Journal for ReAttach Therapy and Developmental Diversities
eISSN: 2589-7799
2022 December; 5 (2s): 216-223

Psychological & Prototypical Model of Execution Management evaluation for the framework Development

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Received: 24-September-2022
Revised: 26-November-2022
Accepted: 14-December-2022

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Abstract

Framework development of the basic structure of an organization, system, roads etc. plays very important part for the development of any society or in broader manner we can say in progress of any country. These infrastructure models or frameworks are the deciding or measuring factors of Economy of any society, country. There are multiple Models are available for the basic framework of infrastructural developments and every model is considered effective if it is lower proportional towards cost and time. But due to many factors most of the framework and models cannot perceives these aspects. Due to these, most of the vendors faces loss in the project completion whether in terms of late completion, cost increase or quality measures. To improve the depiction of these infrastructure projects we have to take care of it from grass root level to higher level. Mostly what happens, we take care of the projects earlier with very sharp and tight supervision in terms of cost only, but according to our research we should take care of time and quality both from start to end, which will definitely pay by means of Time and Cost effectiveness later on. Therefore, this research aims to create a prototypical model of Execution Management for the framework development and it also depict the causes for loses and delays which has been neglected. We gone through the multiple different literature reviews and their mentioned issues related to the presentation management. Apart from this we collect the data from actual site and identified the problems. For that survey we develop a questionnaire with the help of subject matter experts, consultants, freelancers, service providers and contractors of the project. Records are documented by the facts we acquired from the direct and indirection review of the ongoing work. We also collect their behavioral, habitual response towards the project and work allotted. We collect data by all sorts of persons viz from engineers to the helpers. By all the onsite and offsite, direct and indirect data we collected, and the standards and specifications marked up, we access and evaluate the acquired data. By this evaluation we develop a prototypical model for the framework of any organisation which properly understood and depicts the all major and minor issues due to which performance of any project could lead to a delay and high cost. This prototypical model helps to improve the performance of the personnel which leads to saving the cost and minimize the delays. To get best results training can be given to all the personnel's of every category about the awareness of the standards. In this research we collect data two times, before the training and after the training, these data are also compared to get the time and cost measures improvements.

Keywords: Prototypical Model, Framework Development, Evaluation, Measures, questionnaire.

I. Introduction

As we know now a days manufacturing of buildings, bridges, roads business or we can say construction industry in on boom, especially in developing and developed countries. This is the business which adapt changes in technology very frequently and which impacts on business environments, its strategies and its performance management and measurements (PMM)[1].

These environmental aspects have caused Construction industry to made modification or revision for their strategies and also in their PMM Systems to reflect these changing factors [2]. Over the decades, the evolution of the business environment has brought a Project Management revolution [3], which led to changes. The revolution of the Project Management has moved the Construction Industries to an incremental pace [4].

In view of this, contemporary performance measurement and management CPMM is being adapted and implemented by several construction organizations to drive performance improvement [5]. Over the past few years, many studies were conducted on PMM in construction [6] and most of them have focused on the project-level performance [7]. This paper keenly studied the past researchers point of view and concepts for proper analysis and development of the model [8].

II. Literature Review

Most of the researchers [9] main aim of the research was to analyze the different aspects of project requirements for the well-organized performance in construction Organizations, which are important so that the Project management team engineers should be aware of; which was done via questionnaire survey. The data collected will be used to interpret results and suitable suggestions to improve the performance management.

They explained the need in the present market of the construction and it's important to measure the performance of the project management team; engineers and their work are as per the standards of the Industry. It is not being followed in many companies and expects a positive financial turn over regardless of the performance of their employees [9].The study involves in identifying various aspects of a project for the measurement of performance of the project managers and site engineers. The whole study is based on performance management and finding out the methods in practice of a construction project with respect to those practices which are Planned. Then a questionnaire survey is prepared and used for the collection of data from the project management team of various companies. A survey is done based on the weighted scale questionnaire for obtaining the results which is further analyzed. Based on the result suitable suggestions are made to enhance the performance of the engineers [9].

Some researchers performed a Macro level analysis study, and the results shows that the rate of productivity development in construction industry has been moderate at best, leaving behind the best of its international counterparts [10].Author describe the Productivity and Profitability with different characteristics measurements and the Productivity analysis in Construction Industry.

Literature survey showed that most of the work is concentrated on study of the need of Performance Management and its measurement at the corporate level like at top or middle level of the hierarchy of project organization or the other studies shows only the part of productivity as Performance Management but failed in defining the main Performance and the main contribution of the bottom level hierarchy of the project.

As the work force is the main and large contribution towards project success it's not the Project Manager or site staff but the workmanship at the bottom level of hierarchy of the Project Organization chart who contributes their performance towards the profit and loss of the project but also towards the industry.

Since the problems of performance and execution lies with the work force of the construction site which plays an important role for the overall project and company's evaluation Management. So there is a definite need for any infrastructural project to have a prototypical model which can enhance the performance and its evaluation.

III. Objective of Research

Main objective of this research is to get detailed information for improvement of the performance depiction by marking or measuring the issues which creates hurdle in improvement of performance, and in on time implementation of any infrastructural project, by creating management index after getting direct and indirect data from onsite or offsite of all the workforces whether it be behavioral or work execution related.

IV. Research Methodology

To achieve the research objectives we divide the data collection and measurement in four levels or factors according to literature Study. A basic introductory of all the work force carrying out the primary questionnaire design was developed which was requested to validate from an academic expert and two field experts to have an opinion and feedback on the developed questionnaire.

Based on the questionnaire which consist of four sections to know about the respondent profile in the company his position and work experience followed by recording his understanding and behavioral aspects of the work carrying through direct and indirect observation and questioning to assess his scope of knowledge about the project and the work that needs to carryout.

Step four is creating a portfolio of the work force and entering all the data collected for each employee his understanding knowledge of the work to execute along with behavior towards his reporting boss.

in this step the collection of the evidence related to the standards of the different works of the project like every country have the occupational standards and health and safety standardsthrough multiple choice questions for the engineers and foremen.

And the last steps is analyzing all the data and find the performance and wastage of hours and how much it effects the cost and the schedule of the project and the ways to improve the performance of workforce has influenced the Project, its knowledge the understandings and how wastage of hours can controlled.

As most of the Infrastructure projects have different standards that need to be fulfilled, we choose an Infrastructure or framework Project consists of construction of Housing Society with utilities building for the research purposes.

V. Details of Data Collected

On the first page of the questionnaire survey, we introduce our research goals, plans and procedures to each of our participants, and obtain the written informed consent from all the participants.

In order to obtain reliable and effective data, we adopt the multi-stage sampling method to conduct a sample survey on the employees of the Construction Company in MANDA Company, which is a construction building and consultancy company. Here, we research or survey on the Housing Society construction project. According to the purpose of the research survey of construction site, we use the four questionnaires, databases for data collection of Details of project, Direct Assessment of Evidence, Questioning, Indirect Observation Data.

For our research we study on the infrastructure project of “Housing society development”, by the manda group, and the total cost of the Infrastructure Project is 23951770.86 AED of which a project cost 2993971.36 AED (clearly there is a loss).

Data is collected in four sections, following are the details of sections:-

1. Step 1: Detail of the Project Company

Following questions are designed to get the details of the project:-

a. Name and work of nature of the company
b. Number of employee category wise.
c. Experience of company in its field.
d. Range of Projects in which he is involved.

2. Step 2: Data Collection and Assessment by Direct observation

Direct observation is done for recording the evidence of different trades on the site

i. Whether the scope of work is in line with the National occupational safety and standards or not.

ii. Quality assurance of the work is carried out or not and accordingly it is recorded.

The total percentage of the work group is divided on grade according to their performance and the score is based on the percentage.

Results of Assessment of different workforce will be accessed according to following grading and percentage criteria shown in table 1.

Table 1. Assessment Criteria

Location of Assessment: Sharjah, UAE		
Trade Accessed	**Performance grade according to safety standards and quality assurance**	**Workforce Score in Percentage**
Steel fixers, Shuttering works, Masonry works, Interiors works, MEP works	A	95%+
	B+	81%-94%
	B	615-80%
	C	50%-64%
	Fail	Below 50%

Table 2: Direct Assessment-Performance of workforce in particular trade or measure in Section B

No.	**Trade**		**Productivity**
1	Flooring	(block flooring)	4 m2
2	slab work	(300mm hollow slabs)	30 slabs
3	Spray Coating	(12mm internal extract)	6 m2
4	Steel Setting	(20mm rebar)	220 kg

3. Step 3: Questionnaire Development

Questionnaire is developed to assess knowledge regarding the scope of the project, to record the employee's evidence, to point out the gaps of their understanding.It is done through the following.

i. Multiple choice questionnaires are provided to test knowledge and understanding of foremen's and site engineers who can read and write.

ii. Underpinning is the best way to assess the knowledge and it is done by asking some technicalquestions.

Sample of Questions asked.

i. List out the five items of PPE.

ii.Calculate the area of block that to be laid for a distance of 6.5mts Long and 3.6mts in width.

iii. Define Kinetic Lifting.

iv. Standards for Plastering required in the scope of work.

v. Safety requirements during lifting of materials.

4. Step 4: Indirect Observation Data

Indirect observation and its evidence is recorded by, Pointing our each employee and there details of work and there way of doing, providing a form filled for evidence to scope of works, there productivity & quality, Professional discussion, whether they Following Health and Safety.

VI.Results:

In result evaluation we keep in mind the Results of Market Research, On Site Assessments – time and motions studies, Measuring performance against standard productivity norms, Discussions with contractors [52-55]. And as shown in table 3 most of the workforce fails to meet the standards. Reasons of failure to meet the standards of the project according to the onsite Assessment data is unorganized workforce, lack of planning, no proper targets, management issues, Unskilled labor, improper tools, and other H & S issues.

Table 3: Final Results/Assessment of different workforce Section according to data collected

Location of Assessment: Sharjah, UAE			
Trade Accessed	Performance grade according to safety standards and quality assurance	Workforce Score in Percentage	Workforce Score in Percentage, who qualify the measures
Steel fixers, Shuttering works, Masonry works, Interiors works, MEP works	A	95%+	12%
	B+	81%-94%	0
	B	615-80%	0
	C	50%-64%	40%
	Fail	Below 50%	48%
Description: The operatives ranked here are supervisors in the making. They have a very goodunderstanding of setting out for tiling, plaster, block work, screed			
Lead teams and carry out high quality of work			

As a resultant of these issues company suffers with-

- Low Productivity
- Cost Implications
- Loss on Labor

If we keep an eye on particularly of low productivity issues, then table 4 shows the actual work hours which are actually productive.

Table 4: Low Productivity evaluations in terms of Time

evaluations in terms of Time	
Average Work Hour per day(8 Hours)	**Hours**
Actual Productive Hours	4.5
Poor time keeping	1
Downtime – Poor forward planning	1
Under performance due to poor skills	1.5
Average time lost each day (WASTE)	**3.5**

Table 5 Evaluation of loss in term of Cost

No of Labour	**Total days in a month**	**Paid Leave**	**Working Hr**	**Payment (AED) per hr**	**Annual Total cost**
74	26	15	8	4.79	927269.4
No of Labour	Total days in a month	Paid Leave	Actual Working Hr	Payment (AED) per hr	Annual Total cost
74	26	15	4.5	4.79	521587.9
Loss in a year in terms of labour cost	927269.4-521587.9				405679.5 AED

VII. COMPLIANCE:

a. Scope of the Project and its Understandings.

b. Some features of the scope of the project and identifications may be differed from the collecteddata from the

performance of the work of employees and then further validated with the multiple choice questionnaire.

c. Indications during Assessment.

d. The strategy of assessment will be set out for the Observation of Evidence and its requirements.

e. Collected data of the evidence will show whether the employee is consistently working with competences and meets all the work performance requirements with proper understanding ofscope of the project.

f. Knowledge and evidence from the observation collected will match with the requirements of Standards.

VIII. CONCLUSION:

The main Effect of Low Productivity is directly affecting the Worker Salary, which ultimately goes low. So, Performance improvement of the employees is the urgent necessity to reduce the wastage hourswhich affects the cost and the duration of the Project. According to our survey if project duration in a year daily loss of time 4.5 hr per day then it effects the duration of the project by one year. Also by the onsite Assessment data it is found that failures to meet the standards of the project are more i.e. 48% and with C grade 40% and only 12% workforce meets the requirements of the project which ultimately results in over Cost and Delays in the completion of the project. We suggest Performance improvement of the workforce can be done through proper organization of all the employees in groups with their trades and given proper training and knowledge with proper scope of the work and standards to follow.

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