Study of Construction Project Parameters to Achieve Project Life Cycle

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Abstract*:*
Risk management is important for every construction project. It is use to improve performance of project and increase the profit. Now a day, project become very complex and they have particular budget. So, companies and manager have responsibility to complete the work with time and schedule. Project work presents an application of risk management in the early stage of a project life cycle of a construction. Project life cycle contains various phases like conceptual, planning, execution and termination. This project life cycle may delay due to some reason. This delay occurred in any stage of project. In that project, work on the early phase of project. In this process, we prepare questionnaire for the stages like site selection, design, vendor and implementation. After that, find out best result through their comments. Then using Taguchi method to find out the best result. This result put into Anova. Find the best optimal value. Using this parameter find out overall effect on project life cycle. After end of that, expected reduction in project cycle time and reduce the cost of project. So that indirectly project completion time will reduce and also waste will be eliminated. The aim of this research is to identify risk and uncertainties in construction industry and then find out better solution for this. So, this data will be useful for development of risk management to be adopted in construction project.

Keywords:Risk Management (RM)

1. Introduction

1.1 Risk Management

Risk management is most critical parts of commissioning. This indicates strong relationship between managing risk and project success. Also risk management described as the most difficult area in construction management and its application promoted in projects to avoid negative consequences.
One concept wildly used in risk management is called risk management process. It's consist of four main steps: identification, assessment, taking actions and monitoring the risks. More construction companies are starting to become aware of the risk management process, but are still not using models and techniques aimed for managing risks. Risks differ between projects due to the fact that every project is unique, especially in the construction industry. However, there are still many practitioners that have not realized the importance of including risk management in the process of delivering the project. Even though there is an awareness of risks and their consequences, some organizations do not approach them with established risk management methods. The aim of each organization is to be successful and risk management can facilitate it.

1.2 Project Life Cycle

The project manager and project team have one shared goal: to carry out the work of the project for the purpose of meeting the project's objectives. Every project has a beginning, a middle period during which activities move the project toward completion, and an ending (either successful or unsuccessful). A standard project typically has the following four major phases: initiation, planning, implementation, and closure. Taken together, these phases represent the path a project takes from the beginning to its end and are generally referred to as the project "life cycle."

The tool of risk management project life cycle is used as a management tool to improve a projects performance. However, several terms are often used within one particular sector even though a number of phases can vary. Therefore, it is difficult to systemize and provide one common scope and definition of a project life cycle.

1.3 Problem Statement

It is clear from the above literature that effective project management is a key to the enhanced project life cycle. Project life cycle is to be maximized to deliver maximum value to the customer. Through effective risk management, project completion time schedule can be maintained, waste can be reduced, and by application of innovation in the process methods the project life cycle can be enhanced.

1.4 Objectives of Project

1.Identification of various risks involved at various stages of project execution.

2. statistical analysis of the same to find the co-relation and interaction between various factors and identify the significant factors.
3.Proposal of innovation in construction methods, materials to the significant factors and test the feasibility of the same
4.Application of statistical tools like factorial design and Anova to the predict the effect of the various factors on project life cycle by use of Minitab 17 software

1.5 Scope of project

In the project work a detail study of above processes will be done to identify the current practices followed their problems and pitfalls and the statistical tools will be used to co-relate the cause and effect and interaction between various elements to find out the significant elements in process. Then these elements will be replaced via innovation by different novel methods.

2. Methodology

1. System design of Project life cycle as for the component of system selection, company profile selection, Process selection, Scheduling and Routing channel selection etc.
2.The Process parameters under study. Design specific questionnaire preparation for every stage of Component selection (Site selection, Architecture drawing preparation, supplier selection& implementation)
3. Mathematical modelling (Design of experiment using Taguchi method)
4.Analysis of variance using Minitab software to find the influential factors.
5.Selection of optimal values of the parameter for maximum project life cycle
6. Methodology preparation required for experimental analysis and validation.
7.Result discussion

3. Data Collection

Firstly, start to collect relevant data to project. Start with preparing questionnaire for various aspect. This questionnaire divided into four categories. These are: site collection, design, architect and implementation.

Site Selection Questionnaire

Site search and selection is a major element of the process of creating a supportive housing project in which units of housing are being developed. With some exceptions, it is impossible to seek permanent financing and community support until the site is identified and site control has been secured. Prior to initiating a site search, it is important to first develop the project concept, including defining the site and configuration requirements for the proposed supportive housing project.
The site selection process is most successful when it is a methodical search for the site that best meets established criteria, including size, location, proximity to services and price — factors that will help ensure the project fulfils the needs of future tenants. However, in many situations, a thorough and careful site search may not be possible.

The circumstances that can impact a site search include:
• An inadequate inventory of available and appropriate sites in the community
• A very hot real estate market and competition from for-profit developers with large amounts of upfront capital
• A limited funding opportunity that doesn't provide adequate time to conduct a thorough site search
• A site becomes available that offers cost efficiency, political expediency, and/or other factors that outweigh its deficiencies
Regardless of the challenging circumstances that can influence the site search and selection process, the primary components of the site selection process include:

Questionnaire for Site Selection:

Project Description:

a) Project Over view:

Introduction**,** main goals, operation, instructions etc.

b) Timing

Milestones	**Estimated Date**
Transmit RFI	(Date)
Receiving Location Proposals	(Date + 2-3 Weeks)

Select investment areas for further Analysis	(Date + 5-6 Weeks)
Conducted Detailed Due Diligences	(Date + 1-2months)
Select Final Location	(Date + 3-4months)

b) Site Requirements

Site requirements at full Capacity
Total Land Requirement
Construction Surface
Soil Load Bearing
Building Foundation and Depth Requirement
Preferred water table depth
Rail Access
Highway Access
Hospital Access
Schools Access
Mall / Cinema / Recreation Facility Access

d) Site Utility Requirements

Site ultility requirements at full Capacity
Electric
Demand (Mega Watt)
Usage Mega watt hour / year
Natural Gas
Peak demand (Nm3/H)
Usage of Natural gas Nm3/year
Water
Industrial Water Average usage (m3/hr)
Industrial water Estimate Consumption (m3/day)
Drinking water (m3/day)
Waste
Industrial waste water(m3/day)

e) Approximate Employment Estimate

Employment level at full Capacity
Site Production
Site Managers

Site Staff
Site Security
Site workers
Total

- **Site Viability and Environment:**

Project Support
(Contact information)
Name:
Designation:
Phone:
E-mail:

- **Business & Environment**

Top Industrial clusters
Recreation Gardens - Walking Plaza etc.
Worship Centers (Temple / Mosque/ Church)
Major Educational Institutions/ Universities

4. Data Analysis:

Analysis of Data Using Minitab Software

Design of Experiment (DoE) by using Taguchi L16 Array

The investigation experiments are designed by using Taguchi based L 16 array. The experiment set is repeated for a conventional and wiper insert. Following table shows process parameters and their levels.

Parameters	**Levels**			
	1	**2**	**3**	**4**
Site Selection	A1	A2	A3	A4
Design	B1	B2	B3	B4
Vendor Selection	C1	C2	C3	C4
Implementation	D1	D2	D3	D4

Table 4.1 Design of Experiment procedure by Taguchi

Taguchi Design

Taguchi Orthogonal Array Design
L16(4^4)
Factors: 4
Runs: 16

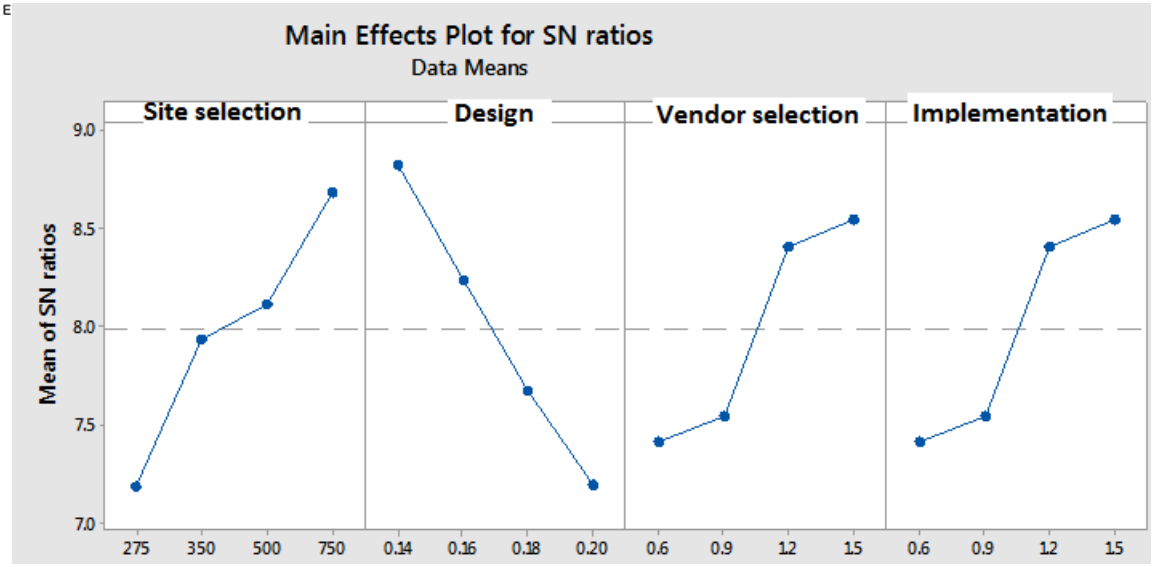

Fig. 4.1 Main Effects Plot for SN

Using the signal to noise ratio the Optimal values of the parameters will be determined and then the effect of the optimal parameters on the project life will be determined.

5. Result And Discussion:

1. The Data collection phase will be done for all the above mentioned parameters and results will be tabulated and analysed.
2. Effect of each parameter will be determined on the basis of p-factor for 5 percent variance.
3. The optimal parameters for maximum project life will be determined

6. Conclusion:

Four problems were identified that influences project life cycle. Following are: Site selection, Design, Vendor, Implementation. Out of which site selection criteria was selected and detailed questionnaire for data was prepared. This questionnaire will be used for data collection and analysis. Using this analysis find out various risk which effect on project life cycle. Using these results try to achieve project life cycle.

7.Future Scope

1.There are various factors affect to the project life cycle. So, overcome these factors will use above methodology to enhance project life cycle.
2.Due to this construction time and its cost will save
3.Due to this project completion time will reduced and also waste will have reduced.

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