**Assessing Construction Challenges during the House Construction Stage**


## Abstract

This research study investigates the construction challenges encountered during the house construction stage in the Karnal and Hisar regions of India. Using a quantitative methodology, data were collected from 60 participants—30 from each region—through a structured questionnaire. Respondents rated their agreement on various construction challenges using a Likert scale, with responses analyzed through frequency percentages and Weighted Mean Scores (WMS). Key findings reveal significant challenges related to the availability and affordability of building materials, adherence to construction timelines, and lack of flexibility in material selection. Other notable issues include sanitation, waste disposal, workforce shortages, and security concerns. The results indicate a more pronounced difficulty in the Hisar region compared to Karnal, highlighting the need for targeted interventions. This study provides essential insights into the complex challenges faced during residential construction, laying the groundwork for further research and informing decision-making processes to enhance construction project outcomes in these regions.



Keywords: building, challenges, construction, house, process


## Introduction

The construction industry plays a vital role in the development and growth of urban areas, providing essential infrastructure and housing for communities. However, the process of house building is often accompanied by numerous challenges that can impact the timely completion and overall success of construction projects. Understanding these challenges is crucial for industry professionals, policymakers, and researchers to develop effective strategies and solutions. Over the past five decades, the construction industry in India has undergone significant transformations in terms of project scale and complexity. The primary objectives of construction projects have remained consistent, focusing on timely project completion, adherence to quality standards, and staying within the allocated budget (Alaloul*et al.*, 2016). The construction projects play a crucial role in the economic development of a country, contributing to its commercial, infrastructure, and industrial growth. However, delays in construction projects are common, and their impact varies depending on factors such as the project's nature, design, and significance. When a project experiences delays, there are two main approaches: extending the delivery time or intensifying the project's progress to ensure timely completion (Choudhry *et al.*, 2021). (Ng *et al.*, 2004) studied in any construction project, challenges are unavoidable and have a significant impact on its performance. These challenges can arise from various factors, including ineffective communication among staff members, poor workmanship leading to low-quality output, and inadequate availability of materials. Moreover, organizational

shortcomings and an inability to effectively handle critical situations further contribute to these challenges (Yadollahi*et al.*, 2014).One of the primary factors contributing to the low success rate of building projects is often attributed to construction delays(Doloi*et al.*, 2012). These delays stem from a range of project management-related issues involving clients, contractors, design, and consultants (Aiyetan and Das, 2016).Construction challenges encompass a wide range of factors that can hinder the progress and performance of a project. These challenges may arise from various sources, such as technical limitations, resource constraints, regulatory compliance, environmental considerations, and organizational issues. (Mokhtariani*et al*., 2017) stated that the key attributes of a construction project, namely time, cost, and quality, cannot be precisely determined or assessed until the project is contracted and completed. According to (Frimpong *et al*., 2003), project success is achieved when the project objectives and goals are met as intended. This entails achieving successful technical performance while staying within the allocated budget and adhering to the scheduled timeline. This research paper aims to explore and analyze the construction challenges faced during the construction stage of projects.

**Research Methodology:**

The research conducted to analyze the construction challenges faced during the construction stage of houses involved a quantitative approach. The methodology aimed to gather data from respondents in the Karnal and Hisar regions of India. The sample size consisted of 60 participants, with 30 respondents from each location. A structured questionnaire was developed to collect data on the construction challenges faced by the respondents. For each challenge, the respondents were asked to indicate their agreement level on a Likert scale, with options of "Agree," "Neutral," and "Disagree." The frequency of responses for each challenge was recorded as a percentage to determine the prevalence of the challenges among the respondents. The data collected from both locations were analyzed separately, as well as collectively to derive overall insights into the construction challenges. To further analyze the data, Weighted Mean Scores (WMS) were calculated for each construction challenge. The WMS provided a quantitative measure of the respondents' agreement level, ranging from a minimum of 1 to a maximum of 3. Higher WMS indicated a higher level of agreement with the respective challenge.

The study did not delve into the underlying causes or potential solutions for these challenges. However, the research outcomes can serve as a basis for further investigation and inform decision-making processes in the construction industry.

**Result and discussion**

The research study focused on examining the challenges encountered during the construction stage of residential houses in the Karnal and Hisar regions. The results, presented in Table 1, provide a comprehensive overview of the frequencies and percentages of agreement among the participants regarding various construction challenges.

**Table 1: Construction challenges faced by respondents at construction stage**

| Sr. No. | Construction challenges | Karnal (n=30) | Hisar (n=30) | Total (N=60) | WMS (Karnal) | WMS (Hisar) |
|---|---|---|---|---|---|---|
| | | Frequency(%) | Frequency(%) | Frequency(%) | | |
| **1.** | **Availability of building material** | | | | | |
| | Agree | 10(33.33) | 20(66.66) | 30(50.00) | 1.83 | 2.50 |
| | Neutral | 5(16.66) | 5(16.66) | 10(16.66) | | |
| | Disagree | 15(50.00) | 5(16.66) | 20(33.33) | | |
| **2.** | **Affordability of building material** | | | | | |
| | Agree | 11(36.66) | 19(63.33) | 30(50.00) | 2.03 | 2.50 |
| | Neutral | 9(30.00) | 7(23.33) | 16(26.66) | | |
| | Disagree | 10(33.33) | 4(13.33) | 14(23.33) | | |
| **3.** | **Lack of flexibility in selection of building material** | | | | | |
| | Agree | 21(70.00) | 15(50.00) | 36(60.00) | 2.53 | 2.33 |
| | Neutral | 4(13.33) | 10(33.33) | 14(23.33) | | |
| | Disagree | 5(16.66) | 5(16.66) | 10(16.66) | | |
| **4.** | **Setting and sticking to construction timeline** | | | | | |
| | Agree | 16(53.33) | 15(50.00) | 31(51.66) | 2.36 | 2.33 |
| | Neutral | 9(30.00) | 10(33.33) | 19(31.66) | | |
| | Disagree | 5(16.66) | 5(16.66) | 10(16.66) | | |
| **5.** | **Adequate sanitation, drainage, sewage, waste disposal and environment** | | | | | |
| | Agree | 17(56.66) | 14(46.66) | 31(51.66) | 2.46 | 2.23 |
| | Neutral | 10(33.33) | 9(30.00) | 19(31.66) | | |
| | Disagree | 3(10.00) | 7(23.33) | 10(16.66) | | |
| **6.** | **Lack of skilled workforce** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Agree | 11(36.66) | 8(26.66) | 19(31.66) | 2.23 | 1.96 |
| | Neutral | 15(50.00) | 13(43.33) | 28(46.66) | | |
| | Disagree | 4(13.33) | 9(30.00) | 13(21.66) | | |
| **7.** | **Curing process for strengthing of building taken care of properly** | | | | | |
| | Agree | 6(20.00) | 15(50.00) | 21(35.00) | 1.83 | 2.33 |
| | Neutral | 13(43.33) | 10(33.33) | 23(38.33) | | |
| | Disagree | 11(36.66) | 5(16.66) | 16(26.66) | | |
| **8.** | Changes in design | | | | | |
| | Agree | 15(50.00) | 13(43.33) | 28(46.66) | 2.33 | 2.23 |
| | Neutral | 10(33.33) | 11(36.66) | 21(35.00) | | |
| | Disagree | 5(16.66) | 6(20.00) | 11(18.33) | | |
| **9.** | **Access to basic housing facilities** | | | | | |
| | Agree | 19(63.33) | 13(43.33) | 32(53.33) | 2.40 | 2.30 |
| | Neutral | 4(13.33) | 13(43.33) | 17(28.33) | | |
| | Disagree | 7(23.33) | 4(13.33) | 11(18.33) | | |
| **10.** | **Security issues** | | | | | |
| | Agree | 14(46.66) | 10(33.33) | 24(40.00) | 2.26 | 2.13 |
| | Neutral | 10(33.33) | 14(46.66) | 24(40.00) | | |
| | Disagree | 6(20.00) | 6(20.00) | 12(20.00) | | |
| **11.** | **Construction schedule delay** | | | | | |
| | Agree | 20(66.66) | 17(56.66) | 37(61.66) | 2.66 | 2.40 |
| | Neutral | 10(33.33) | 8(26.66) | 18(30.00) | | |
| | Disagree | 0 | 5(16.66) | 5(8.33) | | |

**Figures in parenthesis represent percentage**

The research study focused on examining the challenges encountered during the construction stage of residential houses in the Karnal and Hisar regions. The results, presented in Table

4.7, provide a comprehensive overview of the frequencies and percentages of agreement among the participants regarding various construction challenges.

The study's findings reveal several significant challenges related to the availability and affordability of building materials in the regions of Hisar and Karnal. Firstly, the availability of building materials emerged as a substantial obstacle, with a notably higher percentage of respondents (66.66%) in Hisar acknowledging this challenge compared to Karnal (33.33%). This discrepancy suggests that sourcing necessary construction materials posed a more pronounced difficulty in the Hisar region, potentially due to factors such as supply chain disruptions, logistical issues, or local resource constraints.

Furthermore, the affordability of building materials also surfaced as a noteworthy concern. In this regard, a greater percentage of participants in Hisar (63.33%) expressed agreement with this challenge, as opposed to Karnal (36.66%). This disparity implies that while the cost of materials was a shared concern, it was more acute in Hisar. Economic factors, inflation, and market dynamics might contribute to the increased affordability issue faced by participants in this region, potentially impacting the feasibility of construction projects.

Another prominent challenge identified in the study relates to the lack of flexibility in selecting building materials. This obstacle garnered agreement from a majority of respondents in both Hisar and Karnal. This implies that participants encountered limitations in terms of available choices for suitable construction materials, which could potentially compromise the construction process and overall project quality. This limitation could be attributed to factors such as regional availability, regulatory constraints, or a lack of awareness regarding alternative materials.

The study also highlighted the challenge of ensuring adherence to construction timelines, with a majority of respondents from both regions acknowledging this issue. This suggests that delays in project completion were a common occurrence, which could have significant implications for project success, budget management, and stakeholder satisfaction. Reasons for these delays might encompass factors such as weather disruptions, inadequate project planning, or unforeseen technical difficulties.

In addition to the core challenges mentioned, the study also brought to light several other issues impacting the construction stage. These encompassed concerns related to sanitation, waste disposal, environmental considerations, shortage of skilled workforce, managing design changes, providing basic housing facilities, and addressing security issues. These findings underscore the intricate and multifaceted nature of challenges faced during the construction phase, encompassing both technical and socio-economic dimensions. Addressing these challenges necessitates a comprehensive and adaptive approach that takes into account the diverse range of factors influencing construction projects in these regions.

Overall, the research provides valuable insights into the specific challenges experienced during residential construction projects in the Karnal and Hisar cities. By understanding and addressing these challenges, stakeholders in the construction industry can develop targeted strategies and interventions to improve project outcomes and ensure successful completion of

construction projects. This research serves as a foundation for further exploration and implementation of effective measures to mitigate these challenges and enhance the overall efficiency and quality of construction projects in these cities.

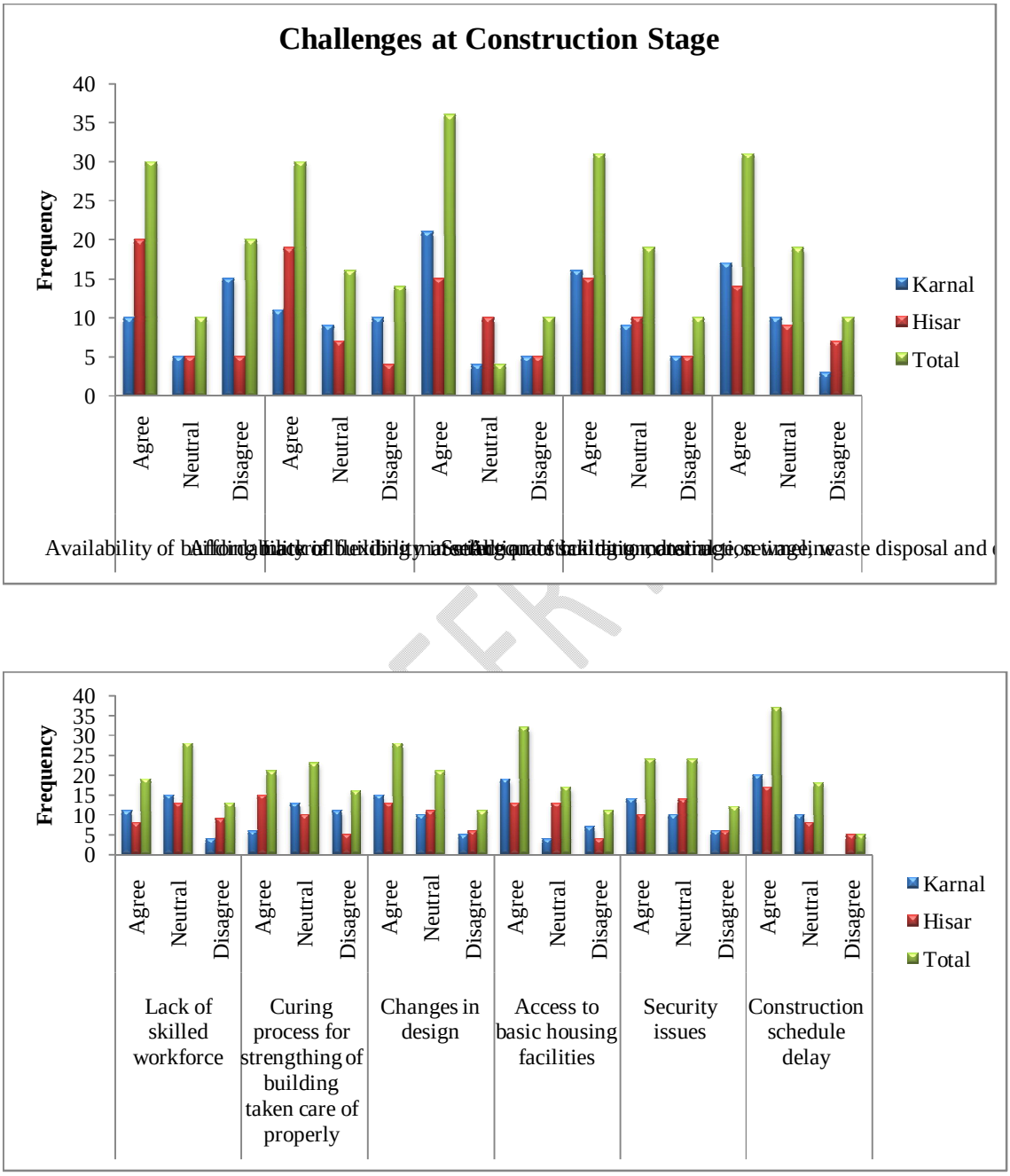


**Fig. 1: Construction challenges faced by respondents during house construction**

## Conclusion

This study provides a comprehensive analysis of the significant challenges encountered during the residential construction stage in Karnal and Hisar, India. The findings highlight

critical issues related to the availability and affordability of building materials, which were notably more severe in Hisar, suggesting regional disparities likely influenced by supply chain disruptions and economic factors. The lack of flexibility in selecting building materials further complicates the construction process, potentially compromising project quality and efficiency. Moreover, adherence to construction timelines emerged as a widespread concern, with delays frequently impacting project success and budget management. Issues such as inadequate sanitation, waste disposal, environmental considerations, and shortages of skilled labor also posed substantial obstacles, emphasizing the intricate and multifaceted nature of construction challenges. Security concerns and the difficulty in managing design changes further underscore the complexity of the construction environment in these regions.

To address these challenges effectively, stakeholders must adopt a comprehensive and adaptive approach that considers both technical and socio-economic dimensions. This involves improving supply chain management, enhancing workforce training programs, and implementing robust project planning and management strategies. Additionally, fostering greater flexibility in material selection and ensuring adherence to environmental and safety standards are crucial steps toward mitigating these challenges.

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