



Industrial Employment Trends in India: Analyzing the Impact of GDP, FDI, and Labor Market Variables

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Abstract

The industrial sector in India has been instrumental in job creation, especially since the economic liberalisation of 1991. This research analyses the main economic determinants affecting industrial employment, including GDP growth, foreign direct investment (FDI), labour productivity, labour force participation rate, and unemployment rate. The research used regression analysis to assess the importance of these factors in influencing employment patterns. The results demonstrate that GDP growth and labour productivity positively correlate with industrial employment, although labour force participation and foreign direct investment display intricate dynamics. The report offers insights into the policy initiatives necessary to improve job prospects in India's industrial sector and promote inclusive economic development.

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Introduction

The industrial sector has significantly contributed to job creation in India, especially during the post-liberalization period. Since the 1991 economic reforms, the industry has seen significant transformations attributable to globalisation, automation, and regulatory initiatives. Notwithstanding India's rapid economic development, employment creation in the industrial sector has failed to align with economic expansion, prompting apprehensions of jobless growth. This research intends to examine the influence of essential economic indicators on industrial employment using a data-driven methodology. This research aims to inform policy debates on promoting sustainable industrial job development in India by analysing these processes.

Importance of the Study

Comprehending the correlation between economic development and job creation is crucial for formulating successful labour market strategies. This research is important since it assesses the determinants affecting industrial employment in India, offering insights into the effects of GDP growth, FDI inflows, labour productivity, and unemployment

rates on job creation. This research's results may assist politicians, economists, and industry leaders in formulating ways to improve job prospects, foster skill development, and guarantee fair industrial growth. Given the rising worries about job creation amidst technological breakthroughs and automation, this research gives helpful ideas for preserving industrial employment in the long term.

Review of Literature

India industrial employment trends are significantly influenced by GDP growth, direct foreign investment (FDI) and labor market dynamics. There is a robust correlation between GDP growth and employment patterns, emphasizing structural changes in the economy (Kumar, 2024). Adarsh *et al.* (2024) highlight how IED tickets catalyze economic growth, ultimately impacting employment creation in several sectors. Within this framework, the development of the financial sector together with the FDI also plays a crucial role in improving employment rates throughout the south of Asia (Farooq *et al.*, 2024).

In addition, the performance of the manufacturing sector is essential to boost the sustainable growth of employment

(Prabhakar, 2024). The introduction of initiatives such as Make in India has led to notable changes in industrial wages and employment dynamics (Ahmed and Chakrabrabor, 2024). Sinha (2024) elaborates how economic growth translates into a better standard of living for common citizens, reflecting socio-economic implications.

Meanwhile, the transformation of the dynamics of the labor market must be considered, as Andabayeva *et al.* (2024), illustrating macro level changes in employment. Gök and ünlüoğlu (2024) discuss how IED entries specifically affect the participation of the women's workforce, underlining the multivariate nature of these influences. In general, the interaction of GDP growth, FDI and labor dynamics form not only employment trends but also to the broader socio-economic realities in India (Malick, 2024; Khan and Naseem, 2024; Pullipati *et al.*, 2024).

Research Methodology

This study utilises a quantitative research methodology to examine the determinants affecting job creation in India's industrial sector since 1991. Secondary data for the time period for 2008-2023 has been sourced from reputable entities such the World Bank, CEIC Data, and Macro Trends, including essential economic variables such as GDP growth, FDI inflows, labour productivity, labour force participation rate, and unemployment rate. The research employs descriptive statistics, correlation analysis, and multiple regression models to investigate the link between these characteristics and industrial employment. SPSS software has been used for statistical analysis, guaranteeing precision and dependability in results. The regression model elucidates the importance of economic variables influencing industrial employment and identifies patterns that influence job growth.

Objectives of the Study

1. To analyze trends in industrial employment in India.
2. To examine the impact of key economic indicators (GDP growth, FDI, labor productivity, labor force participation rate, and unemployment) on employment generation.
3. To identify the most significant economic factors influencing employment in the industrial sector.

Hypothesis of the Study

1. **H₀ (Null Hypothesis):** There is no significant relationship between GDP growth, FDI inflows, labor productivity, labor force participation rate, unemployment rate, and industrial employment in India.
2. **H₁ (Alternative Hypothesis):** There is a significant relationship between GDP growth, FDI inflows, labor productivity, labor force participation rate, unemployment rate, and industrial employment in India.

Industrial Employment Trends in India

Table-1 displays the descriptive statistics of the main economic factors affecting employment in India's industrial sector over the research period (2008–2023). Industrial employment (%) has fluctuated between 20.90% and 26.10%, with a mean of 24.28% and a standard deviation of 1.47, indicating considerable variability in this sector. GDP growth (%) varied from -5.80% (economic contraction) to 9.70% (significant increase), with an average of 6.04%, indicating phases of economic boom and recession. Foreign Direct Investment (FDI) net inflows as a percentage of GDP reached a minimum of 0.80% and a high of 3.60%, with an average of 1.84%, signifying a consistent although variable influx of foreign investment into India's economy.

Labour productivity growth (%) varied from 2.10% to 9.10%, with a mean of 4.88%, indicating fluctuations in efficiency enhancements in industrial production. The labour force participation rate (%) ranged from 54.40% to 58.80%, with an average of 56.08%, indicating a constant although slightly decreasing trend in labour market involvement. The unemployment rate fluctuated between 5.30% and 8.00%, with an average of 6.06%, indicating variations in work opportunities across the years. The standard deviations for GDP growth (3.60%) and labour productivity growth (2.10%) indicate considerable fluctuations in these economic metrics, potentially affecting employment patterns. The descriptive statistics elucidate the economic trends influencing industrial employment in India and serve as the basis for further regression analysis.

Table 1: Descriptive Statistics of Key Economic Indicators Affecting Industrial Employment in India (2008–2023)

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|----|---------|---------|---------|----------------|
| Employment in industry (% of total employment) (modeled ILO estimate) | 16 | 20.90 | 26.10 | 24.2750 | 1.47490 |
| GDP growth (annual %) | 16 | -5.80 | 9.70 | 6.0375 | 3.60201 |
| Foreign direct investment, net inflows (% of GDP) | 16 | .80 | 3.60 | 1.8375 | .64795 |
| Labor Productivity Growth (%) | 16 | 2.10 | 9.10 | 4.8813 | 2.10055 |
| Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate) | 16 | 54.40 | 58.80 | 56.0750 | 1.23261 |
| Unemployment Rate (%) | 16 | 5.30 | 8.00 | 6.0563 | 1.07763 |

Source: Researcher's Estimation

Correlation Matrix of Industrial Employment and Key Economic Indicators

Table 2 displays the Pearson correlation coefficients between industrial sector employment and significant economic factors. The findings reveal many substantial correlations. Foreign Direct Investment (FDI) inflows as a percentage of GDP have a significant negative connection (-0.742, $p =$

0.001) with industrial employment, indicating that heightened FDI may not inherently lead to greater employment in the industrial sector. The labour force participation rate (% of the population aged 15–64) has a negative correlation (-0.644, $p = 0.007$) with industrial employment, indicating that an increase in labour force entrants corresponds to a decrease in the share of industrial employment relative to total employment.

Table 2: Correlation Matrix of Industrial Employment and Key Economic Indicators in India (2008–2023)

| | | Employment in industry (% of total employment) (modeled ILO estimate) | GDP growth (annual %) | Foreign direct investment, net inflows (% of GDP) | Labor Productivity Growth (%) | Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate) | Unemployment Rate (%) |
|---|---------------------|--|------------------------------|--|--------------------------------------|--|------------------------------|
| Employment in industry (% of total employment) (modeled ILO estimate) | Pearson Correlation | 1 | .194 | -.742** | .315 | -.644** | .227 |
| | Sig. (2-tailed) | | .471 | .001 | .235 | .007 | .397 |
| | N | 16 | 16 | 16 | 16 | 16 | 16 |
| GDP growth (annual %) | Pearson Correlation | .194 | 1 | -.422 | .414 | .254 | -.281 |
| | Sig. (2-tailed) | .471 | | .104 | .111 | .343 | .292 |
| | N | 16 | 16 | 16 | 16 | 16 | 16 |
| Foreign direct investment, net inflows (% of GDP) | Pearson Correlation | -.742** | -.422 | 1 | -.137 | .342 | -.277 |
| | Sig. (2-tailed) | .001 | .104 | | .614 | .195 | .299 |
| | N | 16 | 16 | 16 | 16 | 16 | 16 |
| Labor Productivity Growth (%) | Pearson Correlation | .315 | .414 | -.137 | 1 | -.172 | -.456 |
| | Sig. (2-tailed) | .235 | .111 | .614 | | .524 | .076 |
| | N | 16 | 16 | 16 | 16 | 16 | 16 |
| Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate) | Pearson Correlation | -.644** | .254 | .342 | -.172 | 1 | .037 |
| | Sig. (2-tailed) | .007 | .343 | .195 | .524 | | .892 |
| | N | 16 | 16 | 16 | 16 | 16 | 16 |
| Unemployment Rate (%) | Pearson Correlation | .227 | -.281 | -.277 | -.456 | .037 | 1 |
| | Sig. (2-tailed) | .397 | .292 | .299 | .076 | .892 | |
| | N | 16 | 16 | 16 | 16 | 16 | 16 |

Source: Researcher's Estimation

**. Correlation is significant at the 0.01 level (2-tailed).

Conversely, GDP growth (0.194, $p = 0.471$) and labour productivity growth (0.315, $p = 0.235$) exhibit weak positive correlations with industrial employment; however, these associations lack statistical significance ($p > 0.05$), suggesting that economic growth alone does not robustly forecast employment trends in the industrial sector. The unemployment rate (0.227, $p = 0.397$) has a modest and negligible positive correlation with industrial employment, indicating that variations in unemployment do not directly

influence employment patterns within the industrial sector. The correlation between FDI and GDP growth (-0.422, $p = 0.104$) is weak, suggesting that increased FDI inflows do not consistently result in accelerated GDP growth. The growth of labour productivity and unemployment (-0.456, $p = 0.076$) exhibit a slight negative connection, indicating that as productivity rises, unemployment may decline, however this association lacks statistical significance.

Hypothesis Testing Using Correlation Analysis

| Variable | Pearson Correlation (r) | p-value (Sig.) | Decision (at 5% significance level) |
|------------------------------------|-------------------------|----------------|--|
| GDP Growth (%) | 0.194 | 0.471 | Fail to Reject H_0 (Not Significant) |
| FDI Net Inflows (% of GDP) | -0.742 | 0.001 | Reject H_0 (Significant at 1%) |
| Labor Productivity Growth (%) | 0.315 | 0.235 | Fail to Reject H_0 (Not Significant) |
| Labor Force Participation Rate (%) | -0.644 | 0.007 | Reject H_0 (Significant at 1%) |
| Unemployment Rate (%) | 0.227 | 0.397 | Fail to Reject H_0 (Not Significant) |

The correlation study indicates a robust negative association (-0.742) between Foreign Direct Investment (FDI) and industrial employment, which is statistically significant at the 1% level ($p = 0.001$). This suggests that a rise in FDI inflows may not inherently result in increased employment within the industrial sector, perhaps owing to capital-intensive

investments that favor automation over labor use. The Labor Force Participation Rate (LFPR) exhibits a substantial negative correlation (-0.644, $p = 0.007$), indicating that an expanded working-age population does not necessarily result in heightened industrial employment, possibly attributable to skill mismatches or insufficient job opportunities in labor-

intensive sectors. Conversely, GDP growth, labor productivity, and the unemployment rate do not demonstrate statistically significant correlations with industrial employment ($p > 0.05$), suggesting that overall economic expansion and productivity enhancements may not directly affect job creation in the industrial sector. These results underscore the need for policies that promote labor-intensive industry investments and skill development initiatives to improve job prospects.

Regression Analysis

Table 3: Model Summary of Regression Analysis for Industrial Employment in India (2008–2023)

| Model Summary | | | | |
|---------------|-------------------|----------|-------------------|----------------------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .890 ^a | .793 | .689 | .82283 |

Source: Researcher's Estimation

a) Predictors: (Constant), Unemployment Rate (%), Labor force

participation rate, total (% of total population ages 15-64) (modeled ILO estimate), GDP growth (annual %), Labor Productivity Growth (%), Foreign direct investment, net inflows (% of GDP)

Table 4: ANOVA Results for Industrial Employment Model

| ANOVA ^a | | | | | | |
|--------------------|------------|----------------|----|-------------|-------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 25.859 | 5 | 5.172 | 7.639 | .003 ^b |
| | Residual | 6.771 | 10 | .677 | | |
| | Total | 32.630 | 15 | | | |

Source: Researcher's Estimation

a) Dependent Variable: Employment in industry (% of total employment) (modeled ILO estimate)

b) Predictors: (Constant), Unemployment Rate (%), Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate), GDP growth (annual %), Labor Productivity Growth (%), Foreign direct investment, net inflows (% of GDP)

Table 5: Regression Coefficients for Industrial Employment Determinants

| Coefficients ^a | | | | | | |
|---------------------------|---|-----------------------------|------------|---------------------------|--------|------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 56.536 | 12.370 | | 4.570 | .001 |
| | GDP growth (annual %) | .055 | .097 | .133 | .563 | .586 |
| | Foreign direct investment, net inflows (% of GDP) | -.906 | .528 | -.398 | -1.716 | .117 |
| | Labor Productivity Growth (%) | .175 | .126 | .249 | 1.383 | .197 |
| | Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate) | -.609 | .241 | -.509 | -2.527 | .030 |
| | Unemployment Rate (%) | .392 | .271 | .287 | 1.450 | .178 |

Source: Researcher's Estimation

a) Dependent Variable: Employment in industry (% of total employment) (modeled ILO estimate)

The regression research investigates the influence of critical economic variables on employment within India's industrial sector, using GDP growth, FDI inflows, labor productivity, labor force participation rate, and unemployment rate as predictors. Table 3 (Model Summary) indicates that the model accounts for 79.3% of the variance in industrial employment ($R^2 = 0.793$), with an adjusted R^2 of 0.689, indicating a robust match. The ANOVA findings in Table 4 validate the model's overall significance ($F = 7.639$, $p = 0.003$), indicating that at least one independent variable substantially influences industrial employment. Table 5 (Regression Coefficients) offers a comprehensive analysis of the impact of each variable. The labor force participation rate ($B = -0.609$, $p = 0.030$) has a substantial negative influence on industrial employment, indicating that more labor force involvement does not inherently result in greater job creation within the sector. Foreign Direct Investment (FDI) inflows have a negative impact ($B = -0.906$), while not statistically significant ($p = 0.117$), suggesting that foreign investments may be allocated to capital-intensive sectors rather than labor-intensive manufacturing. Additional variables, including GDP growth ($p = 0.586$), labor productivity ($p = 0.197$), and unemployment rate ($p = 0.178$), do not exhibit significant correlations with industrial employment at the 5% significance level.

These results underscore the intricate dynamics of job creation within India's industrial sector. Although economic growth and foreign direct investment inflows are often seen as beneficial for job creation, their true effect may be constrained by structural challenges such as skill mismatches, automation, and capital-intensive industrial development. The considerable adverse effect of labor force participation indicates that employment policy need to prioritize the creation of high-quality industrial jobs instead of only enhancing labor market entrance. Future study should investigate sector-specific determinants and policy measures that might improve workforce absorption in India's industrial sector.

Findings of the Study

The research uncovers critical information about the determinants of job creation in India's industrial sector after 1991. The regression analysis ($R^2 = 0.793$, $p = 0.003$) demonstrates that the chosen economic variables significantly account for a substantial percentage of the variability in industrial employment. Nevertheless, GDP growth, labor productivity, and the unemployment rate were shown to have no meaningful effect on industrial employment. The labor force participation rate has a substantial negative impact ($B = -0.609$, $p = 0.030$), indicating that a rise in the workforce does

not inherently lead to elevated industrial employment, maybe attributable to insufficient job possibilities or skill mismatches. Foreign Direct Investment (FDI) inflows have a negative, although statistically insignificant, correlation with employment ($B = -0.906$, $p = 0.117$), suggesting that foreign investments tend to be capital-intensive rather than labor-intensive. The results indicate that while economic expansion and foreign investments are essential for industrial growth, they do not inherently stimulate employment without accompanying policies that foster labor-intensive businesses and skill enhancement.

Conclusion and Suggestions

The research shows that while economic development, FDI inflows, and labor productivity are significant for industrial expansion, they do not directly facilitate employment creation in India's industrial sector. The considerable adverse effect of the labor force participation rate on employment indicates that just augmenting the workforce is insufficient; improved job development measures are essential. The government should enhance employment prospects by fostering labor-intensive sectors, aligning skill development initiatives with industry requirements, and ensuring that foreign direct investment focuses on job creation rather than capital-intensive projects. Enhancing MSMEs, establishing industrial centers in semi-urban and rural regions, and promoting innovation-oriented employment possibilities may contribute to closing the employment gap. A holistic strategy integrating legislative changes, industrial advancement, and worker training is crucial for maintaining employment growth in India's industrial sector.

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