-governmental organizations accordingly

The creation of the preliminary planning model and the development of the associated RII added considerable value and insight into the decision making process by

1. Developing a formalized structure for the decision making process

2. Requiring a systematic approach to the cost benefit analysis

3. Selecting a mathematical procedure (RII) that provides a measure of consistency in judgments and preferences

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