A Study Of Various Challenges In Adoption Of Green Building Technologies In Construction

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Abstract:*Green building (GB) is gaining increased acceptance in the construction industry as a viable solution for meeting the growing demand for environmentally friendly or healthy buildings. However, the uptake of GB technologies is not as apparent as it should have been. The aim to examine the criticality of various barriers preventing the wider adoption of GB technologies. Results from statistical analyses of questionnaire survey responses from GB experts around the world are presented. The results validated the criticality of 30 barriers used for the survey.The aim of the work is to study the factors(barriers) affecting the adoption of green building technologies in construction industry particularly in Nashik region(Maharashtra) using SMART METHOD .The questionnaire survey is carried out amongst construction companies located in Nashik for the Simple Multi Attribute Rating Technique (SMART).*

IndexTerms - Green buiding, barriers, Green building Adoption

I.INTRODUCTION

Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from sitting to design, construction, operation, maintenance, renovation and deconstruction. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. Green building is also known as a sustainable or high performance building. When we talk about impacts of the built environment then certain things like aspects of built environment, consumption, environmental effects and ultimate effects come into picture. Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by: efficiently using energy, water, and other resources; protecting occupant health and improving employee productivity, reducing waste, pollution and environmental degradation.

There are organizations which are working in this cause with full enthusiasm & dedication; governments and regulatory authorities are providing supports to uplift the use of green building concept. Since the last decade of nineteenth century various organizations like IIA (Indian Institute of Architects), "LEED" propagated by IGBC and GRIHA introduced by TERI with a few private independent authorities have been giving their inputs to raise the bar of their own capabilities. Despite of all these efforts still the gap which needs to be bridged. No doubt the number of green buildings has increased but, when the percentage of green building is compared with the total construction the number is insignificant (i.e. demand or if we say with the rate of construction the supply of GB technology is not meeting the mark). There are categories in which differences can be seen acting as hurdle/barriers/obstacles/hindrances in some or another aspect to meet the expected growth in GB technology applications. therefore ,there is need to find the barriers and appropriate solutions for effective implementation of green building technology. These problems may be classified with the diversions; but one thing will be common as a conclusion that industry is still lagging behind for desired applicability of this beautiful technology on ground.

II. OBJECTIVES OF THE STUDY

1. To identify various barriers in adoption of green building principles.
2. To Analyse identified barriers using Simple Multi Attribute Rating Technique (SMART).

III. METHODOLOGY

A questionnaire survey was developed to investigate the criticalities of the various factors affecting the success of GBPs and the differences in the criticality between green and traditional business parks.To develop the questionnaire, a comprehensive literature review was first carried out. Afterward, a two-step process was adopted to test the validity and relevance of the questionnaire. The questionnaire was first reviewed by an expert on survey-question construction to ensure that the survey did not contain any common errors,such as leading, confusing, or double-barreled questions. Then, a pilot survey was conducted with construction industry experts to test the relevance of the questions to the topic.

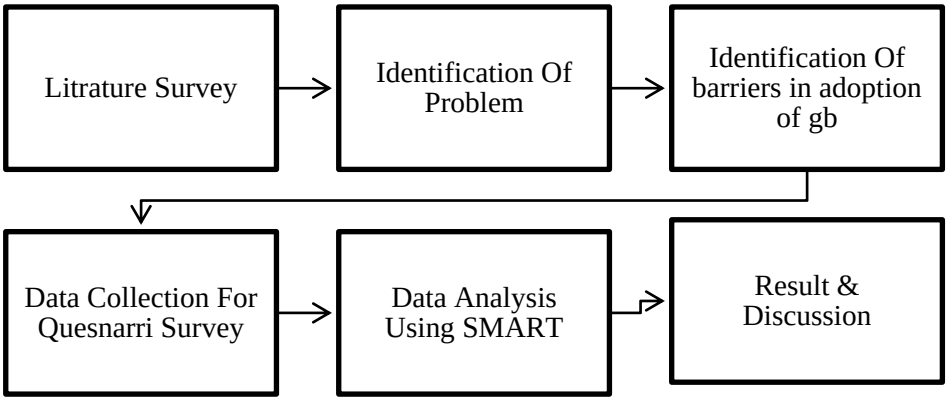


Figure 1 Flow Chart of Methodology

IV.DATA COLLECTION

GB has the potential to reduce the negative impacts of the built environment on the natural environment and human health, but the adoption of GB technologies is affected by several barriers. Hence, the aim of the study was to examine the criticality of common barriers to the implementation of green technologies in the construction industry. Statistical analyses of questionnaire survey data collected from GB experts in nashik were conducted and the views of the experts were compared: 5 main factors of various 30 barriers examined were found to be significantly critical

From the literature review following factors are considered for the study. There are total of 8 possible main factors and 44 sub factors, that were felt to have an effect on the construction business failure for small, medium and large sized companies in Nashik region, were determined. Similarly, the Sub factors of these main factors were determined based on literature review and on basis of expert opinion and discussion with the people who are actually in the field from last 25 years in Nashik.

V.DATA ANALYSIS AND RESULTS

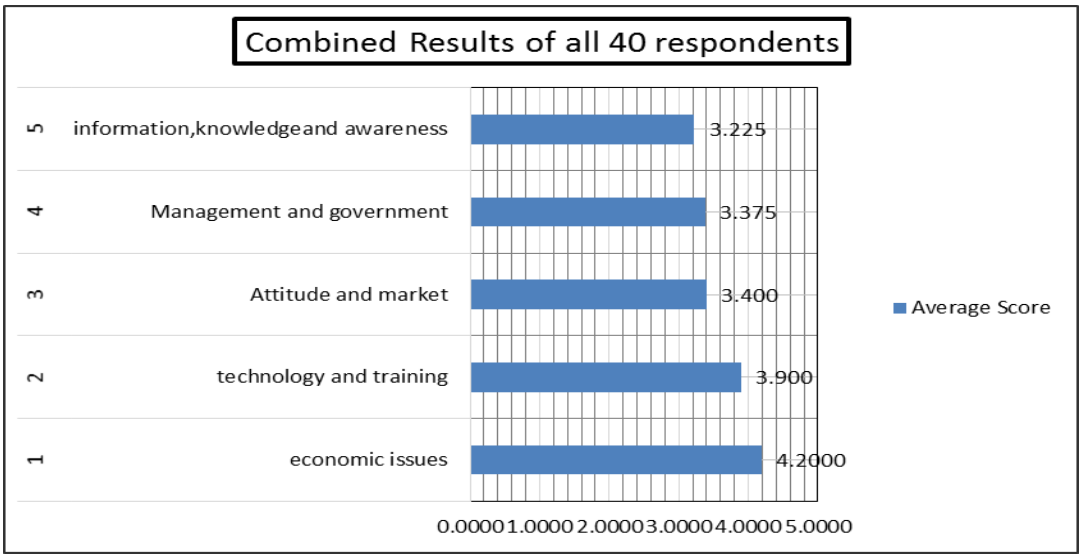
The present work includes the result of the study in Nashik region, Maharashtra (India). the study carried out using SMART method.

The important factors affecting the adoption of green building construction were investigated through interviews among different personnel working in the construction field. Following conclusions are made for green building construction in Nashik.

Results Of All 40 Respondents Using SMART Method

	Main factors	Score	Weightage	Rank
1	Economic Issues	4.2000	0.2320	1
2	Technology And Training	3.900	0.2155	2
3	Attitude And Market	3.400	0.1878	3
4	Management And Government	3.375	0.1865	4
5	Information,KnowledgeAnd Awareness	3.225	0.1782	5
TOTAL		**18.100**	**1.0000**	

Main Factors Affecting The Adoption Of Green Building Technology



Graph.1. Average score of Main factors affecting the adoption of green building technologies in construction industry

VI. CONCLUSION

Following conclusions are made for green building construction in Nashik:

- Economic issues, technology and training, Attitude and market is identified as the most important main barriers affecting the adoption of green building technology in Nashik.

- Higher cost of green technologies, A belief that GB technologies cost more, Lack of availability of demonstration projects, Lack of GB expertise/skilled labour, Difficulties in providing GB technological training for project staff, Risks and uncertainties involved in implementing new technologies is perceived to be the most important sub-factor resulting in company failure when considering the weightage of importance of the sub factors identified.

- Hence there is need of increase awareness well trained professional in Nashik for successful adoption of green building technology in construction industry.

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