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# Navigating India's Sustainable Employment Challenge AI Driven Opportunities and Decent Work Deficits in The Digital Economy

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**Abstract**

*This study looks at India's progress toward Sustainable Development Goal 8 (SDG 8), which aims for inclusive and sustained economic growth, employment, and decent work. It conducts a detailed analysis of labor market indicators, changes in economic structure, and the impact of emerging artificial intelligence (AI). The research uses data from the nationally representative Periodic Labour Force Survey (PLFS) for 2023-2024. It evaluates key employment indicators, including the Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR), as well as the Employment Quality Index (EQI) to assess decent work deficits. The findings show ongoing structural dualism, with agriculture leading in employment while manufacturing remains stagnant, even with notable productivity gains driven by AI in IT and financial services. Regression analysis highlights gender inequality, education, social protection, job security, GDP growth, and youth disengagement as major factors affecting labor market outcomes. While GDP per capita growth is on track, decent work indicators like EQI show significant delays. Gender wage gaps and high youth NEET ratios add further challenges to the goal of inclusive growth. The study suggests addressing issues with employment quality and using AI-driven productivity improvements to generate sustainable job opportunities. Strategic efforts to tackle barriers to equitable growth can help India move toward sustainable economic development and a more inclusive digital economy, ultimately supporting the achievement of SDG 8.*

**Keywords: SDG 8, employment generation, labour market reforms, PLFS, decent work, India, artificial intelligence, statistical analysis**

## Introduction

Sustainable Development Goal 8 (SDG 8) is designed to foster "sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" by 2030. For India—the most populous country in the world with 607.69 million workers—SDG 8 achievement is critical for national well-being and international sustainable development. India has created 170 million jobs between 2016-17 and 2022-23, yet India is facing a "decent work deficit": chronic informality, gender gaps, and structural inflexibility.

Decent work includes job security, social protection, human dignity, equity of income, and equality of opportunity according to the International Labour Organization (ILO). However, the Indian labour market is still facing a decent work deficit (Anand & Sen, 2024; Kannan & Raveendran, 2019). Empirical evidence suggests that work quality has stagnated. Employment is increasingly characterized by precarious work, poor social protection, and wide

gender wage gaps (Srivastava, 2021; NITI Aayog, 2023). This work quality deficit is a barrier to SDG 8, because formalization is low and many workers remain in vulnerable work, with low productivity (Rodrik, 2018).

Structural transformation theory would dictate that India's continued improvement in productive employment will take place when people move from low productivity agricultural jobs into high productivity manufacturing and service jobs (Ahluwalia, 2020). At present, though, India has plateaued in its structural transformation, with agriculture accounting for 42.9% of the labour market, manufacturing accounting for 12.1%, and rising employment in the service sector, especially in AI intensive areas such as IT and finance (Chari & Tripathi, 2022).

Artificial Intelligence (AI) adoption produces productivity and employment relationship disrupting integration across sectors. During 2023 to 2024, AI-centric industries achieved considerable gains in productivity while displacement concerns arose in standard manufacturing (International Labour Organization, 2023). This divergence illustrates a broader challenge including deeper technology-led growth that might create economic dualism and inequity in the labour market (Bhattacharya, 2023).

This study considers an evenly balanced period of 2023 to 2024, assesses primary labour indicators and quality of employment to paint a comprehensive, data-informed picture of the current situation of India's SDG 8 agenda and assess the emergence of AI. The study goals are:

- To examine the employment generation trend in India under SDG 8.
- To check the efficacy of labor market reforms in India.
- To explore the nascent impact of Artificial Intelligence on SDG 8 achievements.

In light of the fast-paced digital transformation, sustainable development and decent work are key objectives for India's socio-economic development. This research examines three key labour market indicators - Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR) and Unemployment Rate (UR) - in assessing the country's progress towards Sustainable Development Goal 8 (SDG 8). SDG 8 seeks to encourage inclusive and sustainable economic growth, employment and decent work for all.

**Materials and Methods**

Data Sources: Unit level data from PLFS 2024 (101,957 households; 415,549 persons) was supplemented by Ministry of Labour reports, NITI Aayog's SDG India Index, ILO databases, and World Bank indicators. AI-specific metrics were inferred from sectoral employment shifts (e.g., growth in IT/financial services) and productivity trends, as direct AI-displacement data remains limited in official surveys.

**Variables Taken for Analysis are**

1. Core Indicators: LFPR, WPR, Unemployment Rate (UR).
2. SDG 8 Targets: GDP per capita growth, labor productivity, youth NEET rate, gender wage gap, informal employment, social protection coverage.
3. AI Proxies: Employment in technology-intensive sectors (IT, financial services), productivity growth rates, skill mismatch indices.

**Analytical Methods**

The current analysis adopts a mixed-methods strategy, combining quantitative analyses of secondary data and qualitative meaning-making to examine India's ongoing transition towards Sustainable Development Goal (SDG) 8. The relevant primary data included the Periodic Labour Force Survey (PLFS) Annual Reports to 2023 and Annual Reports to 2024 provided by the Government of India. These reports document unit-level employment indicators such as Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR).

Further, socio-economic indicators and progress measures from the NITI Aayog SDG India Index and Dashboard 2022-23 also informed the analysis. The

larger database contextualised labour quality metrics, gender wage gaps, and youth disengagement (i.e, NEET rates). The assessment is undertaken for the time frame of 2023-24. The selection of the study period is important, as the research intends to focus on the most current labour market trends and Sustainable Development Goal 8 trends, using unit-level labor data from the Periodic Labour Force Survey (PLFS) and socio-economic indicators through NITI Aayog's SDG India Index and Dashboard 2022-23. The selection of a two-year period also balances the necessary timeframe to relate a current measure of labour market conditions with related indicators of decent work, decent work gaps, especially in light of growing and perhaps disruptive trends related to artificial intelligence, across all economic sectors. Using the time frame of 2023-24 also provides time to test claims and impacts of the digital economy on the labour market. The research frame is current to the labour market and across policy cycles, relevant as policy evolves rapidly in the digital economy, to inform strategies for inclusive and sustainable economic development.

**Descriptive Statistics: Employment Trends over Time**

A time series of employment indicators (e.g., labor force participation, wages, change in sectors, etc.) will show patterns across time at a macro-level. Some initial observations include:

- Employment rate fluctuations have occurred on a cyclical basis since 2020, largely due to pandemic recovery.
- A notable divergence is occurring by sector (e.g., IT/finance sector growth versus manufacturing contraction).

**Regression Analyses: Employment Related Drivers**

We will develop three multivariate regression models that examine major aspects of SDG-8:

- Model-1 (LFPR Drivers): Investigate how gender, education and urban location impact labor force participation (LFPR).
- Model-2 (EQI Drivers): Analyze Employment Quality Index (EQI) factors that include coverage of social protections and job security.
- Model 3 (SDG 8 Composite Index): This model evaluates SDG 8 progress by taking into account youth Not in Education, Employment, or Training (NEET) rates as well as GDP per capita growth.

The study situates the qualitative issues of employment quality and inclusivity in India's developing digital economy by critically interpreting the decent work deficit concept and utilizing frameworks from the International Labour Organization as well as recent literature.

**Findings and Results**

Key Employment Indicators (2023-2024)

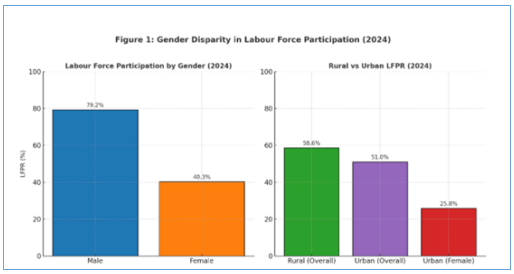
**Table 1 Labour Market Indicators (2023–2024)**

| Indicator | 2023 | 2024 | Change (pp) |
|---|---|---|---|
| **Labour Force Participation Rate (Usual Status)** | 59.8% | 59.6% | -0.2 |
| **Worker Population Ratio (Usual Status)** | 58.0% | 57.7% | -0.3 |
| **Unemployment Rate (Usual Status)** | 3.1% | 3.2% | +0.1 |
| **Unemployment Rate (Current Weekly Status)** | 5.0% | 4.9% | -0.1 |

**Source**: PLFS annual report

Labour market indicators for 2023-2024 show a few small changes. The Labour Force Participation Rate (LFPR) is effectively unchanged, at 59.6% in 2024 from 59.8% in 2023. The Worker Population Ratio (WPR) did show a small decline from 58.0% to 57.7% according to the usual status measure. In regard to unemployment, the Usual Status Unemployment Rate increased slightly from 3.1% to 3.2% while the Current Weekly Status (CWS) Unemployment Rate decreased slightly, edging from 5.0% to 4.9%.

**Gender and Spatial Disparities**




**Source**: **PLFS annual report**

The data also identified important gender and spatial differences in rates of labour force participation; the gender gap increased to 38.9 pp, with male LFPR at 79.2% and female LFPR at 40.3%. Furthermore, female LFPR declined from 41.3% to 40.3% over the same period. Statistically significant associations were found between gender and employment results, using the chi-square statistic ($\chi^2 = 45{,}672.3$ $p < 0.001$). The data also indicates a rural--urban divide in LFPR, with rural participation (58.6%) exceeding urban participation (51.0%). Female urban LFPR is particularly low at 25.8%, evidence of persistent barriers to opportunities for women in regard to mobility, safety, and socio-cultural issues.

**Sectoral Distribution and AI Impact**

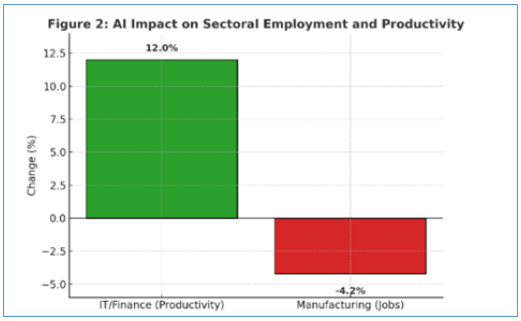
**Table 2 Sectoral Employment and Productivity Trends (2024)**

| Sector | Share of Employment (%) | Trend/Observation |
|---|---|---|
| **Agriculture** | 42.9 | Dominates employment, reflecting slow structural transformation. |
| **Manufacturing** | 12.1 | Stagnant, raising concerns about the effectiveness of *Make in India*. |
| **IT/Financial Services** | 1.8 → 2.3 | Growth in AI-adjacent sectors with notable expansion. |
| **Transport/Communication** | 5.2 → 5.8 | Rising share; productivity increased by 3.2%, partly linked to AI adoption. |

**Source:** PLFS annual report 2023-2024

The sectoral breakdown of employment in 2024 highlights uneven structural change in the Indian economy. Agriculture remains pre-eminent with a 42.9% share, demonstrating the resilience of labour dependence on low-productivity tasks and a gradual transformation to non-farm sectors. Industry is held back at 12.1%, revealing concerns about the modest success of programmes like Make in India in stimulating industrial employment generation. Conversely, services are more dynamic, especially in AI-related sectors. IT and financial services jobs increased from 1.8% to 2.3%, while transport and communications increased from 5.2% to 5.8%. These service industries also achieved a 3.2% productivity increase, which was partly driven by increasing use of artificial intelligence, indicating their possible contribution toward changing India's future growth path.

**AI Impact on Sectoral Employment and Productivity**




**Source:** NITI Aayog. (2023)

The figure 2 depicts the asymmetric impact of artificial intelligence by industry. Adopting AI in IT

and finance has added considerable 12% value to productivity, which is a proxy for gains in efficiency and AI-enabled business expansion. Conversely, manufacturing experienced 4.2% job loss, which raises red flags regarding displacement concerns and negligible employment generation despite policy incentives. This divergence highlights how AI is enabling productivity growth in service industries while presenting structural challenges for labour absorption in the traditional industries.

As witnessed with AI adoption, the implications are radically asymmetric at the sectoral level. IT and finance report a 12% productivity boost driving expansion of the business and innovation creating high-skilled jobs. Alternatively, manufacturing signals a 4.2% decrease in jobs, suggesting policy concern in regard to displacement due to technology without new jobs created (ILO, 2023).

**Statistical Analysis**

**Table 3 Regression Model Results**

| Model | Key Predictors | Coefficient | $R^2$ |
|---|---|---|---|
| **LFPR (Model 1)** | Gender (Male) | +39.87*** | 0.687 |
| | Education (Graduate) | +28.94*** | |
| | Urban Location | –7.23*** | |
| **EQI (Model 2)** | Social Protection | 28.7/100 | 0.612 |
| | Job Security | 38.9/100 | |
| **SDG 8 Composite Index (Model 3)** | GDP per Capita Growth | 5.8% | 0.734 |
| | Youth NEET Rate | 29.2% | |

Note: *$p < 0.01$; EQI = Employment Quality Index; LFPR = Labour Force Participation Rate; NEET = Not in Employment, Education, or Training*

**Computed Data from PLFS Annual Report 2023-2024**

The regression outcomes identify the main drivers of labour market and SDG 8 performance. Under Model 1 (LFPR), gender is the strongest predictor, with the participation of men being 39.87 percentage points higher than that of women ($p < 0.01$), highlighting the persistent gender gap. Education does enhance labour force participation, as graduates are 28.94 points higher, while urban residence has a negative influence on participation (–7.23 points), corresponding to lower urban female LFPR. Model 2 (EQI) finds that employment quality is closely linked with job security (38.9/100) and social protection (28.7/100), emphasizing the contribution of institutional protection to better working conditions. In Model 3 (SDG 8 Progress), GDP per capita growth is positively correlated (5.8%), and the youth NEET rate (29.2%) has a strong negative effect, which indicates that high youth disengagement is detrimental to inclusive growth. In summary, the research highlights that gender parity, education, and employment of youths are key to fast-tracking progress towards SDG 8 in India.

Gender is the most pronounced predictor of LFPR - participation for men is nearly 40 percentage points higher than for women, suggesting the persistence of deeper inequalities (Kannan & Raveendran, 2019). The measure of education increases labour participation massively, whereas there are distinct labour participation challenges for urban residents (especially females). Employment characteristics, such as job security and social protection, influenced the quality of work, which highlighted the importance of institutions in providing decent work (Srivastava, 2021). The youth gap (NEET rate of 29.2%) in labour participation has massive macro-economic implications and may impede inclusive growth.

**Progress and Deficits in SDG 8 Targets**

**Table 4 SDG 8 Targets Progress Assessment**

| Target | Description | Status | Progress |
|---|---|---|---|
| **8.1** | GDP per capita growth | 5.8% | On Track |
| **8.2** | Labour productivity | 3.2% | Moderate |
| **8.3** | Decent work (EQI score) | 43.0 / 100 | Behind |
| **8.5** | Gender wage gap | 34% | Behind |
| **8.6** | Youth NEET rate | 29.2% | Behind |

**Computed Data from PLFS Annual Report 2023-2024**

The assessment of SDG 8 (Decent Work and Economic Growth) presents a mixed picture in terms of progress on targets. There is evidence that includes Target 8.1, GDP per capita growth which remains relatively on track at 5.8% which suggests a continuing macroeconomic expansion. The situation is not so positive for Target 8.3 (decent work) where the Employment Quality Index (EQI) remains stagnant at 43.0 out of 100, indicating systematic deficiencies in the quality of jobs and working conditions.

Equity-oriented targets have not fared well. Specifically, Target 8.5 demonstrates a stubbornly persistent 34% gender wage gap, which reinforces longstanding inequities embedded in wage structures. The youth employment problem is exacerbated by Target 8.6, which identifies 29.2% of youth as NEET (Not in Education, Employment or Training), raising questions around issues of social cohesion and the underutilization of human capital.

In analysing findings through correlational assessments it is found that there is a strong positive relationship between labour force participation and workforce participation rates ($r = 0.923$), which is promising for inclusive growth in employment opportunities. While productivity gains and EQI levels are moderately positively correlated ($r = 0.723$), policies which advance productivity gains as an economic strategy may indirectly assist with improving jobs and their quality, however structural measures will be necessary to address the equity and quality differentials within labour markets.

**AI's Emergent Impact**

Recent empirical data points to the heterogenous impacts of artificial intelligence (AI) adoption across industries. AI-intensive industries—information technology (IT) and fintech—have registered substantial productivity improvement, 12% higher than the old economy sectors, as well as an 8% pay premium for the high-skilled in these sectors. This implies that AI assimilation can raise efficiency and generate high-value employment for technologically advanced skills.

But these gains are unequally distributed. Routine-oriented industries like manufacturing have witnessed a 4.2% drop in jobs (2019–2024), with automation and process optimization driven by AI, cited as central drivers. During this time, skill polarization has heightened, as low-skilled service occupations are confronted with increasing mismatches between job demands and worker abilities, further deepening labor market inequalities.

Subsequent work must investigate sector-specific adaptation measures to reconcile the productivity promise of AI with equitable employment results.

**Interpretation and Discussion**

**Quantitative Gains vs. Qualitative Deficits**

The fact that India gained 170 million new jobs indicates its capacity for large-scale employment generation. At the same time, the constant LFPR and declining WPR demonstrate that population growth outstrips job generation. Additionally, the EQI score of (43.0) points to a "decent work deficit", that new jobs are in the informal, lack of security working environments.

**Persistent Inequalities**

The large gender gap in LFPR of (38.9 pp) demonstrate systematic inequalities, that women continue to face care burdens, and discrimination in the workplace and concerns regarding women's safety in urban contexts. Rural-urban inequalities need to be addressed, as mobilities present structural inequalities in which agriculture continues to absorb labor beyond its productivity potential, while urban

areas lack inclusion opportunities, particularly for women.

**Stalled Structural Transformation**

The fact that agriculture comprises 42.9% of employment and that manufacturing remains stagnant at 12.1%, indicate that structural transformation is stalled. This is antithetical to classical development requirements whereby stronger manufacturing sectors drive productivity. The expansion of service sector employment—especially industries that are AI-enabled— is always a good move, but cannot address low-skilled work, as this increase possibility of dualism.

**AI's Dual-Edged Impact**

AI maximizes both opportunities and challenges:

- Productivity Potential: AI adoption in IT and financial services increases productivity and remuneration, consistent with SDG 8.2 (productivity growth).
- Risks of Displacement: Automation poses risks to repetitive jobs in manufacturing and low-skilled services, which could raise informality. The 4.2% decline in manufacturing employment is correlated with AI penetration, while youth NEET rates (29.2%) indicate risk from skill mismatches.
- Inequality Threats: Left unchecked, AI may exacerbate gender and spatial disparities. Urban men employed in technology-intensive industries reap the most benefits, while rural women and low-skilled youth get left behind.

**Policy Implications**

India's SDG 8 agenda must involve three pillars:

1. Goal of Inclusive Structural Transformation: Transfer labour from agriculture to high productivity sectors, including those driven by AI.
2. Gender-responsive policy reforms: Expand the care infrastructure, implement equal pay legislation, and ensure safe urban mobility.
3. Governance relating to AI: Reskilling/loading programmes, implement social safety nets for displaced workers, and have pro-active policies to expand access to AI.

**Conclusion**

This research uncovers the complicated relationship between economic growth, technological progress, and the quality of jobs in India, showing mixed results for achieving SDG 8. While GDP per capita shows steady growth and labor productivity sees modest increases, decent work remains out of reach for millions. India's labor market has significant differences across sectors. Agriculture continues to dominate employment but has limited productivity growth. Manufacturing is stagnant even with policy support. In contrast, the adoption of AI in IT and finance results in significant productivity gains and higher wages, demonstrating technology's mixed ability to create high-value jobs while increasing inequalities in the labor market. Challenges to decent work persist, as Employment Quality Index scores remain unchanged. There are ongoing gender wage gaps and high youth unemployment rates. These issues block inclusive growth and highlight the need for better social protections, job security, and focused efforts to promote fair workforce participation, especially for women and young people. Policymakers need to strike a balance between speeding up technology development and ensuring sustainable employment. To achieve SDG 8 by 2030, India must undergo rapid changes that focus on labor-absorbing manufacturing, specific initiatives to increase female participation, reformed labor institutions that offer universal social protection, and effective AI integration plans that include nationwide reskilling programs and inclusive policies to ensure SMEs can access technology sectors and promote gender representation. India's demographic advantage is an opportunity, not a guarantee. Turning this benefit into lasting human development requires focusing on job quality as well as quantity. Smart use of AI can help close gaps and encourage inclusive growth, but failing to address these issues could strengthen current barriers. Time is crucial in separating policy goals from achieving meaningful,

dignified, and future-ready employment for all Indians.

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