

Preparation of Questionnaire for Training Needs Analysis of Construction Project

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Abstract

Training needs analysis (TNA) determines the gap between 'what is' and 'what should be' situations. Construction industry is very important for progress, development and economic growth of a country and therefore the task of analyzing training needs in construction projects is very important aspect in the present scenario of Indian construction industry. Most of the construction projects are running behind the schedule and training imparted to employees is not based on systematic analysis. In this study a model questionnaire has been prepared which is unique because questions related to training needs analysis as well as causes of delay have been included. The data so obtained will be easy for analysis and the results of hypothesis testing will be more reliable. Models developed as the result of TNA will be more realistic as in addition to questions related to TNA, it takes into consideration the most serious problem of construction work i.e. delay which is responsible for time and cost overrun.

Keywords- *Training needs analysis, Construction project, Ethical issues, Relative Importance Index (R.I.I.), Spearman's rank correlation, 5- point Likert scale, Variables, Anova / in-dependent t-tests.*

I. INTRODUCTION

Training needs analysis (TNA) is a process in which needs are identified and broken into their component parts to determine the solutions of the problem. It determines the gap between 'what is' and 'what should be' situations. The construction delay is one of the main problems in India as well as in other countries, which results in time and cost over-runs because of which organization, contractor, client, everyone connected with the construction project, suffers. Besides this construction industry is very important for progress, development and economic growth of a country. Therefore the task of analyzing training needs in construction projects is very important aspect in the present scenario of construction industry. A questionnaire is a technique which is used to obtain information by collecting data from the targeted respondents for a research topic. Data are of two types viz. primary and secondary. The primary data is that

which is collected afresh, for the first time and thus is original in character. On the other hand the secondary data are those which have been collected previously by others and are used for a new research problem for merely compilation. The primary data can be collected through observation methods, interview methods, through questionnaire survey etc. The secondary data can be obtained through literature review, published books, articles and the internet. Data collection is very important to fulfill the aims and objectives of a research. When a questionnaire is used to collect data, it should have the potential to match with the requirements of the research methods. In the preparation of this questionnaire both primary as well as secondary data have been used to make it more reliable and realistic. Short and simple questions related to needs assessment and construction management have been incorporated. By using this questionnaire training needs analysis would become easier as it finds gaps between what is and what should be situations more accurately and models of TNA can be developed with more authenticity.

II. LITERATURE REVIEW

The prominent literature on questionnaire related to training needs assessment in construction industry have been studied to take a look at the different aspects and requirements of construction projects in terms of training needs. Some of the previous studies are as follows:-

A. *Questionnaires on Causes of Delay:*

Memon et. al. (2010) studied 24 factors affecting construction cost in large construction projects and found that unforeseen ground conditions and financial difficulties faced by the contractor were the most serious issues. We do agree that if a contractor faces financial problems it could affect the construction of a project very badly but if proper survey beforehand is done it can take of problems related to unforeseen ground conditions. Sunjka and Jacob (2013) tested hypothesis related to significant causes and effects of project delays in the Niger Delta Region, Nigeria which resulted in the inadequate planning was one of the major factors responsible for delays. This is true for other countries as well because defective planning affects all the areas of construction work. Aibinu and

Jagboro (2002) through questionnaire survey concluded that time overrun and cost overrun were the frequent effects of construction delays on project delivery in Nigerian construction industry. In India also this is one of the biggest problems more particularly in government sector. Haseeb et. al. (2011) studied the causes and effects of delays in large construction projects of Pakistan, Kuwait and stated that finance and payments, inaccurate time estimation, poor site management are main causes of delay. Alinaitwe et.al. (2013) investigated into the causes of delays and cost overruns in Uganda's public sector construction projects. They found that important causes were "changes to the scope of work, delayed payments and poor monitoring". Tawil et.al. (2013) stated that factors like delay in receiving progress payments, problems in contractor management scarce of construction materials contribute to delay in project construction. Mukuka et.al. (2013) by study of previous literature review made a theoretical assessment of the causes and effects of construction project delay and pointed out that equipment breakdown, inefficiency of workers and bad weather also cause delays. Alnuaimi, and Mohsin (2013) in their research, studied 34 causes of delay in completion of construction projects in Oman and revealed that improper planning was the most important factor. Frank et.al. (2010) in their study investigated delays in building construction projects in Ghana through questionnaire and found that underestimation of the cost of projects was very important factor out of 32 other factors. Hamzah et. al. (2011) through literature review studied the causes of construction delays under two segments i.e. excusable delay and non-excusable delay. While preparing a model questionnaire all above factors have been taken into consideration and most influencing 29 factors have been incorporated.

B. Questionnaires on Training Needs Assessment:

The aim of the article by Rodrigo and Abbad (2013) is to systematically review TNA scientific literature and to point out some possible developments. Database, website, wiley online library and 51 articles ranging from 1978 to 2010 were consulted. The paper reveals this fact that there is little concern with building concepts related to TNA and it suggests that TNA research should be based on measurable human competences gaps. Questions for assessing competencies have been added to the model questionnaire prepared in this study. According to Chang et. al. (2012) training is a method to increase the working ability of employees. Training is one of the methods to solve organizational problems and it must be able to solve organizational problems. The paper by Teixeira et. al. (2006) shows that a survey was conducted in 4 European countries i.e. Portula, Poland,

Spain and Lithuania on the needs of training in management of construction projects. A questionnaire was circulated and data were collected and analyzed. Training needs were assessed. The participants showed strong interest in the following area :-

1. Project conception development.
2. Planning and scheduling
3. Cost estimation and management
4. Quality management
5. Procurement and tendering process.
6. Health and safety management.

Project conception development is a part of Planning and scheduling so in the present questionnaire this has not been taken separately. The paper by Mselle and Manis (2007) describes necessity of training of site managers, as lack of leadership, accountability, training and knowledge creates problems during construction. Site managers, construction companies, consulting firms and clients suffer as a result of these problems. Emphasizing the need for training, the paper suggests objectives, structure and benefits of training program. Training need assessment report was prepared on solid waste management Udayakumar and Karthikethan (2014) presented a paper on career up-gradation of civil engineers through training and development at M/s URC construction (P) Ltd. India which describes BIM (Building Information Module), a concept for project planning, designing, analysis, monitoring, costing and data management in construction. The personnel were grouped in to 4 categories - fresher, 1 to 3 years, 4 to 7 years and more than 7 years experienced persons. On the job & of the job training module was designed. The paper states that all the construction industries should focus on their people development for their continuous career up-gradation. However in the model questionnaire 5 categories of working experience ranging from fresher to experience of more than 20 years have been taken. . Ebrahim Hemmtania (2005) presented a case study on "A project manager specialist in management or specialist in a topic area". This study expresses that project manager skills can be elaborated in three different categories: human, conceptual and organizational with technical skills. In the sample questionnaire a broader spectrum of having 7 skills e.g. technical, managerial, communicative, marketing skills, interpersonal behavior and innovation skills have been incorporated to care of all the most important qualities. Okuntade Tope Femi (2014) explains in detail the rejection of null hypothesis & acceptance of alternative hypothesis pointing out that building construction technicians must be encouraged to undertake training and sufficient funds should be provided by the organizations. Also the techniques of training should be simple and plain. In the model questionnaire respondent are being asked to make their comments on

9 statements, the data analysis of which would make us enable to test 9 hypotheses. The result of these hypotheses testing would help reflect the present scenario of construction industry.

III. TYPES OF QUESTIONNAIRE

A questionnaire is an instrument consisting of a set of questions which a respondent must answer. It can either be a structured or an unstructured questionnaire. Structured questionnaires have pre-determined and definite questions. The questions with same wordings and the same order are put forward to all respondents. It has multiple choice questions and a respondent is supposed to select one of the alternatives from the given possible answers. Multiple choice questions can also be named as 'closed questions'. Although providing possible answers to the respondents restricts their opinion but this having the advantages of quick response, simple to answer, inexpensive and easy to handle qualities, preferred for data collection. Contrary to this, if respondents are free to give their opinion in their own words, the questionnaire is termed as an open-ended questionnaire. As closed questionnaires are more suitable to achieve realistic, conclusive results for hypothesis testing and useful in reaching a clear cut conclusion, they are preferred in preparation and design of this questionnaire. A good questionnaire should have short and simple questions and the number of questions should be kept to the minimum. The sequence of questions should be logical moving from easy to more difficult questions. Vague language and terms which could create confusion in interpretation should be avoided. If need arises there can be the provision of answers showing the indications of uncertainty, e.g. "do not know", 'no preference' and so on. The questionnaire should look attractive. Before the preparation of questionnaire, intense literature survey was performed to know the structure of the questionnaire. A draft questionnaire was prepared with the consultation of researcher's supervisor. A pilot study was carried-out by sending the draft questionnaire to seven experts and specialists, who are highly placed engineers, and management experts to take their guidance and suggestion to improvise the questions, to get rid of any uncertainty in questions and for the proper choice of words, sequence and other valuable pieces of advice. Having received their expert opinion and valuable suggestions, corrections were made in the questionnaire.

IV. METHODOLOGY

The term 'ethical issues in research' is defined as the behavior of the researcher in respect of the right of the respondents. The researcher has made a promise in writing through a letter to the respondents and a note on the questionnaire that the researcher would not

reveal the identity of any party involved in the study and ethical validation procedure would be followed to logically accepted standards. The Statistical Package for Social Science (SPSS) software will be used for statistical analysis. The results will be used for hypothesis testing for analyzing data in respect of working of construction organizations and for conducting Anova / independent t-tests and for the development of TNA models. Data received from four variables viz. project leader, site engineer, architect and contractor will be compared to assess training needs. All independent and dependent variables would be measured by a 5- point Likert scale in this study. The questionnaire comprises of three parts. The part-I contains general questions which are related to information regarding age group, working experience, position, qualification of the respondent and the category of the organization whether it is a private or government organization. The main objective of incorporating these questions is that by viewing the received information at a glance it would clearly show whether the sample represents entire population or not. The Part II contains construction related questions. After discussion with the seven experts and specialists as many as 29 possible causes of delay were identified. An investigation to find out causes that make construction projects delayed is the most important aspect to restrict a project face time over-run & cost overrun problems. Having studied literature and after consultation with the experts only those possible causes of delay have been taken which are the most common and which affect construction work directly. The data so generated would be useful in Failure Mode Effects Analysis (FMEA) and Cause and Effects analysis of construction projects and Relative Importance Index (R.I.I.) and Spearman's rank correlation would be calculated. The ranking of causes of delay would be useful in finding-out the gap and accordingly training needs analysis would be performed. Ranking wise data of causes of delay will make the organization take care of the causes for ongoing and future projects. Part III comprises of TNA related questions. These questions are related to the barriers, drivers for conducting training in the organization, evaluation process of training imparted, identification of training needs, the importance and possession of competencies and comments of respondents on some statements which would be used in testing & various hypotheses. The results so obtained will be very useful because then an organization can take of barriers to training, skills of employees can be evaluated and enhanced through proper training. Thus prepared model questionnaire is given in Appendix A. This questionnaire is unique because questions related to both, i.e. causes of delay and training needs analysis have been incorporated. Based on this questionnaire, causes of delay and

development of TNA models for construction projects will be worked out in further study.

V. CONCLUSION

The questionnaire is prepared taking into consideration causes of delay based on real situation experiences of site engineers who look after construction work at root level as well as top ranking engineers, architects and contractors in respect of Indian construction industry. It also comprises of questions related to training needs to evaluate various

aspects of TNA so that proper training programs could be conducted accordingly. The questionnaire so prepared would make TNA on construction projects easier and the results of hypothesis testing, model development and gaps so came out would enable us to take care of delays in construction projects and to have an overview of the situation in terms of training, so prevailing in construction industry. This would solve the time overrun and cost overrun of construction projects and besides getting rid of litigation and claim cases and will help improve the economic growth of countries.

Annexure A

MODEL QUESTIONNAIRE for TRAINING NEEDS ANALYSIS FOR CONSTRUCTION PROJECTS

Name -
Designation -
Mobile No -
Email ID -
Name of Organization -

Note:-

1. Information filled up in this questionnaire would be kept confidential.
2. Please tick appropriate options.
3. TNA stands for Training Needs Analysis & SWOT stands for strength, weakness, opportunity & threat.

PART 1- GENERAL QUESTIONS -

1. What is your age group ?

less than 20 years	
20-30	
30-40	
40-50	
50-60	
60-70	
more than 70	

2. How long have you been working with this organization?

0-5 yrs	
5-10 yrs	
10-15 yrs	
15-20 yrs	
more than 20 yrs	

3. What is your position in your organization ?

Project Leader	
Site Engineer	
Architect	
Contractor	

4. What is your qualification ?

Under Graduate	Graduate	Post Graduate	Doctorate	Any other

**5. Which category your organization falls into **

A	Private	
B	Government	

6. Are you aware that your organization is doing TNA for conducting training programs ?

Yes	
No	
Don't know	

(Signature)

PART 2 - CONSTRUCTION RELATED QUESTIONS :-

7. Do you think projects are delayed in your organization?

Never	Rare	Seldom	Frequent	Always

8. Do you think projects are delayed due to following reasons?

Sr.	Reasons	Never	Rare	Seldom	Frequent	Always
1-	Lack of communication					
2.	Improper planning					
3.	Change in schedule					
4.	Labour problem					
5.	Late material delivery					
6.	Poor material quality					
7.	Lack of supervision					
8.	Lack of finance					
9.	Frequent design changes					
10.	Lack of support from contractor					
11.	Binding to give contract to the lowest bidder					
12.	Ineffective delay penalties					
13.	Change in govt. policies					
14.	Change in responsibilities					
15.	Use of old methods					
16.	Unskilled workforce					
17.	Equipment breakdown					
18.	Delay in mobilization of resources					
19.	Faulty pre-project survey					
20.	Delay in obtaining permissions from regularity					

	authorities					
21.	Delay due to strikes					
22.	Traffic restrictions					
23.	Environmental reasons					
24.	Effect of foundation soil					
25.	Delay in decision by top management					
26.	Non cooperation of seniors					
27.	Non cooperation of juniors					
28.	Delay in land possession					
29.	Problem in access to site due to poor infrastructure					

PART 3 - TNA RELATED QUESTIONS :-

9. How frequently training programs are organised in your organization?

Never	Rare	Seldom	Frequent	Always

10. What are the barriers for conducting training in your organization. Give your opinion:-

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
No management initiation					
Non- availability of funds					
Non- availability of expert trainers in the field					
Unwillingness of potential trainees					
Non- availability of time					
Poor understanding of correct TNA					
Absence of training climate					

11. What are the drivers for conducting training in your organization. Give your opinion:-

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Career opportunity					
Timely completion of projects					
Change of environment					
Growth of organization					

12. How does your organization evaluate the effectiveness of training imparted?

Verbal feedback from participants	
Verbal feedback from trainer	
Written feedback from participants	
Written feedback from trainer	
Supervision by senior employee during training	
Post training exams	
Assessment is not done	
No defined method	

13. How does your organization evaluate individuals after imparting training?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Change in behavior					
Change in functional results					
Improvement in communication skills					
Knowledge enhancement					
Any other					

14. How training needs are identified in your organization?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
By SWOT analysis of organization					
By performance review appraisal of individual					
Through assessment center of target group					
Through individuals request					
Through internal survey questionnaire					
Through upcoming updating methods					

15. Which of these competencies are importance in your organization?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1- Technical Knowledge					
2- Knowledge of Management					
3- Communication skills					
4- Marketing skills					

5- Interpersonal skills					
6- Behavior skills					
7- Innovation skills					

16. To what extent do you possess these competencies?

	Poor	Fair	Average	Good	Excellent
1- Technical Knowledge					
2- Knowledge of Management					
3- Communication skills					
4- Marketing skills					
5- Interpersonal skills					
6- Behavior skills					
7- Innovation skills					

17. Please give your opinion on the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
A. Effectiveness of training can be enhanced by systematic TNA of construction work force					
B. TNA of construction workforce helps to achieve overall objective of the organization					
C. TNA of construction workforce is useful for the career development of individuals					
D. Delay in construction projects can be minimised through TNA					
E. Work efficiency of construction workforce can be improved through TNA					
F. TNA of construction workforce is useful for improving cost effectiveness while performing construction activities					
G. TNA can motivate construction workforce for a safe and environmental friendly job execution					
H. TNA of construction workforce can help organization to adopt latest technologies and to keep the pace with time					
I. TNA can help in improving knowledge skill and attitude of construction workforce					

Remark:-

Please use the space below to provide additional information related to construction management, if any.

Thank you for sparing your valuable time & filling information.

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