

# IMPACT OF PREFABRICATION TECHNOLOGY & EQUIPMENT ON PROFITABILITY



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## ABSTRACT

Prefabricated buildings and structures are mounted from uniform prefabricated three-dimensional units, providing strength, preset thermal properties of structures, dynamic stability, and immutability of geometric dimensions of the prefabricated elements during their manufacture, transportation, and installation in special and difficult conditions. Prefabrication has been widely regarded as a sustainable construction method in terms of its impact on environmental protection. One important aspect of this perspective is the influence of prefabrication on construction waste reduction and the subsequent waste handling activities, including waste sorting, reuse, recycle, and disposal. Suggestions for improvement of the industry and study on cost effectiveness of precast concrete construction.

In this project the replacement of non-structural component with prefabrication element is proposed. The cost benefit analysis will be studied including prefabrication element in conventional building.

**Keywords:** - Prefabricated elements, sustainable construction, environmental protection, profitability

## ARTICLE INFO

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## I. INTRODUCTION

Prefabrication has been widely regarded as a sustainable construction method in terms of its impact on environmental protection. One important aspect of this perspective is the influence of prefabrication on construction waste reduction and the subsequent waste handling activities, including waste sorting, reuse, recycle, and disposal. Never the less, it would appear that existing research with regard to this topic has failed to take into account its innate dynamic character of the process of construction waste minimization; integrating all essential waste handling activities has never been achieved thus far. This report proposes a dynamic model for quantitatively evaluating the possible impacts arising from the application of prefabrication technology on construction waste reduction and the subsequent waste handling activities

### Aim and Objectives of Project

**Aim:** The aim of the research is to check the profitability that prefabrication implementation can bring in the

construction industry. This topic aims to propose the possible impact arising from the application of prefabrication technology on construction activities. Prefabricated building and structure are mounted from uniform prefabricated three-dimensional units, providing strength, pre-set thermal properties of structures, dynamic stability, immutability of geometric dimension of prefabricated elements during their manufacture, transportation and installation in special and difficult conditions. The main aim of this project is to identify the use of prefabricated elements in construction industries and to carry a comparative analysis of cost and duration on the site using MSP software.

### Objectives:

- To study construction process of prefabrication systems.
- To compare prefabrication construction with conventional construction in terms of cost, work breakdown structure and feasibility.

- To identify the cost benefit analysis to change parts of RCC building with prefabrication parts for instance doors and windows frame, prefabrication walls, w.c., bath.

## II. METHODOLOGY

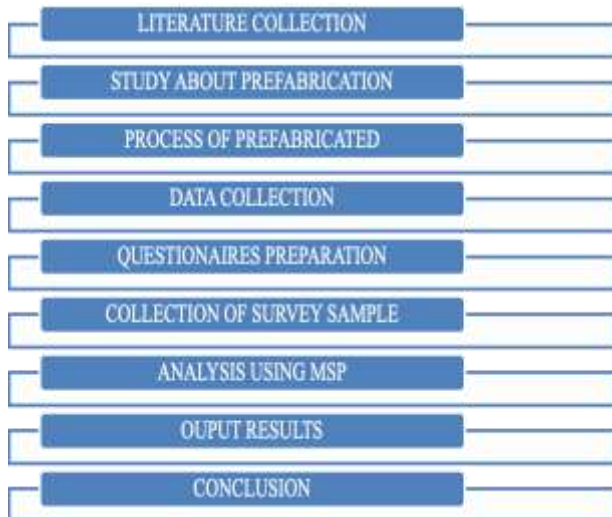


Fig 1. Methodology Chart

### Prefabrication in housing construction

It is very clear that automation brings great value to businesses. It allows them to achieve higher capacities, improved quality and a wider product range, as well as allowing more options to be offered at significantly higher productivity. Companies that run automated prefabrication thus appear to be very satisfied. As to the question of whether the machine technology pays off, we are seeing a consistently positive image. It is important to think through and plan the transition process precisely. Ideally, experts should be involved at an early stage in the process in order to get the best possible result. By taking a step towards automation, businesses are set up for the future.



Fig 2. prefabrication In Housing Construction

The above figure shows that house construction of prefabricated wall having the window and shelves which have already made means prefabricated.

## FACTORS AFFECTING THE COST OF BUILDING WORK- AN OVERVIEW

The issue of the cost of construction work is one that is rarely far from the minds of construction clients, design teams, constructors and, of course, quantity surveyors. The cost of constructing a building project is a primary concern for the vast majority of construction clients. Indeed one of the most common initial questions a client has is what is it going to cost me? often followed closely by „can we do it any cheaper? “Providing answers to such questions is a key objective of quantity surveyors, who set ask it is to predict the likely cost of building work and to manage the evolving project design to ensure that the client’s approved budget is not exceeded The reality is that although the three most important considerations for any client are usually cost, time and quality, the business of building procurement invariably calls for some comprise or a consensus balancing of these priorities. This requires adequate thinking time and careful thought.”

## III. CASE STUDY IN PREFABRICATION



Fig 3. First Floor Aesthetic View

The above image show the ground and first floor of shopping mall or a showroom shop which have the good aesthetic view and having parking area.



The growth of a business depends a lot on its location. And the prime location of Pride Purple commercial spaces gives your business exactly what it needs. Offices here will enjoy easy connectivity to prime destinations, while the shops will enjoy a lot of customer attention!

#### IV. RESULTS AND DISCUSSIONS

#### V. CONCLUSION

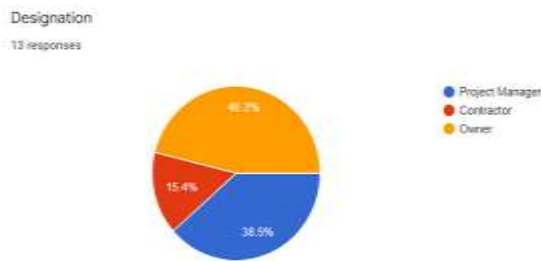


Fig 4. Responses of Challenges faced by prefabricated technology

The above pie chart shows that maximum responses of ownr (46.2%). As well as project manager responses from the stakeholders about (38.5%). Minimum responses of contractor (15.4%).

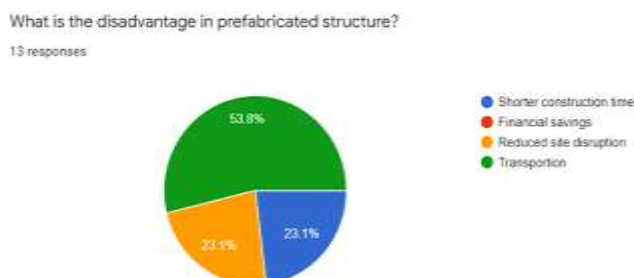


Fig 5. Response of Disadvantages of Fabricated Structure

The above pie chart shows that maximum responses of the disadvantage in prefabricated structure (53.8%). As well as shorter constructin time responses from the disadvantage about (23.1%). Minimum responses of contractor (23.1%).

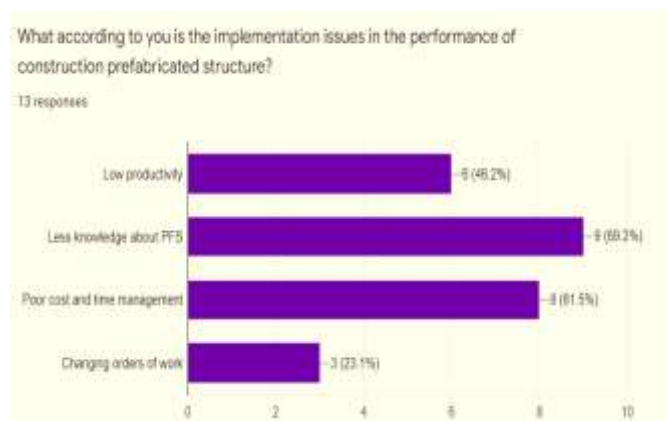


Fig 6 Response of implementation issues in performance of construction

The above graph shows that maximum responses of the implementation issues in performance of construction prefabricated structure for less knowing about PFS (69.2%). As well as for poor cost and time management responses about (61.5%). Minimum responses for changing orders of work (23.1%).

The study of prefabrication process is done which finds that prefabrication reduces activities related with repetitive body movements, ergonomic challenges & ergonomic problems & workers reported that use of prefabrication preassembly reduce hazards related to material handling on site & that reduction of scaffoldings through use of prefabricated preassembly or precast components would lead to less fall on site.

The comparative survey of conventional construction with prefabricated construction found that conventional construction requires 1.95 Cr rupees & 1375 days to complete construction while 1.73 Cr rupees & 1090 days required for prefabrication construction which shows that prefabrication process reduces time and cost required to construction for completion.

In this way we found that prefabricated material reduces time as well as cost required to project for completion.

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