

Study on Engineer Longevity in India's Construction Industry

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Abstract: *The construction sector in India, marked by fierce competition and rapid expansion, stands as the country's second - largest economic contributor due to urbanization, infrastructure growth, and heightened expectations for improved living standards. Consequently, there's a heightened demand for skilled engineers, leading to a notable rise in engineer turnover rates. This attrition significantly impacts organizational efficiency, causing setbacks in productivity, profitability, and resource allocation. In this study, 150 engineers from diverse construction firms across India were surveyed using questionnaires. Data analysis conducted through SPSS software aimed to identify key factors contributing to engineer turnover and propose effective retention strategies. The findings highlight salary discrepancies, job dissatisfaction, abundant job opportunities elsewhere, limited growth prospects, and inadequate recognition from superiors as prominent drivers of engineer attrition.*

Keywords: Attrition, Retention, Engineer's Satisfaction.

1. Introduction

In India, the construction sector ranks second in terms of economic activity, contributing approximately 11% to the country's Gross Domestic Product (GDP). As project complexity and workload continue to rise, there's a growing awareness within the industry regarding the necessity of employing well - trained personnel. However, many employees are seeking career advancement opportunities outside their current organizations, leading to a significant attrition of engineers—a pressing issue in the construction field. This engineer turnover adversely affects productivity, project timelines, and overall project costs. Recognizing engineers as the cornerstone of the modern construction industry, organizations are increasingly focusing on engineer retention as a critical aspect of their operations. While other resources can be procured relatively easily, acquiring and retaining proficient engineers pose considerable challenges. Developing effective retention strategies for engineers has the potential to yield substantial savings for organizations by mitigating the costs associated with employee turnover. This study aimed to identify the primary causes of engineer attrition and propose retention strategies accordingly. Additionally, the satisfaction levels of engineers regarding various retention factors were assessed and analysed through an "Engineers' Satisfaction Assessment".

2. Methodology

Sample and sampling method

The study encompasses a sample size of 150 participants, comprising engineers employed across diverse construction firms in India. Employing a questionnaire - based approach, data collection was conducted systematically using the systematic random sampling technique. This sampling method was chosen to ensure every individual within the sampling frame had an equal and unbiased chance of selection, facilitating comprehensive representation across the engineer population.

Instruments and indicators

The questionnaire comprised three sections. The initial section focused on gathering demographic information from the respondents. In the subsequent section, engineers were queried about the reasons contributing to their attrition or departure from their respective roles. The third segment aimed to gauge engineer satisfaction regarding various retention factors within their organizations. For the first two sections, a nominal scale was utilized, whereas, for the third section, a 5 - point Likert Scale was employed, with 5 indicating the lowest level of satisfaction and 1 indicating the highest.

Data analysis was conducted using the Statistical Package for Social Science (SPSS). To ascertain the attrition rate within the construction industry, information regarding engineer turnover over the past five years was obtained from three different types of construction organizations. The attrition rate was calculated using the formula:

Attrition rate = $(N / Z) \times 100$, Where:

N = Number of employees departed. X= Newly employed personnel

Y = Initial staff count

Z = Average staff count = $(X + Y) / 2$.

Table 1: Demographic information of respondents

Gender	Percent
Male	85%
Female	15%
Designation	
Site Engineer	48.20%
Planning Engineer	30.30%
Design Engineer	11.20%
Project Manager	5.10%
Safety Engineer	2.30%
Experience	
1 - 5 years	72.00%
5 - 10 years	19.10%
10 - 15 years	3.60%
15 - 20 years	5.3

3. Results

In Table 1, the demographic breakdown reveals that 85% of respondents are male, with females comprising 15%. Additionally, 48.2% identify as site engineers, 30.3% as planning engineers, 11.2% as design engineers, 5.1% as project managers, 2.3% as safety engineers, and a small minority (0.3%) as technical engineers. Most respondents, over three - quarters, belong to the younger generation based on their work experience.

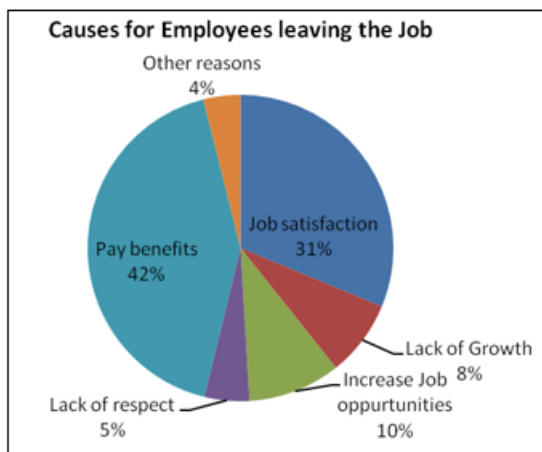


Figure 1: Causes of Employees leaving the Job

Figure 1 displays the top 5 reasons for engineer attrition. Leading the list, 41% of respondents cite low pay as the primary factor for leaving a job. Following closely, 30.3% express dissatisfaction with job satisfaction, while 9.50% indicate that the availability of alternative opportunities influences their decision to switch organizations. Another 7.80% attribute high turnover to a lack of growth opportunities, with 4.60% attributing it to insufficient respect from superiors. An additional 3.8% cite various other factors such as educational pursuits and personal reasons for engineers leaving their roles.

Table 2: Engineers' Satisfaction Assessment

Factors	1	2	3	4	5
Rewards and recognition	11.1	12.4	30.8	23.8	39.1
Encouragement from seniors	5.2	12.8	19.8	25.2	15.6
Learning opportunities	7.6	15.5	45.6	10.1	8
Growth and advancement opportunities	3	18	33.3	41.3	30
Promotion based on performance	0.8	7.2	19.3	39	17
Balance between home and job	0	6.8	14.1	43.3	39
Vacation or holidays provided	0	5.1	12.8	36.5	45
Management of work stress in your company	0	2.5	24.6	55	30
Satisfaction regarding overtime in your company	0.1	0.2	17.6	27.9	65.5
Freedom for innovative thinking	0	0.5	15.2	44.3	39.5

1- Excellent 2 - Very Good 3 - Good 4 - Satisfaction 5 - Dissatisfaction

Table 2. Illustrates Engineers' satisfaction levels regarding various retention factors. Notably, more than 62% express dissatisfaction with the provided overtime system. Around 32% find rewards and recognition inadequate, and 44% are dissatisfied with the amount of vacation or holidays offered. A significant portion, 35%, feel constrained in terms of innovation freedom, and 36.4% perceive a lack of work - life balance. However, there's a slight majority of engineers who find the learning opportunities provided satisfactory (53%), although this comes amidst dissatisfaction in several other critical areas.

4. Summary

This study delved into the reasons behind engineer job turnover and their satisfaction levels regarding various job - related factors. The findings underscore that pay and associated benefits rank highest as reasons for attrition, closely followed by dissatisfaction with the job itself and the allure of better opportunities elsewhere. Moreover, the lack of growth prospects and respect from superiors are contributing factors to engineer turnover. The Engineers'

Satisfaction Assessment reveals significant discontent regarding overtime, rewards and recognition, and vacation provisions. Addressing these factors is crucial for improving engineer retention rates.

Furthermore, attribute data from engineers in three distinct construction organizations indicate attrition rates exceeding 25%, incurring substantial expenses associated with recruitment and onboarding. To mitigate attrition, implementing effective retention strategies such as competitive compensation, robust recognition programs, engaging and challenging tasks, performance - based incentives, supportive work environments, adequate vacation allowances, and opportunities for relaxation and leisure are imperative. Recognizing the pivotal role of human resources in driving the growth and success of the construction industry, enhancing job satisfaction fosters innovative thinking, paving the way for the creation of new technologies and trends vital for industry and national development.

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