Abstract
The demand on building construction has been becoming increasingly more complicated, more varied, and bigger. Technology intensive construction projects rather than simple labour-intensive projects are increasing in number. For implementation of any construction project every owner has responsibility regarding method by which project is designed and constructed. Therefore decision regarding a project delivery method is complicated. A motivation behind this study is to find out which project delivery method performs at a higher level in terms of cost, time, and quality. A different project delivery method elaborate role and responsibility of person involved in project and how owner pay for services.

1. INTRODUCTION
Construction sector is diverse as it contains contractors, consultants, designers, owners, and others. Construction projects suffer various problems and complex factors such as cost, duration, quality and safety. There are undue cost overruns, delays and loss of productivity.
associated with construction projects everywhere. In today’s era, one of the biggest concerns for any organization is to improve their productivity, representing the effective and efficient conversion of resources into marketable products and determining business profitability. With the business environment becoming highly competitive, it is essential that organizations improve construction productivity performance for survival.

Now there are different types of project delivery methods available to owner. It is important for specific project to select an appropriate method of project delivery. Contractual relations, contemporary laws and regulations, owner’s perception of risks, awarding mechanisms and the method of payment all contribute to project delivery method selection. Selection of the project delivery system is one of the most important decisions affecting the success of a project. Project size, complexity, innovation, uncertainty, urgency and the degree of Owner involvement all affect delivery method selection and the difficulty of achieving the required results.

2. LITERATURE REVIEW

- **Sanvido and Konchar** carried out study on Project delivery system in his paper entitled as, “Comparison Of U.S. Project Delivery Systems”. The main aim of paper was to study and compare different project delivery methods used in United States. Design-build, design-bid-build, Construction management at risk were three project delivery methods were studied. According to his study, “Cost was defined as the design and construction cost of the base facility and did not include land acquisition, extensive site work, and process or owner costs. The three cost measures were unit cost, project cost growth, and intensity.” The time aspect was defined as “the total as planned time,” and was calculated from the planned start date to the planned construction end date. And quality was defined as, “Quality was recorded separately for the turnover process and for the performance of specific systems.

- **C. William Ibbs et al.** presented a research paper titled ‘Project Delivery Systems and Project Change: Quantitative Analysis. He compared the effectiveness of an alternative project delivery method D/B with the traditional project delivery method D/B/B. paper examined the relationship between impacts on project change by applying different project delivery approaches. Performance data -cost, schedule, and productivity from the Construction Industry Institute –CII were used to compare the average amounts of change for two different project delivery strategies D/B and D/B/B.

- **Wardani et al.** presented their study, “Comparing Procurement Methods for Design-Build Projects.” This research on the procurement method of project delivery systems is important as the for delivery method itself. The data analysis indicated several important trends associated with different performance metrics. Results from this study showed that the low-bid selection process had the highest cost growth, which was9% higher than the qualifications-based procurement method. This study showed that schedule growth from the best value procurement method had an average of 0% schedule growth. Therefore, even though the DB delivery method can possibly lead to superior project performance,
the procurement methodology used to select the DB firm should be evaluated very carefully prior to advertising.\textsuperscript{[3]}

- The study, conducted by Rojas and Kell in his paper entitled as, “Comparative Analysis Of Project Delivery Systems Cost Performance In Pacific Northwest Public Schools”, looked at 297 school projects. The focus of the study was to determine whether CM at-Risk was better at controlling costs when compared to Design-Bid-Build although much of the analysis did not result in statistically significant results, observable evidence was obtained. The analysis of cost control revealed that CM at-Risk did not outperform Design-Bid-Build; however, only 8% of the total projects in the study were CM at-Risk.\textsuperscript{[4]}

- Adetokunbo A. etal. presented their study, ‘Relative Effectiveness of Project Delivery and Contract Strategies’. This paper provides Multi criteria decision analysis techniques which is suitable approach for a quantitative, analytical evaluation of project delivery systems. It reviews several analysis methods for evaluating alternative project delivery systems for the purpose of identifying an optimal solution for any given project. Several methods are methods considered included genetic algorithms, statistical decision theory and multi criteria decision analysis (MCDA). Author found MCDA was appropriate for selection of project delivery system. In his paper, results of research were presented that develop numerical data _quantitative metrics_ called relative effectiveness values from qualitative variables considered in selecting project delivery systems. With the relative effectiveness values, a multi criteria decision analysis methodology can be implemented to quantitatively compare alternative delivery systems and analytically identify an optimal solution for any given project.\textsuperscript{[5]}

- Fereshteh Mafakheri et al. carried out study in his paper titled ‘ Project Delivery System Selection under Uncertainty: Multi-criteria Multilevel Decision Aid Model’. This study is intended to select an optimal project delivery system to ensure project success. In his research, a decision aid model using the analytical hierarchy process (AHP) coupled with rough approximation concepts was developed to assist the owners. The selection criteria were determined by studying a number of benchmarks. The model ranks the alternative delivery systems by considering both benchmark results and owner’s opinion. In interval AHP, an optimization procedure is performed via obtaining the upper and the lower linear programming models to determine the interval priorities for alternative project delivery systems. In cases having incomparable alternatives, which are the most likely case in uncertain decision making, the model uses rough set-based measures to reduce the number of decision criteria to a subset, which is able to fully rank the alternatives. The author concludes that the model was able to effectively facilitate the decision-making process.\textsuperscript{[6]}

- Fouad M. Al-Sinanetal. presented his study in his paper on ‘Facility Project Delivery Selection Model’. The aim of this research was to find out model for project delivery system. There are different project delivery systems and the process of selecting the appropriate project delivery system according to owner's requirements is a very important
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step that may significantly affect the success or failure of the project. Author developed
A project delivery selection model (PDSM), and a project delivery decision model
(PDDM).

- Author concluded that the model consisting of many interdependent, interrelated, and
complex parameters that change with time. The PDSM model utilizes a project delivery
decision model (PDDM), which consists of those parameters provided by the PDSM and
a series of decision-making tools. This model will be helpful to owners for selection
process.7

3. PROBLEM STATEMENT

In India there is considerable growth in construction sector. Due to drastic change In
Technology and material, specialization of design and construction is required. The
construction industry undergoes different changes in project delivery method. These are due
to customer requirements, new technology, and advanced materials. Generally construction
project faced various problems like cost overruns, disputes, late delivery of material, lack of
communication, poor quality. Every project owner is responsible for the implementation of
a construction project and he should take important decision regarding the method by which
the project will be designed and constructed i.e. the project delivery method. Decision
regarding selection of project delivery method is complicated due to various parameters like
cost, time, quality, and schedule. A motivation behind this study is to find out which project
delivery method performs at a higher level in terms of cost, time, and quality. A different
project delivery method elaborate role and responsibility of person involved in project and
how owner pay for services. Contractual relations, contemporary laws and regulations,
owner’s perception of risks, awarding mechanisms and the method of payment all contribute
to project delivery method selection. Project delivery systems offer owners choice in their
search for value in infrastructure, cost, quality, service and technology.

4. OBJECTIVE OF THE PROJECT

Selection of appropriate project delivery method is important aspect for construction
industry. It is therefore important to study the present scenario of project delivery method
for construction and suggest best among them. The objectives of this project are listed as
below;

I. To study Design-Bid-Built and Design –Bid method of project delivery.
II. To conduct the investigation to study the current scenario of project delivery method for
construction.
III. To find out which project delivery system is commonly used in Pune.
IV. To find out significant success factor for Design Bid Build and Design Build method.
V. To analyze the results of the investigation and compare them with the ideal requirement
of a construction projects.
VI. To suggest the feasible method for construction.
5. METHODOLOGY

Study the Existing system

Study the different statistical Methods

Identify the input & output parameters

Taguchi, Regression analysis based on selected parameters

Complete the analysis for both methods DB and DBB

Identify the best suitable method for the given site

6. CONCLUSION

After following the research methodology to fulfill the objectives, the following conclusions can be drawn about method of project delivery. According to analysis there is a significant difference between the performance of DBB and DB projects. In case of DB project it shows good performance with respect to fluctuation. In case of DBB project fluctuation is more. Taguchi Method and regression analysis are identified as a key methods to study BD and DBB method.

7. REFERENCES


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