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Development of Procurement Policy Project for Construction

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ABSTRACT: Procurement is depends on the kinds of work, sequence of work. Customer wants the work very speedily with early start of construction work. Procurement is nothing but the creation and management of any type of contract. Some parameters are very important in the construction procurement such as Cost of material, quality of material, material handling time. Suppliers are located in different places from construction site that directly effect on the cost of material as well as transportation time. While procuring the construction material all above parameters are very important. There is different type of parameters of the procurement but in this paper following three parameters are considered such as Time, Cost and Quality. The conspicuous components for arriving at a purchases decision are cost, lead time and quality of commodity being purchased.

I. INTRODUCTION

Every manufacturing industry aims at producing maximum benefits within less time. But during this quality may be loss so it is necessary to check the quality is within desired tolerance level which can be accepted by the customers.

With the approach of new materials and procedures in the development business combined with squeezing due dates for the ventures, the requirement for sorted out acquirement arranging has increased more significance to date.

The absence of organized techniques, in light of good data, for the choice of development obtainment framework here and there restrains the open door for customers to pick an acquirement alternative in a completely educated way.

The development business varies from most different ventures, since it tends to create an irregular model rises as a model and is imitated, the development can be contrasted and mass items.

Unlike with mass production, the client usually takes the initiative to have construction designed and build. The client is the actor who pays for the construction. Then client may sell or let construction later Thus the client is the one who orders the construction. There are different parameters consider during procuring material.

1. Time
2. Cost
3. Quality

Time: - Completion of any construction project on time is the project success for the Client, contractor, and others which are related with the projects. Time is related with costs. It plays a vital role in the construction process. Time administration is only the demonstration of arranging, controlling lastly executing particular exercises, particularly to expand proficiency or efficiency.

Deferral for consummation of task or likewise wastage of work assets are happens because of wanted material isn't accessible at wanted time. Time administration is vital in the development. There are many causes for delay of completion of construction work such as

- i. Workers are paid by hourly basis.
- ii. Sometimes one group or company must wait for another group to finish their work before starting of next work.
- iii. If construction work is not completed on time then company loses that payment of work. So time management is very important for construction companies.

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Cost of material: - Construction is possibly one of the most cost orientated industries in any economy. The essential method of provider choice has constantly had a tendency to be based on most reduced material or administration cost at purpose of utilization.

There are distinctive sorts of the costs, for example, overhead charges, benefit; work expenses and wastage of material are combined into the cost of the materials. Development is one of a kind inside the different ventures making up an advanced economy in that the main part of the materials and segments that it utilizes are of generally low esteem while being of high volume. Cost is consisting of different type of material purchase in the form of transportation from the view of production to the view of consumption. Price of material consists of quantities and delivery time.

Quality: - As indicated by client quality is only the execution to standard. Quality means the addressing clients' needs or fulfilling to client. Quality does not have any significant bearing to the items just it likewise applies to the diverse kinds of technique or forms and hierarchical condition related with it. Definition of quality according to customer is quality of fit, finish, appearance, function and performance.

Process and Procurement of the Material is very essential in a construction industry. In extensive nations there are numerous issues related with development industry .The real issues are the low qualities of material and about consumer loyalty. The fundamental protest of this work is to boost the strategies of acquisition parameters. Acquirement of Construction material is the best strategy which gives the depiction of procedure of material obtainment. To enhance the obtainment method and development industry improvement is essential. There are diverse techniques for securing the material utilized as a part of development industry.

II. LITERATURE REVIEW

Shrinivas Athreya, Dr. Y.D. Venkatesha"Application of Taguchi Method For Optimization Of Process Parameters In Improving The Surface Roughness Of Lathe Facing Operation",

Surface finish of any product is conducted on lathe machine. Surface roughness is measures of smoothness of product and it is one of the most important things which directly effect on cost of product.

Surface finish directly effects on the life of the product and so it is very important to obtain higher grades of surface finish at minimum cost.

Following are the different methods which are developed and used to optimize roughness of surface of product.

- 1) Build-Test-Fix
- 2) One factor at a time.

It is the statistical approach which attempts to provide different predictive knowledge of a complex, multi variable process with few trials. Following are the main approaches to DOE

- 1) Full Factorial Design
- 2) Taguchi Design

In this study three main factors are considered such as speed, feed and depth of cut. The Suitable Orthogonal array is selected then experiments are carried out.

Three parameter and three levels are selected .The most suitable orthogonal array L9 is selected for conducting experiments. According to orthogonal array 9 experiments are conducted for five times after that surface roughness is measured with the help of surface roughness tester.

Experimental data which gives the optimum three value of speed, feed and depth. Full Factorial analysis is compared with taguchi parameter design it gives the sane result with lesser experiment.

Taguchi method provides simple, systematic and efficient methodology for optimizing the process parameter.

R. Murli Krishna, T. V. Subha Reddy, Eshwara Prasad Koorapati and N. Ravindra Reddy," Optimization Of Turning Process Using Design Of Experiment",

Every manufacturing industry aims at producing large number of product in minimum time. Turning is a process in which removal of metal from outer diameter of rotating cylindrical work piece. Turning is the process in which diameter of work piece is reduced to specified limit.

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Quality of product is very important factor during procurement of any product. The main objective of this paper is the optimization of turning process by using DOE to meet customer needs. Cutting speed, feed rate and depth of cut these parameters are used as a cutting parameter.

Experimental data is collected and analyzed by using S/N ratio. At first experiment hardness is reduces when speed increases but when further speed is increased then hardness is increased.

Finally the experiment gives the result such as cutting speed and depth of cut are significant variable to SR of mild steel. Surface roughness decreases with increasing spindle speed. Surface roughness is increases with increase in depth of cut. When feed rate is increases then surface roughness is also increases.

Achyut k. Panda, R. K. Singh, "Optimization of Process parameters by Taguchi Method: Catalytic degradation of polypropylene to liquid fuel",

In the present work distinctive parameters are utilized, for example, temperature, impetus focus and impetus composes. The fundamental goal of the technique is to deliver fantastic item easily to maker.

The exploratory plan proposed by Taguchi includes utilizing orthogonal clusters to sort out parameters influencing the procedure and the levels at which they ought to be fluctuated; it takes into consideration gathering of the essential information to figure out which factors most influence item quality with least measure of experimentation, hence sparing time and assets .

Taguchi technique was utilized to improve the procedure parameters for the creation of fuel from squander polypropylene.

By utilizing orthogonal clusters to outline the trial causes the fashioner to impact of numerous controllable factors on the normal quality attributes and variety in a quick and monetary way.

In the present response framework three working parameters, each at three levels are chosen to assess yield of fluid fuel. By utilizing association plots it can see outwardly that there are non-parallel lines amongst temperature and corrosiveness of impetus likewise the plastic to polymer proportion does not demonstrate any huge communication for yield of fluid fuel.

In the process of catalytic decomposition of waste polypropylene in a batch reactor the rank indicates that temperature has the greatest influence followed by acidity of catalyst and then plastic to catalyst ratio which can be observed effect as well as interaction of potentially influential factors on the degradation of pollutant.

Rosali Abdul Rashid, Ismail Mat Taib , Wan Basiron Wan Ahmad, Md. AsrulNasid, Wan Nordiana Wan Ali & ZainabMohdZainordin, "Effect of procurement systems on the performance of construction project",

The acquirement of development venture is huge in scope since it comprises of the social occasion and sorting out data of partitioned people, firms and organizations to configuration oversee and assemble development items, for example, houses, office structures, shopping complex, streets, spans and so forth for particular customers or "clients". Acquisition comes the word get which truly signifies "to get via care or exertion"; "to achieve" and "to gain".

Framework is about "sorted out strategy, approach, method, process or technique". In this unique circumstance, venture acquirement is especially worried about the composed techniques or process and method of getting or obtaining a development item, for example, a house, shopping complex or street. It likewise comprises of masterminding and planning individuals to accomplish recommended objectives or targets.

There are different procurement systems which are as follows

- 1) Management contracting
- 2) Construction management
- 3) Design and manage

The main difference between contract management and construction management contracting is that in the former, the package contractors are in contract with the management contractor. In the last mentioned, the bundle contractual workers (expert sub-temporary workers) are in contract with the customer or building proprietor. Design and manage system is responsible for the designing the project and managing the construction.

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Following are the different procurement systems

- 1) Traditional procurement system
- 2) Design and Build and Turnkey Procurement Systems
- 3) Management Contracting and Professional Construction Management Systems

Traditional Procurement System:- Traditional system is identified as slowest project delivery approach. This system is longer so that more time is available for the client and the project team to scrutinize and review the design before construction.

This system provides more price certainty to the client at the very early stage of the project. This system does not provide opportunities for contractor to contribute his construction technology and management expertise because they only come into the scene after the design has been fully developed and approved.

Design and Build and Turnkey Procurement Systems:- This system is also known as fast-tracking” or “build-it-fast project delivery system in which design and construction are integrated. In this type of procurement contractor has been selected on its vast experience, knowledge and competency in construction that can able to reduce the construction time.

Cost is fixed at tender stage and is changes with design. Cost of this procurement system is higher than traditional procurement system.

Management contracting and professional construction system:-In this construction system the package contractors enter into contract with the client. Construction time is lesser than other two procurement system because this factor allows more effective and efficient coordination of work, material, manpower and plants. This system allows for early start of construction compared to the traditional system.

Cost of project procured system is lesser than other two procured approach. Cost of project is nothing but sum of prices quoted by package contractor.

III. RESEARCH METHODOLOGY

The development business varies from most different enterprises, since it tends to create an irregular model rises as a Model and is recreated, the development can be contrasted and mass items. Not at all like with large scale manufacturing, the customer more often than not steps up with regards to have development outlined and fabricate. The customer is the fundamental performing artist who pays for the development. At that point customer may offer development later and furthermore the customer is the person who arranges the development.

The Clients can taking free counsel considering a development venture are probably going to need an answer which will address their issues, at a cost they can manage, at a worthy date later on.

Taking unbiased expert exhortation is valuable; however there is no standard technique for getting such guidance. There are numerous experts who could enable an intermittent customer with fair-minded guidance to incorporate engineers, surveyors, fashioners, building temporary workers and building administrations organizations, if they are not to be associated with the development venture itself.

Step 1: Verifying need for construction Project:

Successful solution is depends upon verifying the need for a project. This procedure ought to exude from the customer's incentive or business case for the task and ought to include all partners including the individuals who will go for broke related with the venture and the individuals will's identity straightforwardly engaged with utilizing the finished office. The procedures will important to set up and needs the goals to be met by the task and the money related and physical modified parameters.

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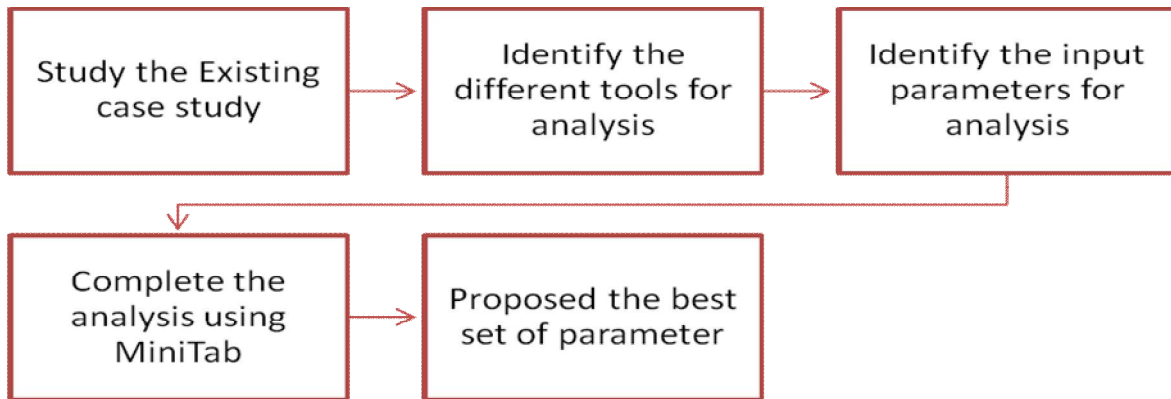
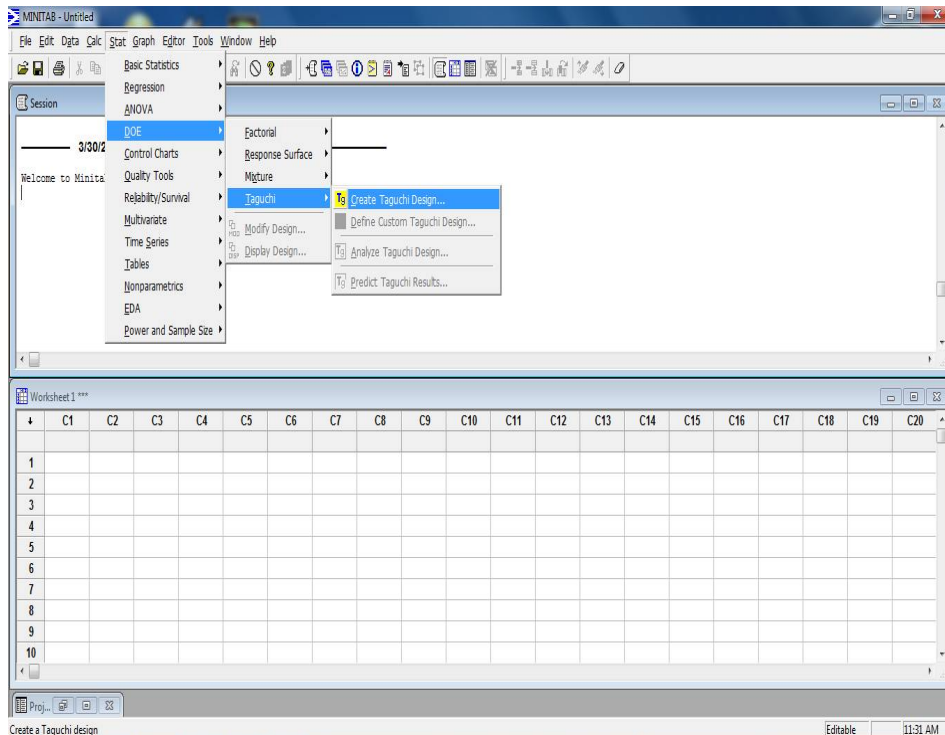


Figure 1: Process of Research Methodology

IV. RESULT

Step-I This shows Design of Experiment of Taguchi Design.



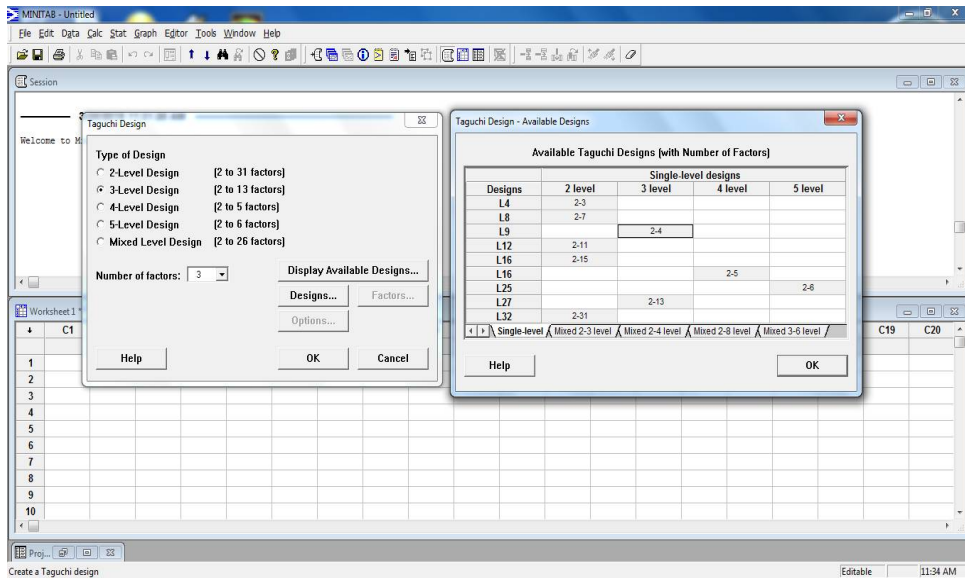
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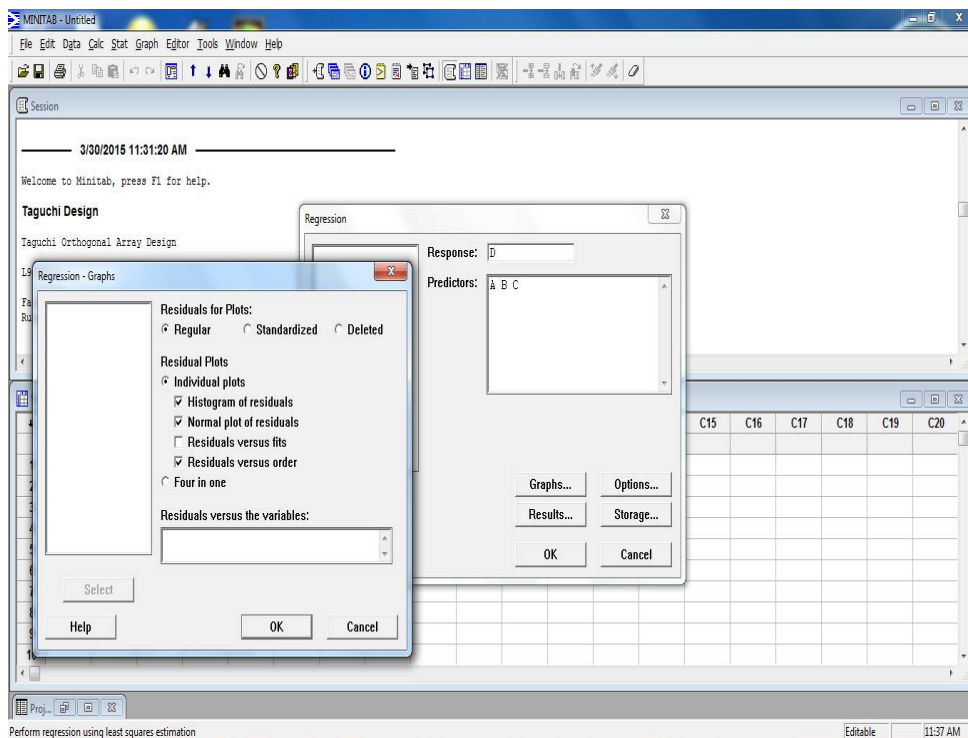
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Step-II Give the number of factor and design of level



STEP-III Give the residual plot.



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V. CONCLUSION

- 1) In the present work OA analysis is used. By using this analysis future work of OA is done through the ANOVA. When data is collected for a designed experiment then this information is used for measuring appropriate optimal solution.
- 2) The process parameters which have predominant effect on the process can be given by analysis of variance. In the analysis of cement the cost per bags is the predominant factor. Which has more effect of cost during procuring construction material? Four different experiments carried out to study the interaction of each parameter on the other. It is very difficult to separate out the contribution of each factor as whole on to the final response.
- 3) By taking the combination of different parameter we get the optimal solution for procurement. From that conclusion is 285 is suitable price for the procurement of cement bags.
- 4) Also in the second parameter labour cost analysis gives the optimal solution such as such as 293 cost, 1.8 Quickness in time, Days, 1.7 Absentism, days, 9.6 Builder satisfaction rating
- 5) The Excavator gives the optimal solution such as analysis gives the optimal solution. Such as cost of Excavator 4500000, Maintenance cost per year 40000, Salvage life, and years 8, Losses born by owner.
- 6) The optimal parameter set for steel is steel per ton is 42000, lead time is 5 days, Distance of warehouse is 20 km, Expenditure is 42000.

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