

LEAN MANAGEMENT IN CONSTRUCTION TECHNIQUES

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Abstract

Waste in construction projects indicates that waste can occur at any step of the building process. In recent years, various research initiatives throughout the world have focused on waste in the construction. It is widely acknowledged that building generates a significant amount of wastage. To decrease waste in the building, the following aspects are site time and cost. The goal of this project is to reduce construction waste using lean concepts. Construction wastes are regarded by Lean Construction as potential wastes that inhibit the flow of value to the client and should be removed. The method often begins with physically mapping the present state and progresses to a future, which can serve as the base for additional lean initiatives. Minimizing material waste would not only improve the work and add value to individual consumers, but it would also benefit to the entire economy. Lean technology is a new management method in today's industrial sector since, it has direct the impact on total performance of the organization. A questionnaire survey has been prepared in factors used to obtain the data from the construction management. The ranking method analysis are carried out by use of Statistical Package for the Social Sciences software. Implementation of lean provides minimizing the waste with maximum result.

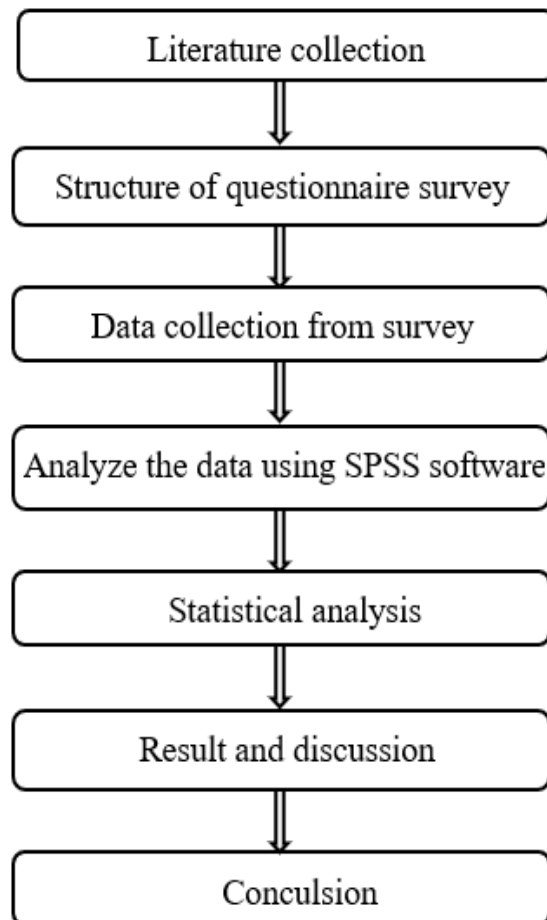
Keyword: Lean Construction, Lean technology, Minimizing material waste, Ranking method, SPSS.

1. INTRODUCTION

Lean construction is a way to design production systems to minimize waste of materials, time and effort in order to generate the maximum possible amount of value. It is also a holistic design and delivery philosophy with an overarching aim of maximizing value to all stakeholders through systematic, synergistic and continuous improvements in the contractual arrangements, product design and method of selection, the supply chain and the workflow reliability of site operations. The construction industry lags far more years behind the manufacturing industry because of the several reasons. Lean means to make a work as easily and understand the process of work, analyze and control the defects. It was adopted in the 1940's but it was established in the year 1990's used in the construction industry. And it became well known and this idea was used in both the practice and construction management. The Toyota production system was considered by some to be the most efficient in the world, it was claimed that their lean principles are applied in both manufacturing and also business activities. LC is aimed at reducing defects like cost, time, effort and materials.

Minimize the wastage and obtain a maximum result in construction. This improves the delivery method and satisfies the client's needs and procedure by eliminating the barriers in construction. The objective of this study to access lean construction from the various views the project. To identify the benefits and defects, associates, by executing the lean concept and evaluate the barriers in construction using Six Sigma and SPSS software to increase the project.

2. METHODOLOGY



3. ANALYSIS METHOD

The construction project forecast the wastage. Based on that questionnaire survey is collected from the 30 industries through the direct interviews, they are categorized into five factors they are,

1. Operational factor
2. Procurement factor
3. Resource factor
4. Material handling and storage factor

5. Labour factors

Statistical Package for the Social Sciences (SPSS) is the most extensively used program for statistical analysis. data using descriptive statistics like frequency, mean, standard, minimum, and maximum and examine the relationship between the variables in this spreadsheet has data view (enter data) and variable to create and define the variables. And collected companies data are feed into the software and analyse the data and ranked as the most affected defects in the software. originally it is an acronym of SPSS but it is opinions for numerical standard and experience solution. one of the highest popular statistical packages which can achieve extremely complicated data manipulation and analyze with easy instruction. This software used for data analysis in research can be used to process surveys, reporting tables, graphs, analyse the mean. In this SPSS software used to analyze by two method are,

3.1 Relative Importance Index (RII) Method

The feedback from the respondents had been analysed using excel application. Relative index analysis was selected in this study to rank the criteria according to their relative importance. The following formula is used to determine the relative index.

$$RII = \sum W/A * N$$

Where, W is the weighting as assigned by each respondent on a scale of one to five with one suggesting the least and five the highest. A is the highest weight and N is the total number of the sample.

3.2 Regression method

Regression analysis is a statistical analysis to estimate or forecast any relationship between the value of dependent variables (outcome or response variable) based upon the two or more independent variables (predictor or explanatory variables).

4. RESULT AND DISCUSSION

		Frequency	Percent	Valid Percent	Cumulative Percent
	AGREE	12	30.0	30.0	30.0
	NEUTRAL	15	37.5	37.5	57.5
	DISAGREE	11	25.0	25.0	92.5
	STRONGLY DISAGREE	3	7.5	7.5	100.0
	Total	40	100.0	100.0	

Table 4. 1: Shortage of skilled labours

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AGREE	7	17.5	17.5	17.5
	NEUTRAL	15	37.5	37.5	55.0
	DISAGREE	12	30.0	30.0	85.0
	STRONGLY DISAGREE	6	15.0	15.0	100.0
	Total	40	100.0	100.0	

Table 4.2: where the inspection of the project that leads to the good quality of the plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	STRONGLY AGREE	2	5.0	5.0	5.0
	AGREE	9	22.5	22.5	27.5
	NEUTRAL	7	17.5	17.5	45.0
	DISAGREE	14	35.0	35.0	80.0
	STRONGLY DISAGREE	8	20.0	20.0	100.0
	Total	40	100.0	100.0	

Table 4.3: Preventive maintenance in your organization

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	97.558 ^a	68	.011
Likelihood Ratio	58.443	69	.788
Linear-by-Linear Association	2.409	1	.120
N of Valid Cases	40		

Table 4.4: Seasonal changes affect the work

Shows coefficient of determination (R square) 0.43, which means 43.0% difference in the dependent variable (Designation) is clarified by the independent variable (factors).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	325.725	17	19.160	.927	.558 ^b
	Residual	433.967	21	20.665		
	Total	759.692	38			

TABLE 4.5: ANOVA^a

5. CONCLUSION

Adoption of lean construction such as using thinner internal walls and floor slabs and reducing foundation size could minimize the amount of raw material being used and thus reduce the amount of waste. Proper use of lean perceptions and performs can be accepted in Indian construction plans. With the use of lean, there is the achievement of more by use of continuous decrease of wastage generated in the construction industry. The maximum affected factors are recognized by ranking by means of SPSS analysis of RII, and Regression method. And find the critical factors from the collected respondent's data. Based on the work carried out the companies accepted the conditions that were created in the construction. which is recognized from the collected responds of various construction. Lean concepts/ principles used to minimalize the defects in companies. the most affected factors are identified and ranked by use of SPSS software and improve the work.

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