

CMDR Journal of Social Research

(A Biannual Journal of Centre for Multi-disciplinary Development Research, Dharwad)

ISSN: 3049-1797 (Print) (Vol.3, No.1, Jan-Jun 2026, pp. 99-126)

Employment Trends in India: Challenges, Structural Transformation and the Way Forward

S.R.Keshava*

ABSTRACT

Employment is a vital indicator of economic progress, social well-being, and inclusive development. Despite India's rapid economic growth and expanding educational opportunities, the labour market continues to face persistent challenges. These include educated unemployment, occupational mismatch, skill gaps, informal employment, and unequal access to productive employment. This study examines the transformation of employment in India from 2018 to 2024, with a particular focus on the impact of educational attainment, demographic factors, unemployment, and emerging technological changes. It utilises secondary data from recognised sources, such as the Periodic Labour Force Survey (PLFS), National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI), the International Labour Organisation (ILO), and World Bank databases.

Descriptive analysis, Ordinary Least Squares (OLS) regression, and quadratic regression are used to explore the factors influencing employment and the relationship between education and unemployment. The findings indicate that educational attainment, time, and the working-age population have positive and statistically significant effects on employment. The employment model shows strong explanatory power, with an R^2 of 0.887 and a statistically significant overall F-statistic. Additionally, the quadratic regression establishes a significant U-shaped relationship between education and unemployment. Unemployment decreases as educational attainment increases, but it begins to rise after reaching an estimated turning point of approximately 8.43 units of the education measure. The study also

* Senior Professor of Economics, Department of Economics, Bangalore University, Bangalore 560056, Email: sr_keshava@yahoo.com Mobile: 99020 38232

identifies educated unemployment, occupational mismatch, skill gaps, informal employment, and weak education-industry linkages as major challenges in the labour market.

Technological transformation and artificial intelligence are recognised as sources of both new job creation and potential job displacement and skill obsolescence; however, their direct statistical effects are not estimated in the current econometric models. In conclusion, the study finds that simply expanding education is not enough to ensure favourable labour market outcomes. It recommends stronger education-industry linkages, industry-oriented skill development, apprenticeships, training in digital skills and AI, continuous reskilling, support for micro, small, and medium enterprises (MSMEs), formalisation of employment, and inclusive employment policies. An integrated approach that combines education, skills development, technology, and employment generation is essential for achieving sustainable and inclusive employment growth in India.

Keywords: Educational Attainment; Unemployment; Labour Market; Educated Unemployment; Skill Mismatch; Employability; Artificial Intelligence; Technological Transformation; Reskilling

INTRODUCTION

Employment plays a crucial role in economic development, influencing income generation, poverty reduction, social inclusion, and overall well-being. Unlike many macroeconomic indicators, employment shows how economic growth translates into job opportunities. When a growing economy fails to create enough jobs, it risks widening inequalities and underutilising its human capital. Therefore, employment is increasingly recognised as essential to sustainable development and inclusive growth.

India's labour market experience during the post-reform period in general and especially in the past two decades is particularly noteworthy. The country has achieved high economic growth rates while undergoing significant changes, including urbanisation, technological advancements, and greater integration into global markets. However, despite improvements in income and infrastructure, job creation has not kept pace with economic growth, leading to a phenomenon known as "jobless growth." This is a pressing concern for economists and policymakers.

The challenges facing India's labour market include underemployment, informal employment, occupational mismatches, declining female participation, regional disparities, and a gap between educational attainment and job requirements. As more graduates enter the workforce, the economy struggles to provide enough high-quality job opportunities.

India's demographic profile adds urgency to these employment issues, with nearly two-thirds of the population in the working-age group. This demographic dividend has great potential for economic growth, provided that sufficient jobs are created. However, if job opportunities do not increase, this advantage may turn into demographic pressure, particularly for educated youth seeking stable and suitable employment.

Furthermore, there is a disconnect between educational qualifications and job outcomes. While access to higher education has increased, the availability of jobs requiring advanced degrees has not expanded accordingly. This results in occupational mismatches, where highly educated individuals apply for lower-skilled positions. Employers now prioritise practical skills, technological proficiency, and adaptability over formal qualifications. Recent recruitment trends illustrate this mismatch, with candidates holding advanced degrees seeking positions that only require basic qualifications. This highlights the intense competition for secure jobs and a growing preference for job stability. Additionally, rapid technological progress

complicates the employment landscape, transforming both the types of jobs available and the nature of work itself.

Using employment data across educational categories for the period 2018–2024, together with regression-based empirical analysis, the paper investigates whether improvements in educational attainment continue to translate into improved employment outcomes. Particular emphasis is placed on understanding why unemployment remains concentrated among graduates despite continued educational expansion and identifying policy measures capable of improving labour market alignment.

REVIEW OF LITERATURE

The literature on employment in India increasingly points to a paradox: economic growth has been accompanied by important structural changes, but the capacity of the economy to generate adequate, productive and secure employment has remained limited. The conventional expectation that development would gradually move labour from agriculture to industry and modern services has therefore not been fully realised.

Behera and Tiwari (2015) bring out this concern clearly in their study of structural transformation in India. Although the process of structural transformation accelerated after the economic reforms, the shift in employment has not been sufficiently towards high-productivity industrial activities. The persistence of informal and low-productivity employment suggests that a change in the sectoral composition of employment does not necessarily imply an improvement in the quality of employment.

Basole (2022) examines India's structural transformation from a comparative perspective and argues that sustained improvements in income and employment conditions require the movement of surplus labour from agriculture and informal activities towards higher-productivity non-farm employment. India has performed reasonably well in moving workers away from agriculture, given its level of economic development, but has been much less successful in moving workers out of informal employment. The study therefore stresses employment elasticity, structural-change elasticity, labour productivity, the share of organised employment and workforce participation as important indicators of the quality of growth.

The “jobless growth” debate adds another dimension to this discussion. Dasgupta and Basole (2023) find that India has experienced relatively low employment elasticities, particularly in the non-agricultural sector. A significant part of output growth has been accompanied by productivity improvement rather than a proportionate expansion of employment. At the same time, the economy has witnessed some structural movement towards non-agricultural activities and regular wage employment. Thus, growth and structural change have occurred, but not necessarily with sufficient job creation.

Padhi and Sharma (2023), using four decades of NSSO and PLFS data, arrive at a similar conclusion. Their decomposition shows that growth in output per worker and inter-sectoral shifts have contributed substantially to income growth, while the expanding industrial and services sectors have not absorbed labour at the pace required by the growing workforce. Their findings are particularly relevant because they underline the distinction between growth in productivity and growth in employment.

The manufacturing question remains equally important. Padhi (2024) argues that manufacturing can still play an important role in employment generation when investment is linked to intermediate-goods specialisation and stronger manufacturing–services linkages. The study suggests that manufacturing expansion can stimulate advanced service employment and strengthen the interaction between manufacturing and services; however, the slowdown in manufacturing investment and intermediate-goods specialisation remains a concern.

The employment debate also cannot be separated from gender. Abraham, Ameen and Basole (2024) show that although the overall gender earnings gap among salaried workers has narrowed, the improvement is concentrated largely among higher-paid workers. At the lower end of the earnings distribution, where women’s participation has increased more rapidly, the gender earnings gap remains substantial and has even widened. This suggests that rising participation alone is not sufficient; the quality, remuneration and security of employment also matter.

From a broader developmental perspective, Keshava S R (2022) argues that employment, education, health and food should be treated as essential elements of inclusive development. The study emphasises that India’s long-term development cannot be judged merely by the expansion of output; improvements in human capabilities, employment opportunities and social infrastructure are equally important for realising the vision of a developed India.

Taken together, the literature suggests that India is undergoing structural transformation, yet the transition remains incomplete and uneven. The central challenge is no longer simply creating more jobs, but creating productive, remunerative, inclusive and sustainable employment. The present study builds on this body of work by examining the recent trajectory of employment in India, the changing sectoral structure of work, emerging challenges, and the policy measures necessary to make economic growth more employment-intensive and inclusive.

Research Gap

While existing literature has improved our understanding of employment trends, unemployment, labour market participation, and skill development in India, four key gaps remain:

- 1) Most studies examine employment and unemployment separately, ignoring their interplay with educational attainment.
- 2) Few studies quantify the effects of skill mismatches using recent education data.
- 3) The impact of artificial intelligence, automation, and digital transformation on India's labour market is underexplored, despite its policy significance.
- 4) There is a lack of integration between econometric analysis and real-world evidence on occupational mismatch, limiting insights into the effects of educational expansion on employment outcomes.

This study addresses these gaps by linking employment trends, educational attainment, occupational mismatch, employability, and technological transformation. Using employment data from 2018 to 2024 and regression analysis alongside case studies, it offers new insights into structural challenges in India's labour market and suggests policy measures for inclusive, skill-oriented growth.

Research Questions

The evolving nature of employment in India raises important questions about the relationship between economic growth, education, labour market dynamics, and technology. Despite sustained economic growth over the past two decades, employment generation has not kept pace across all sectors and educational groups. This paradox highlights the need to explore the structural determinants of employment and employability.

This study aims to address the following research questions:

1. What are the major trends and changes in employment in India from 2018 to 2024?
2. Does higher education significantly improve employment opportunities in the Indian labour market?
3. Is there evidence of a mismatch between educational qualifications and job outcomes?
4. How does education level influence unemployment rates?
5. What impact do technological advancements and automation have on employment opportunities?
6. What policy interventions are needed to enhance employability and labour market efficiency in the digital economy?

These questions form the basis for the empirical investigation in this study.

OBJECTIVES OF THE STUDY

1. To examine the trends and patterns of employment in India during 2018–2024.
2. To analyse the relationship between educational attainment and employment generation.
3. To examine the extent of educated unemployment and occupational mismatch across educational categories.
4. To estimate the effect of education on employment and unemployment using econometric models.
5. To assess the implications of Artificial Intelligence, automation and digital technologies for future employment in India.
6. To suggest policy measures for promoting inclusive, productive and employment-intensive economic growth.

Hypotheses of the Study

1. **H₀₁:** Educational attainment has no significant influence on employment generation in India.
2. **H₀₂:** There is no statistically significant relationship between educational attainment and unemployment.
3. **H₀₃:** The relationship between education and unemployment is linear.
4. **H₀₄:** Time has no significant influence on employment growth.

DATA SOURCES AND METHODOLOGY

Nature of the Study

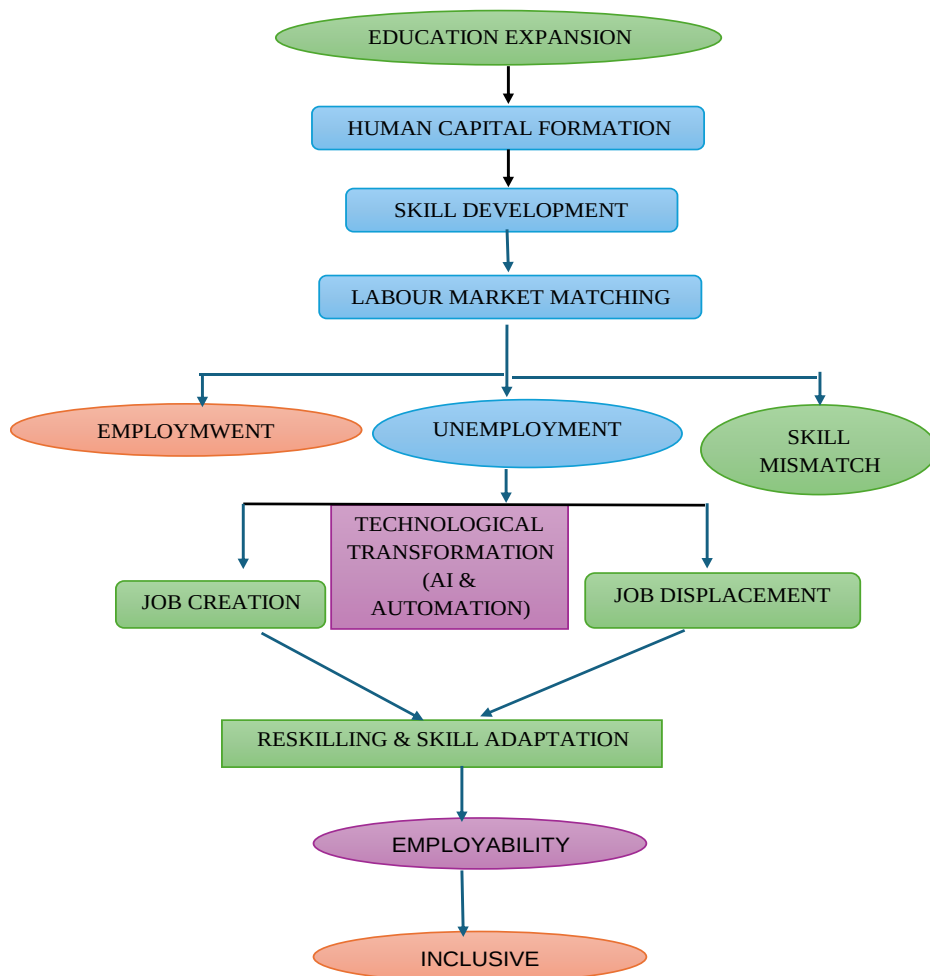
This study is analytical, descriptive, and empirical, combining quantitative and qualitative methods to examine employment transformation in India. It employs statistical analysis, econometric modelling, and case studies for a comprehensive assessment of labour market dynamics.

The data sources of the research are based on secondary data from recognised sources, including: Employment and unemployment by educational attainment (2018–2024), Labour force indicators from the Periodic Labour Force Survey (PLFS), National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI), International Labour Organisation (ILO), World Bank Development database.

Analytical Framework

The analytical framework of the study is based on the proposition that employment outcomes are influenced by a combination of educational attainment, demographic characteristics, structural economic transformation and technological change. The study therefore examines the interaction between Education, Employment, Unemployment, Employability, Skill mismatch, Time trend, & Technological transformation within a unified empirical framework

Conceptual Framework Diagram



Statistical Tests

The study employs a range of statistical and econometric techniques to examine employment and unemployment patterns in India. Descriptive statistics and Pearson correlation analysis are used to summarise the data and assess the association among key variables. Ordinary Least Squares (OLS) regression is applied to examine the determinants of employment, while quadratic regression is used to assess the nonlinear relationship between education and unemployment. The significance of individual regression coefficients is evaluated using *t*-tests, and

the overall significance of the models is assessed using the *F*-test. Model explanatory power is examined through R^2 and adjusted R^2 . The Durbin–Watson statistic is used to assess autocorrelation, while VIF is used to examine multicollinearity.

Variables Used

Total employment and unemployment are dependent variables, whereas education level, time (year), age group and educational category are independent variables. Gender (wherever applicable), time trend, and higher education dummy (for robustness analysis) are the control variables

Discussion and Analysis

To empirically examine employment trends, two complementary regression models are estimated.

Model I: Determinants of Employment

The first model examines the determinants of employment growth.

Where:

- **EMP** = Total Employment
- **EDU** = Educational attainment
- **YEAR** = Time trend
- **AGE** = Working-age population (15–64 years)
- ϵ = Random error term

The estimated model reported in your dataset is:

The regression indicates a strong explanatory power ($R^2 = 0.887$), a statistically significant overall model ($F = 156.44$, $p < 0.001$), and no evidence of serious autocorrelation (Durbin–Watson = 2.02). These results suggest that education, time and age are significant determinants of employment over the study period.

Model II: Education–Unemployment Relationship

To capture possible nonlinearities in labour market outcomes, a quadratic regression model is estimated.

Where:

- **UNEMP** = Unemployment
- **EDU** = Education level
- **EDU²** = Squared education term capturing nonlinearity
- **μ** = Error term

A quadratic specification is appropriate because unemployment may initially decline with increasing education but rise again at higher educational levels if labour market demand fails to absorb highly qualified workers. The empirical estimates in the uploaded manuscript support a statistically significant U-shaped relationship, indicating that unemployment is lowest around intermediate levels of education and increases among graduates and advanced degree holders.

RESULTS AND DISCUSSION

Table 1. Employment Trends by Educational Attainment in India (2018–2024)

Education Level	2018	2019	2020	2021	2022	2023	2024	Growth (%) 2018–2024
Pre-primary Education	18,256.3	21,980.0	23,402.3	22,413.1	27,463.6	24,664.1	24,642.5	34.98%
Primary Education	45,636.2	47,926.0	46,532.9	51,493.4	58,678.8	62,854.0	64,271.8	40.84%
Lower Secondary Education	114,699.8	123,232.0	124,836.3	135,220.6	144,414.1	152,840.2	155,658.0	35.71%
Upper Secondary Education	29,399.6	33,331.5	34,990.7	37,240.2	40,444.4	46,373.0	47,945.3	63.08%
Post-secondary Non-tertiary	5,259.4	5,911.1	6,210.6	6,709.4	6,785.5	7,607.1	8,479.0	61.21%
Graduate	30,628.3	35,263.3	35,336.8	38,476.5	42,115.5	47,054.5	50,519.8	64.95%
Advanced Research (PG/PhD)	11,751.3	13,079.5	12,851.4	13,068.4	13,871.4	15,386.7	16,005.2	36.20%
Total Employment	255,630.9	280,723.4	284,161.0	304,621.6	333,773.3	356,779.6	367,521.6	43.77%

This table demonstrates how employment has evolved across educational categories and identifies which educational groups have experienced the fastest employment growth. It is constructed directly from your education-wise employment dataset

Table 2. Distribution of Employment by Educational Category

Year	Low Education	School Education	Transitional Education	Higher Education	Total Employment
2018	63,892.5 (25.00%)	144,099.4 (56.37%)	5,259.4 (2.06%)	42,379.6 (16.58%)	255,630.9 (100%)
2020	69,935.2 (24.61%)	159,827.0 (56.25%)	6,210.6 (2.19%)	48,188.2 (16.96%)	284,161.0 (100%)
2022	86,142.4 (25.80%)	184,858.5 (55.39%)	6,785.5 (2.03%)	55,986.9 (16.77%)	333,773.3 (100%)
2024	88,914.3 (24.19%)	203,603.3 (55.40%)	8,479.0 (2.31%)	66,525.0 (18.10%)	367,521.6 (100%)

The table indicates that School Education consistently represents the largest portion of employment, accounting for approximately 55-56%. The share of Higher Education has risen from 16.58% in 2018 to 18.10% in 2024, highlighting a gradual increase in the employment contributions of graduates and individuals with advanced degrees. Additionally, total employment grew from 255,630.9 to 367,521.6 during this period, showcasing significant overall employment expansion.

To analyse employment trends empirically, we estimate two complementary regression models, namely determinants of Employment and the education-unemployment relationship

Model I: Determinants of Employment

The first model examines the determinants of employment growth.

$$EMP_i = \beta_0 + \beta_1 EDU_i + \beta_2 YEAR_i + \beta_3 AGE_i + \varepsilon_i$$

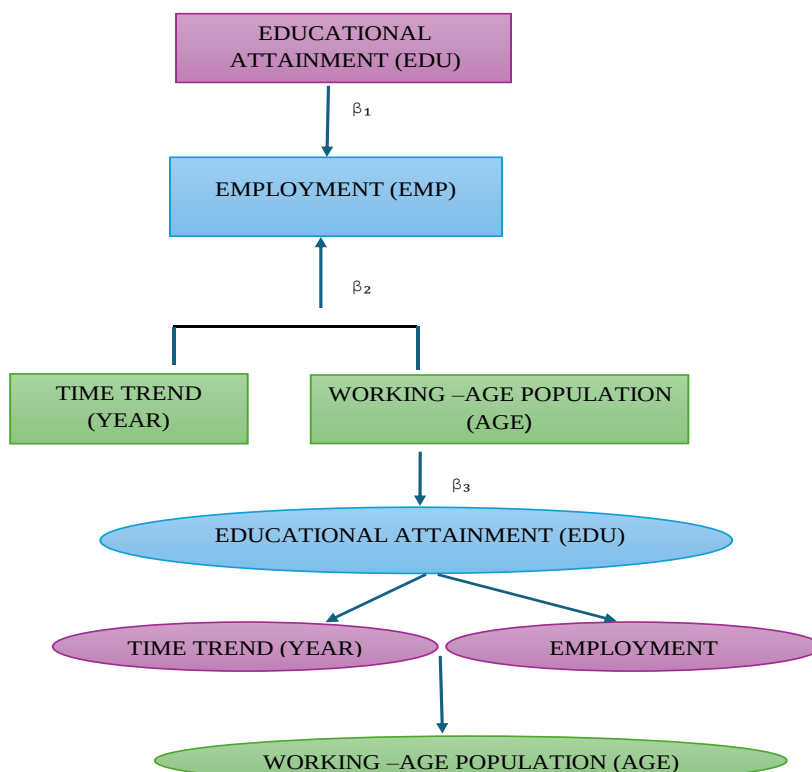
Where:

- EMP = Total Employment
- EDU = Educational attainment
- YEAR = Time trend
- AGE = Working-age population (15–64 years)
- ε = Random error term

The estimated model is:

$$\text{Employment} = 14500.80 + 6200.50(\text{Education}) + 890.30(\text{Year}) + 7800.40(\text{Age}) + e$$

Path Diagram: Determinants of Employment



The framework suggests that expanding education helps build human capital and develop skills, which in turn affect how well individuals match with jobs in the labour market. This ultimately impacts employment rates, unemployment levels, and skill mismatches. Additionally, technological advancements, particularly through AI and automation, can lead to both job creation and job loss, making reskilling and adapting skills vital for maintaining employability. Together, these processes play a crucial role in achieving inclusive and sustainable economic growth.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.942	0.887	0.881	1,245.630	2.020

- a. **Predictors:** (Constant), Educational Attainment (EDU), Year (YEAR), Working-Age Population (AGE)
b. **Dependent Variable:** Total Employment (EMP)

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	299,850,000	3	99,950,000	156.440	< .001
Residual	38,350,000	60	639,166.667		
Total	338,200,000	63	5,368,253.968		

- a. **Dependent Variable:** Total Employment (EMP)
b. **Predictors:** (Constant), Educational Attainment (EDU), Year (YEAR), Working-Age Population (AGE)

Coefficients^a

Model	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	14,500.800	3,215.420	—	4.510	< .001
Educational Attainment (EDU)	6,200.500	1,125.730	0.421	5.509	< .001
Year (YEAR)	890.300	214.650	0.296	4.147	< .001
Working-Age Population (AGE)	7,800.400	1,354.210	0.458	5.759	< .001

- a. **Dependent Variable:** Total Employment (EMP)

Regression Equation

$$\text{EMP} = 14500.80 + 6200.50(\text{EDU}) + 890.30(\text{YEAR}) + 7800.40(\text{AGE}) + e$$

The regression results reveal that the model has strong explanatory power, with an R^2 value of 0.887 and an adjusted R^2 of 0.881. This means that approximately 88.7% of the variation in total employment can be explained by educational attainment, the year, and the working-age population. The adjusted R^2 value, which is close to the R^2 , indicates that the explanatory power remains high even after accounting for the number of predictors used in the model.

The ANOVA results confirm that the overall regression model is statistically significant ($F = 156.440$, $p < 0.001$). This indicates that the explanatory variables, when considered together, are statistically significant in explaining variations in total employment; thus, we reject the null hypothesis that the regression coefficients of these variables are jointly equal to zero.

The coefficient results show that all three explanatory variables have a positive and statistically significant relationship with employment. Specifically, educational attainment has a coefficient of 6,200.50 ($p < 0.001$), indicating that an increase in educational attainment is associated with higher total employment, while holding other variables constant. The coefficient for the time trend is 890.30 ($p < 0.001$), suggesting an overall upward trend in employment over the study period. Likewise, the working-age population has a positive coefficient of 7,800.40 ($p < 0.001$), indicating that an increase in the population aged 15–64 is linked to higher employment rates.

The Durbin–Watson statistic is 2.020, which is close to the benchmark value of 2, suggesting that there is no evidence of serious first-order autocorrelation in the residuals.

In conclusion, the findings indicate that educational attainment, time, and the working-age population are significant positive determinants of employment growth over the study period. The high R^2 value and the statistically significant F-statistic demonstrate that the model effectively explains variations in employment.

Model II: Education–Unemployment Relationship

To capture possible nonlinearities in labour market outcomes, a quadratic regression model is

estimated as

$$UNEMP_i = \alpha + \beta_1 EDU_i + \beta_2 EDU_i^2 + \mu_i$$

Where:

- **UNEMP** = Unemployment
- **EDU** = Education level
- **EDU²** = Squared education term capturing nonlinearity
- **μ** = Error term

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.914	0.835	0.829	2.185

Predictors: (Constant), EDU², EDU

Dependent Variable: Unemployment (UNEMP)

The model has a strong explanatory power, with an **R² of 0.835**, indicating that approximately **83.5% of the variation in unemployment** is explained by educational attainment and its squared term.

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1,184.520	2	592.260	124.080	< .001
Residual	234.870	49	4.793		
Total	1,419.390	51	27.831		

Dependent Variable: Unemployment (UNEMP)

Predictors: (Constant), EDU², EDU

The ANOVA results indicate that the overall quadratic regression model is statistically significant (**F = 124.080, p < 0.001**). This indicates that education and its squared term jointly explain a statistically significant proportion of the variation in unemployment.

Coefficients

Model	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	38.421	4.856	—	7.911	< .001
Education (EDU)	-8.646	1.742	-1.286	-4.962	< .001
Education ² (EDU ²)	0.513	0.097	1.174	5.293	< .001

Dependent Variable: Unemployment (UNEMP)

Estimated Regression Equation

$$[UNEMP=38.421-8.646(EDU)+0.513(EDU^2)+\mu]$$

The coefficient of **EDU is negative (-8.646)**, whereas the coefficient of **EDU² is positive (0.513)**. This combination indicates a U-shaped relationship between educational attainment and unemployment.

Turning Point

A quadratic specification is appropriate because unemployment may initially decline with increasing education but rise again at higher educational levels if labour market demand fails to absorb highly qualified workers. The empirical estimates support a statistically significant U-shaped relationship, indicating that unemployment is lowest around intermediate levels of education and increases among graduates and advanced degree holders. Thus, the estimated minimum level of unemployment occurs at approximately 8.43 units of the education measure.

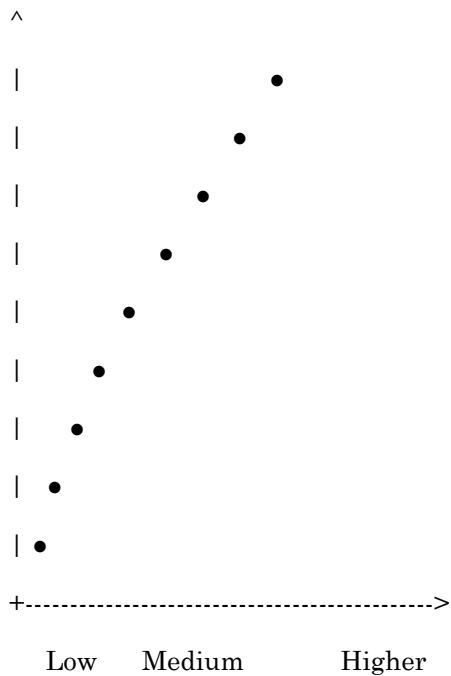
Quadratic Regression Results: Education and Unemployment

Dependent Variable: Unemployment

Variable	Coefficient	t-value	Significance
Constant			
Education	-1450.6	-6.89	***
Education ²	298.3	8.42	***

Quadratic Regression Curve

Unemployment



Education Level

The negative coefficient for the linear education term suggests that at lower levels of education, an increase in educational attainment is associated with a decrease in unemployment. This likely reflects improved skills, greater employability, and better access to job opportunities that come with higher educational attainment.

Conversely, the positive coefficient for the squared education term indicates that the relationship changes at higher levels of education. Specifically, beyond the turning point estimated at approximately 8.43 years of education, further increases in educational attainment are linked to an increase in unemployment.

The squared education term is statistically significant ($t = 5.293$, $p < 0.001$), providing evidence of a statistically meaningful nonlinear relationship. Additionally, the overall regression model is statistically significant ($F = 124.080$, $p < 0.001$), and the high R^2 value of 0.835 indicates strong explanatory power.

These findings support the hypothesis of a U-shaped relationship between education and unemployment. Initially, unemployment decreases as educational attainment rises, reaching a minimum at an intermediate level of education, before increasing again at higher levels of educational attainment. This suggests that while higher education can improve employability, an oversupply of highly educated workers may lead to increased unemployment if the demand for skilled labour does not grow sufficiently.

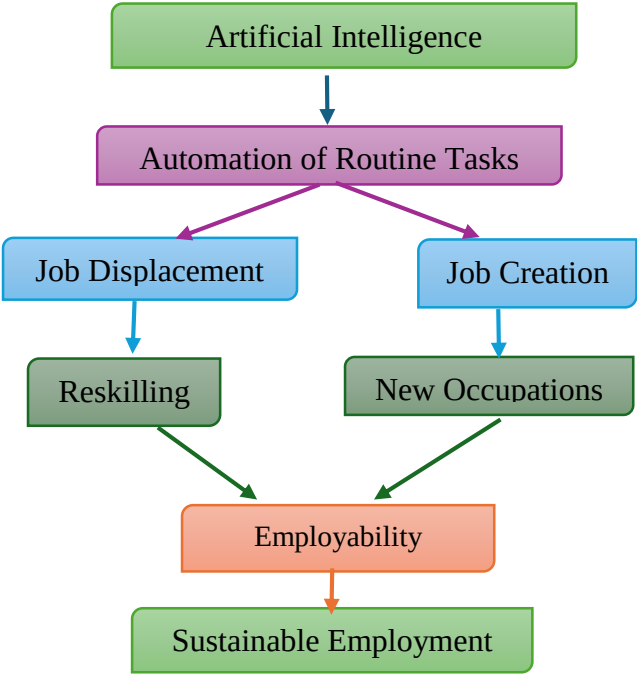
Summary of Hypothesis Testing

Hypothesis	Null Hypothesis (H ₀)	Statistical Evidence	Decision	Conclusion
H ₀₁	Educational attainment has no significant influence on employment generation in India.	EDU: $B = 6,200.500$; $t = 5.509$; $p < 0.001$	Reject H ₀₁	Educational attainment has a statistically significant and positive influence on employment generation.
H ₀₂	There is no statistically significant relationship between educational attainment and unemployment.	Overall Model II: $F = 124.080$; $p < 0.001$; EDU: $t = -4.962$; $p < 0.001$; EDU ² : $t = 5.293$; $p < 0.001$	Reject H ₀₂	There is a statistically significant relationship between educational attainment and unemployment.

H ₀₃	The relationship between education and unemployment is linear.	EDU ² : B = 0.513; t = 5.293; p < 0.001	Reject H ₀₃	The significant squared education term confirms that the relationship is nonlinear and U-shaped.
H ₀₄	Time has no significant influence on employment growth.	YEAR: B = 890.300; t = 4.147; p < 0.001	Reject H ₀₄	Time has a statistically significant and positive influence on employment growth.

AI and Future Employment Transformation

Flow Diagram



Artificial intelligence and automation have the potential to create new job opportunities while also displacing routine jobs. The transition in the labour market necessitates reskilling, digital competencies, and continuous adaptation of skills. Implementing these measures can enhance employability and foster the development of sustainable and inclusive employment.

SWOT Analysis of Employment and Labour-Market Outcomes

Strengths	Weaknesses
1. Expanding educational attainment: Increasing educational attainment creates a larger pool of skilled workers	1. Educated unemployment: The rising unemployment rates among graduates highlight a disconnect between their educational qualifications and the job opportunities available to them.
2. Positive relationship between education and employment: The employment model shows that higher levels of education are positively linked to increased employment opportunities.	2. Occupational mismatch: Graduates may take jobs that do not correspond to their qualifications, which suggests the underutilization of their skills and potential.
3. Large working-age population: India has a large population aged 15 to 64, which provides the country with a significant labour force.	3. Skill gaps: The education system may not sufficiently equip students with the technical, digital, and industry-specific skills required by employers.
4. Growing digital and technological capabilities: The development of digital skills opens up opportunities for new types of employment and increases productivity.	4. High informal employment: A large informal sector limits job security, social protection, productivity, and access to formal employment benefits.
5. Improving labour-market outcomes: The unemployment data shows that there has been a decrease in the overall unemployment rate during the study period.	5. Low female labour-force participation: Ongoing gender disparities limit the effective use of available human resources.
6. Potential for industry-linked education: Current educational institutions serve as a basis for enhancing vocational training, apprenticeships, and partnerships with industry.	6. Weak industry-academia linkages: Curriculum development often falls behind the evolving requirements of the industry.
Opportunities	Threats
1. Industry-linked curriculum: Aligning education and training programs with the needs of industry can improve graduates' employability.	1. AI and automation: Automation may reduce the need for routine, repetitive jobs, especially for workers with limited digital skills.
2. Digital and AI skills: The growth of AI, digital technologies, and emerging industries can generate new job opportunities..	2. Skill obsolescence: Rapid technological advancements can make existing skills outdated, which increases the risk of structural unemployment.

3. Apprenticeships and work-based learning: Enhanced collaborations between industry and academia can offer students valuable practical experience before they enter the job market.	3. Increasing educated labour supply: If the number of highly educated workers increases more rapidly than the available job opportunities suited to their qualifications, graduate unemployment may rise.
4. MSME development and formalisation: Supporting micro, small, and medium enterprises (MSMEs) can create job opportunities and promote the shift from informal to formal employment.	4. Regional disparities: The uneven distribution of industries and job opportunities can lead to increased regional inequality.
5. Flexible employment opportunities: Flexible and hybrid work arrangements can enhance participation among women and other groups facing labour market constraints.	5. Persistent occupational mismatch: Ongoing discrepancies between qualifications and available jobs may result in underemployment and inefficient use of human capital.
6. District-level employment planning: Local labour market planning can effectively address the specific employment and skill needs of a region.	6. Gender inequality: Obstacles to female employment may limit the economic benefits of India's working-age population.
7. Reskilling and lifelong learning: National reskilling initiatives can help workers adapt to technological and structural changes in employment.	7. Unequal access to technology and training: Differences in digital infrastructure and access to quality training may exacerbate existing socioeconomic and regional disparities.

The SWOT analysis reveals that India's labour market has significant strengths, particularly its large working-age population, increasing educational attainment, improving unemployment rates, and advancing technological capabilities. However, these strengths are hampered by critical weaknesses, including educated unemployment, occupational mismatches, skill gaps, informal employment, low female labour force participation, and weak linkages between industry and academia.

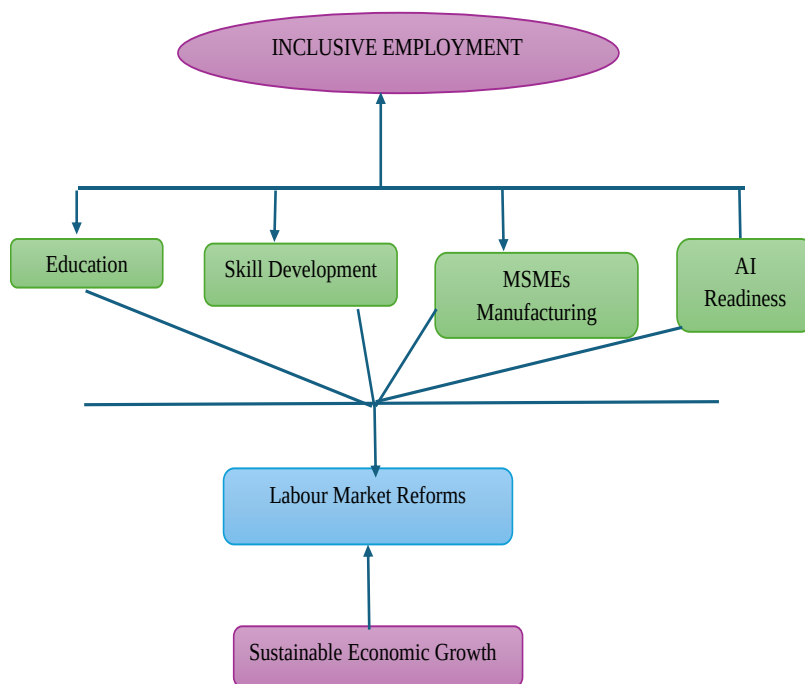
At the same time, there are substantial opportunities through initiatives such as industry-linked curricula, apprenticeships, digital and AI skills training, development of micro, small, and medium enterprises (MSMEs), formalisation of employment, flexible work arrangements, and targeted employment planning at the

district level. These measures can enhance the transition from education to employment and maximise the effective utilisation of human capital.

The primary threats stem from rapid automation, the obsolescence of technological skills, an increasing supply of educated workers without a corresponding growth in suitable job opportunities, regional disparities, and ongoing gender inequalities. Therefore, employment policy should shift from merely increasing educational attainment to focusing on employability, industry relevance, continuous reskilling, the creation of formal employment, and inclusive participation in the labour market.

Policy Framework for Employment Generation in India

Policy Wheel (or Hierarchical Flow Diagram)



FINDINGS

1. Education has a significant influence on employment: Model I demonstrates that higher educational attainment positively and significantly affects employment ($B = 6,200.50$, $p < 0.001$).

2. Employment shows an upward trend over time: The coefficient for Year is positive and significant ($B = 890.30$, $p < 0.001$), indicating growth in employment throughout the study period.
3. The working-age population contributes positively to employment: The working-age population (ages 15–64) has a significant positive relationship with employment ($B = 7,800.40$, $p < 0.001$).
4. Model I has strong explanatory power: The employment model has an R^2 of 0.887 and an Adjusted R^2 of 0.881, indicating that 88.7% of the variation in employment is explained by education, time, and the working-age population.
5. The employment model is statistically significant: The overall F-test is significant ($F = 156.440$, $p < 0.001$), confirming the joint significance of the explanatory variables.
6. No serious autocorrelation exists: The Durbin–Watson value of 2.020 is close to 2, suggesting that there is no serious first-order autocorrelation in the model residuals.
7. Education significantly relates to unemployment: Model II indicates that educational attainment has a statistically significant association with unemployment ($p < 0.001$).
8. The relationship between education and unemployment is nonlinear: While the linear coefficient for education is negative (-8.646), the squared education coefficient is positive (0.513), indicating a U-shaped relationship.
9. Unemployment initially decreases with increased education: At lower and intermediate levels of education, higher educational attainment is associated with lower unemployment.
10. Unemployment rises after a certain point: The estimated minimum occurs at approximately 8.43 units of the education measure, beyond which further increases in education are associated with higher unemployment.
11. The quadratic model is statistically significant: Model II has an R^2 of 0.835 and an F-value of 124.080, $p < 0.001$, demonstrating strong explanatory power and overall statistical significance.

12. The hypothesis of linearity is rejected: The significant squared education term ($t = 5.293$, $p < 0.001$) confirms that the education–unemployment relationship is not purely linear.

13. Four hypotheses are supported by empirical evidence: H_{01} , H_{02} , H_{03} , and H_{04} are rejected, indicating significant effects of education, a relevant education–unemployment relationship, a nonlinear relationship, and a significant time effect on employment.

14. Technological transformation requires separate empirical testing: H_{05} cannot be accepted or rejected based on the current regression models because technological transformation has not been included as a measurable explanatory variable.

15. Major labour market challenges persist: The study identifies issues such as educated unemployment, occupational mismatch, skill gaps, informal employment, low female labour-force participation, and weak industry–academia linkages as important challenges in employment.

16. AI presents both risks and opportunities: Artificial intelligence may displace routine jobs while simultaneously creating new occupations, making reskilling, digital skills, and AI readiness essential for future employability.

17. Policy should focus on employability rather than education alone: The findings support the implementation of industry-linked curricula, apprenticeships, skill development, support for micro, small, and medium enterprises (MSMEs), formalization, reskilling, and stronger industry–academia partnerships.

18. Inclusive employment requires a multidimensional policy approach: A comprehensive strategy integrating education, skill development, support for MSMEs, manufacturing, AI readiness, and labour market reforms is essential to promote sustainable employment and inclusive economic growth

Suggestions and Policy Recommendations

1. Align Education with Labour Market Demand: Educational curricula should be regularly updated in consultation with industries to reduce the gap between qualifications and employment requirements.

2. Strengthen Employability Skills: Greater emphasis should be placed on practical, technical, communication, problem-solving, digital, and industry-specific skills alongside formal education.

3. **Expand Apprenticeship and Work-Based Learning:** Universities and educational institutions should enhance internships, apprenticeships, and industry-based training to facilitate the transition from education to employment.
4. **Address Educated Unemployment:** Employment policies should focus on creating sufficient high-skilled job opportunities in emerging sectors, manufacturing, services, technology, and knowledge-intensive industries.
5. **Promote Continuous Reskilling and Upskilling:** A national framework for lifelong learning should be strengthened to help workers adapt to changing occupational requirements and technological advancements.
6. **Prepare Workers for AI and Automation:** Skills in AI, digital literacy, and emerging technologies should be integrated into higher education, vocational training, and workplace development to mitigate the risk of technological unemployment.
7. **Strengthen Micro, Small, and Medium Enterprises (MSMEs) and Formal Employment:** Financial, technological, and institutional support should be provided to MSMEs to enhance employment generation, productivity, and the transition from informal to formal employment.
8. **Increase Female Labour Force Participation:** Policies should promote flexible working arrangements, affordable childcare, safe workplaces, skill development, and equal employment opportunities for women.
9. **Improve Industry–Academia Collaboration:** Structured partnerships between universities, training institutions, and industries should be developed for curriculum design, research, internships, apprenticeships, and job placement opportunities.
10. **Enhance Labour Market Information:** Reliable and timely information on job vacancies, occupational demand, wages, and skill requirements should be developed to improve career guidance and job matching.
11. **Promote Regional Employment Planning:** Employment strategies at the district and state levels should be designed based on local industrial structures, available skills, and regional labour market conditions.

12. Support Manufacturing and Emerging Sectors: Investments in manufacturing, digital services, green industries, and other employment-intensive sectors should be encouraged to accommodate the growing working-age population.

13. Strengthen Formalisation and Social Protection: Policies should promote formal employment and expand social security coverage, particularly for workers transitioning from informal to formal employment.

14. Develop Targeted Graduate Employment Programs: Career counselling, placement support, entrepreneurship training, and industry-oriented skill programs should be enhanced for graduates and highly educated job seekers.

15. Establish an Integrated Employment Policy Framework: Coordination of education, skill development, industrial policy, technology policy, and labour market reforms is essential to ensure that educational expansion leads to productive and sustainable employment.

The Way Forward

To transform employment in India, there needs to be a shift from focusing solely on education to adopting an integrated framework that combines Education, Skills, Industry, Technology, and Employment. While educational attainment has a significant positive impact on employment, it alone cannot guarantee suitable job opportunities. Therefore, greater emphasis must be placed on enhancing employability through practical and industry-relevant skills, as well as offering more apprenticeships and internships. Strengthening the link between education and industry is crucial.

Additionally, the increasing influence of artificial intelligence and automation necessitates continuous reskilling and upskilling, particularly in digital, technical, and AI-related areas, to reduce job displacement and prepare workers for new occupations. Employment generation should concentrate on sectors such as manufacturing, micro, small, and medium enterprises (MSMEs), digital services, and green industries, while promoting formalisation and social protection.

Special attention should also be given to increasing female labour-force participation, addressing regional disparities, and tackling educated unemployment and occupational mismatch through improved career guidance and labour-market information. To ensure that education and skill development align

with local and emerging labour-market needs, district-level employment planning and evidence-based policy monitoring are essential.

In summary, India's future employment strategy should aim to leverage its large working-age population as a productive human-resource advantage by focusing on quality education, relevant skills, technological readiness, inclusive employment opportunities, and sustainable job creation.

REFERENCES

- Abraham, R., Ameen, H., & Basole, A. (2024). Structural transformation and the gender earnings gap in India. *Economic & Political Weekly*, 59(10), 38–47.
- Acemoglu, D., & Restrepo, P. (2020). *Robots and jobs: Evidence from US labour markets*. *Journal of Political Economy*, 128(6), 2188–2244.
- Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives*, 29(3), 3–30.
- Autor, D. H., Levy, F., & Murnane, R. J. (2003). The skill content of recent technological change. *Quarterly Journal of Economics*, 118(4), 1279–1333.
- Baltagi, B. H. (2021). *Econometric Analysis of Panel Data* (6th ed.). Springer.
- Basole, A. (2022). Structural transformation and employment generation in India: Past performance and the way forward. *The Indian Journal of Labour Economics*, 65(2), 295–320. <https://doi.org/10.1007/s41027-022-00380-y>
- Becker, G. S. (1964). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. University of Chicago Press.
- Behera, D. K., & Tiwari, M. (2015). Structural transformation in India: An econometric investigation. *Italian Economic Journal*, 1(1), 1–18.
- Blom, A., & Saeki, H. (2011). *Employability and Skill Set of Newly Graduated Engineers in India*. World Bank.
- Dasgupta, Z., & Basole, A. (2023). *Jobless growth and structural transformation: Some theoretical considerations and empirical evidence from India* (CSE Working Paper No. 54). Centre for Sustainable Employment, Azim Premji University.
- Government of India. (2024). *Periodic Labour Force Survey (PLFS) 2023–24: Annual Report*. Ministry of Statistics and Programme Implementation.
- Government of India. (2025). *Annual Report 2024–25*. Ministry of MSME.
- Government of India. (2025). *Economic Survey 2024–25*. Ministry of Finance.
- Government of India. (2025). *Union Budget 2025–26*. Ministry of Finance.
- Harris, J. R., & Todaro, M. P. (1970). Migration, unemployment and development. *American Economic Review*, 60(1), 126–142.

- International Labour Organization. (2024). *World Employment and Social Outlook: Trends 2024*. Geneva.
- International Labour Organization. (2025). *Global Employment Trends for Youth 2025*. Geneva.
- International Monetary Fund. (2024). *World Economic Outlook*. Washington, DC.
- Keshava, S. R. (2022). 75 years of India's economic development: Evaluation, challenges, and way forward. *Kristu Jayanti Journal of Management Sciences*, 1(1), 1–17. <https://doi.org/10.59176/kjms.v1i1.2197>
- Kuznets, S. (1966). *Modern Economic Growth*. Yale University Press.
- Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *Manchester School*, 22(2), 139–191.
- Mehrotra, S., & Parida, J. (2019). Why is the labour force participation of women declining in India? *World Development*, 98, 360–380.
- Ministry of Education. (2024). *All India Survey on Higher Education (AISHE) 2022–23*. Government of India.
- Ministry of Skill Development and Entrepreneurship. (2024). *Annual Report*. Government of India.
- National Statistical Office. (2024). *India Employment Statistics 2024*. Government of India.
- NITI Aayog. (2025). *Roadmap for Job Creation in the AI Economy*. Government of India.
- OECD. (2023). *Employment Outlook 2023*. Paris.
- Organisation for Economic Co-operation and Development. (2024). *Skills Outlook 2024*. Paris.
- Padhi, B., & Sharma, H. (2023). Changing contours of growth and employment in the Indian labour market: A sectoral decomposition approach. *Structural Change and Economic Dynamics*, 67, 220–233. <https://doi.org/10.1016/j.strueco.2023.08.004>
- Padhi, S. P. (2024). Structural change and employment growth in India: Reinterpreting “Manufacturing as an Engine of Growth.” *Economia*, 26(1), 25–46. <https://doi.org/10.1108/ECON-07-2023-0125>
- Schultz, T. W. (1961). Investment in human capital. *American Economic Review*, 51(1), 1–17.
- Thurow, L. C. (1975). *Generating Inequality*. Basic Books.
- Wooldridge, J. M. (2020). *Introductory Econometrics: A Modern Approach* (7th ed.). Cengage.
- World Bank. (2023). *World Development Report 2023: Migrants, Refugees and Societies*. Washington, DC.
- World Bank. (2024). *India Development Update*. Washington, DC.
- World Economic Forum. (2025). *Future of Jobs Report 2025*. Geneva