

THE ECONOMIC IMPACT OF AI ON JOBS: GLOBAL TRENDS AND EMERGING MARKET STRATEGIES

Dr. Chanda AppaRao

Assistant Professor of Economics

KRR Government Arts and Science College(A) Kodad

aprchanda@gmail.com

Abstract

Generative AI (GenAI) is fundamentally reshaping global labor markets. Data through late 2024 reveals a complex interplay between job displacement and labor augmentation across different economic tiers. Global exposure reaches 40 percent of total employment, distributed unevenly from 60 percent in advanced nations to 26 percent in low-income regions.

While routine clerical roles face immediate automation, high-skill roles benefit from AI collaboration. Vulnerability disproportionately affects women, who frequently occupy clerical positions. In India, tech services are pivoting toward AI-integrated frameworks, where specialized skills now command significant wage premiums despite broader hiring shifts.

Keywords

Artificial Intelligence, Labor Economics, Task-Based Framework, Job Displacement, Labor Augmentation, Indian IT Services, Skill Premium, Income Inequality.

Introduction

The arrival of GenAI marks a pivotal shift for the global economy. Unlike previous automation waves targeting manual labor, these models process complex logic, generate code, and synthesize data. This disruption has ascended the skill ladder, directly impacting white-collar professionals.

AI acts as a massive productivity shock that expands economic capacity. This expansion triggers competing forces: machines substituting for human tasks and machines complementing human talent. This tension defines the modern workplace landscape.

Global patterns remain uneven as 2024 concludes. Advanced economies face the highest exposure due to their reliance on cognitive services. Emerging markets initially appear shielded by large agricultural and manual sectors, yet their IT and BPO engines face sudden vulnerability.

Analysis must extend beyond aggregate job numbers. Job quality, wage gaps, and national readiness serve as the primary metrics for understanding this transition. Mapping these shifts provides the necessary guidance for policy and workforce strategy.

Objectives

This study focuses on five distinct areas of inquiry:

- Quantification of AI exposure across economic tiers compares advanced and low-income nations.
- Task-level analysis distinguishes between job displacement and labor augmentation.
- Examination of risk concentration in clerical roles reveals demographic and gender imbalances.
- Structural evaluation tracks the pivot in India's IT sector toward AI-driven platforms.
- Assessment of policy frameworks determines the effectiveness of resilient employment ecosystems.

Review of Literature

Economic models now conceptualize employment as a collection of discrete manual, routine, and abstract tasks. This perspective allows for a nuanced understanding of how AI capital interacts with human labor. Technology functions either as a substitute or a complement depending on task complexity.

$$Y = A \cdot F \left(K_{AI}, L_A, \sum_i T_i(L_{R,i}, K_{AI}) \right)$$

where A represents total factor productivity, L_A denotes abstract cognitive human labor operating complementarily with technology, and T_i represents specific task execution functions where routine cognitive labor $L_{R,i}$ competes directly with AI capital K_{AI} .

The IMF utilizes dual scales of Exposure and Complementarity. Exposure measures the overlap between job requirements and AI capabilities, while complementarity tracks the necessity of human oversight. Data entry faces high risk, whereas architects and doctors use AI to enhance professional value.

ILO research indicates that GenAI predominantly augments work rather than destroying it. Full automation remains largely confined to clerical roles. Because women frequently hold these positions, the risk carries significant gendered implications.

In India, the tech ecosystem is undergoing a fundamental shift. Routine coding and basic support are being automated, resulting in slower legacy hiring. Conversely, these forces drive capital into AI development, creating substantial wage premiums for specialists.

Analytical Framework and Methodology

Four data streams synthesized through 2024 track these labor market changes. These sources facilitate the mapping of occupational vulnerabilities on a global scale. Robust metrics provide the foundation for comparing regional outcomes.

The IMF database links job categories to digital readiness and legal frameworks. The ILO task matrix utilizes machine learning to score automation potential. India's PLFS provides local labor metrics and sector-level shifts.

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Third, India's PLFS provides local labor metrics and sector-level shifts.

Corporate filings from major IT firms reveal real-world hiring and investment trends. These quantitative exposure scores help classify roles into four distinct buckets. This categorization identifies where the labor market will likely bend or break.

The quantitative exposure score for an occupation O composed of n tasks is defined mathematically as:

$$AIOE_o = \sum_{t=1}^n w_{o,t} \cdot S(t)$$

We group roles into four buckets: those vulnerable to displacement, those ripe for augmentation, and those protected by physical or high-touch demands. This helps us see where the labor market will bend or break.

Discussion

Cross-Country Exposure Asymmetries and Economic Preparedness

Economies react differently based on development levels. Advanced nations face a sharp shock with 60 percent of workers handling cognitive tasks. These countries possess the capital and infrastructure to construct necessary safety nets.

Country Grouping	Share of Total Employment Exposed to AI	Share of Exposed Jobs Facing High Displacement	Share of Exposed Jobs Facing High Augmentation	AI Preparedness Index (API) Score Tier	Primary Policy Focus Required
Advanced Economies	60% ⁴	30% ⁴	30% ⁴	High ⁹	Regulatory upgrading, labor reallocation support, displaced worker safety nets ³
Emerging Market Economies	40% ⁴	20% ⁴	20% ⁴	Moderate ⁹	Digital skills upskilling, service sector transformation, formal-informal integration ³
Low-Income Countries	26% ⁴	10% ⁴	16% ⁴	Low ⁹	Basic digital infrastructure, foundational literacy, telecommunications expansion ³

Emerging markets face a 40 percent exposure but encounter critical barriers in high-value services. Low-income nations see the least direct risk at 26 percent. However, a long-term trap exists where productivity gains elsewhere may negate their traditional labor cost advantage.

Task Heterogeneity, Gendered Exposure, and Quality of Employment

Exposure clusters in specific occupational profiles. Clerical and administrative roles face the highest risk of displacement. Professionals and managers, however, use AI to sharpen skills and increase output.

ISCO-08 Occupational Category	Share of Tasks with High Automation Potential ($S(t) > 0.75$)	Share of Tasks with Medium Exposure ($0.25 \leq S(t) \leq 0.75$)	Primary Impact Mode	Dominant Gender Representation
Clerical Support Workers	24% ¹⁰	58% ¹⁰	Task Substitution and Displacement ¹⁰	Female-skewed ¹⁰
Professionals (Engineers, Legal, Finance)	4% ¹⁰	25% ¹⁰	Task Augmentation and Productivity Surge ¹⁰	Balanced / Male-skewed in STEM ¹⁰
Technicians & Associate Professionals	3% ¹⁰	22% ¹⁰	Task Augmentation and Workflow Integration ¹⁰	Balanced ¹⁰
Service & Sales Workers	2% ¹⁰	15% ¹⁰	Neutral to Moderate Assistance ¹⁰	Female-skewed ¹⁰
Craft Trades & Agriculture	< 1% ¹⁰	< 10% ¹⁰	Insulated by Physical Constraints ¹⁰	Male-skewed ¹⁰

AI fundamentally alters the nature of work. Algorithmic tracking can increase stress and reduce professional independence. Human-in-the-loop systems remain essential to protect worker dignity during this transition.

Structural Transformation in India's Technology Sector and Informal Economy

India's economy remains bifurcated. Most workers in the informal sector are safe from AI due to the physical nature of farming and retail. Yet the tech sector, generating 7 percent of GDP, occupies the frontline of disruption.

Major IT firms have streamlined workforces over the last two years. Algorithms now handle routine testing and maintenance. This trend represents a structural pivot rather than a temporary hiring lull.

Metric / Dimension	FY 2023–2024 Baseline	FY 2024–2025 Status	2030–2031 Horizon (NITI Aayog / Industry Projections)
IT-BPO Export Revenues	USD 199 Billion ⁷	USD 224 Billion ⁷	USD 350+ Billion Target ⁷
Direct Sector Employment	~5.43 Million Professionals ¹⁴	Headcount optimization (~60,000 legacy roles trimmed) ⁷	Potential loss of 1.5M legacy roles vs creation of up to 4.0M AI roles ¹⁶
Formal Sector Jobs Vulnerable to AI	45%–50% in routine sub-segments ⁵	55% AI tool adoption among white-collar workers ¹⁴	60% of formal sector roles face task restructuring ⁸
Skill Wage Premium (AI vs Non-AI)	Standard digital premium (~12%) ²⁰	AI specialized premium (~28%) ²⁰	Projected premium >40% for specialized architecture roles ²⁰

The sector is progressing through three distinct stages. The legacy model relied on headcount and manual coding. The current disruption phase automates routine support while slowing entry-level hiring. The future ecosystem focuses on high-value AI design and outcome-based pricing. Revenues grow despite headcount cuts in legacy roles. Multinational centers continue to acquire high-tier talent in Indian urban centers.

A proactive strategy could generate 4 million AI-enabled jobs by 2031. AI also facilitates the formalization of the informal economy. Dialect interfaces allow small businesses to access credit and market data without coding expertise.

AI increases productivity across the informal workforce. This shift lifts economic output without requiring complex technical training. Such integration remains a key driver for emerging market growth.

Key Findings

Analysis highlights six core findings regarding the AI transition. Exposure varies by nation, with advanced economies hitting 60 percent. Routine tasks in clerical and admin support face the most significant substitution risk.

Gender disparities remain a critical concern. Women face double the automation risk of men in high-income nations due to clerical job concentrations. Income gaps may widen as AI favors highly educated workers and capital owners.

India is actively repricing its talent pool. Demand for AI skills brings a 28 percent wage premium to the market. Growth occurs alongside friction, as 60 percent of formal jobs face task restructuring.

Conclusion and Strategic Imperatives

AI functions as a disruptive force rather than a simple job-killer. It reallocates labor across tasks and borders. High-skill roles gain productivity, while routine roles gradually fade from the labor market.

India must defend its competitive lead. Transitioning 5.4 million workers into high-value AI engineering is a national priority. AI also offers tools to elevate the informal workforce.

Three clear pillars support an equitable transition:

1. **Human Capital Transformation:** The India AI Talent Mission must bridge the skill gap through higher education and apprenticeships.
2. **Active Labor Market Policies:** Protecting gig and contract workers requires portable safety nets and income support during job transitions.
3. **Public Infrastructure:** Building an Open-source AI Commons ensures shared compute power and human-centric rules for privacy and quality of life.

Works cited

1. Gen-AI: Artificial Intelligence and the Future of Work - International Monetary Fund, <https://www.imf.org/-/media/files/publications/sdn/2024/english/sdnea2024001.pdf>
2. Generative AI and Jobs: A global analysis of potential effects on job quantity and quality, <https://webapps.ilo.org/static/english/intserv/working-papers/wp096/index.html>
3. Gen-AI: Artificial Intelligence and the Future of Work - IDEAS/RePEc, <https://ideas.repec.org/p/imf/imfsgn/2024-001.html>
4. Gen-AI: Artificial Intelligence and the Future of Work - Progress.org, <https://www.progress.org/wiki/imf-gen-ai-future-of-work/>
5. AI and the Future of Employment in India's ITand BPO Industry - ResearchGate, https://www.researchgate.net/publication/392228305_AI_and_the_Future_of_Employment_in_India's_ITand_BPO_Industry
6. Gen-AI: Artificial Intelligence and the Future of Work - International Monetary Fund, <https://www.imf.org/-/media/files/news/seminars/2024/12th-statistical-forum/p2sessioniinov20marina-tavaresgenaiartificial-intelligence-and-the-future-of-work.pdf>
7. AI and the Future of Work – IMF Report Summary - Contextual Solutions, <https://www.contextualsolutions.de/blog/gen-ai-and-the-future-of-work>
8. Generative AI and Jobs: A global analysis of potential effects on job quantity and quality, <https://espas.secure.europarl.europa.eu/orbis/system/files/generated/document/en/AI%2520JOBS.pdf>
9. Generative AI and jobs: A global analysis of potential effects on job quantity and quality, <https://cdn.files.pg.edu.pl/zic/Strona%20angielska/Technology%2C%20Innovation%20and%20Growth%202024/abstracts%20/GMYREK%20Generative%20AI%20and%20jobs%20A%20global%20analysis%20of%20potential%20effects%20on%20job%20quantity%20and%20quality.pdf>
10. Generative AI and jobs: a global analysis of potential effects on job quantity and quality, <https://researchrepository.ilo.org/esploro/outputs/encyclopediaEntry/Generative-AI-and-jobs-a-global/995326516102676>
11. Generative AI and Jobs: A global analysis of potential effects on job quantity and quality., https://www.youtube.com/watch?v=2ttF5A_j9hM
12. Psychological impacts of AI-induced job displacement among Indian IT professionals: a Delphi-validated thematic analysis - PMC, <https://pmc.ncbi.nlm.nih.gov/articles/PMC12409910/>
13. Generative AI and jobs: - International Monetary Fund, <https://www.imf.org/-/media/files/news/seminars/2024/12th-statistical-forum/p1sessioniinov20generative-ai-and-jobs-a-global-analysis-of-potential-effects-on-job-quantity-and-q.pdf>
14. Shaping India's AI-Driven Economy - Drishti IAS, <https://www.drishtiiias.com/daily-updates/daily->

[news-analysis/shaping-india-s-ai-driven-economy](#)

15. India's IT services industry built the talent. Its biggest clients are now hiring it directly through GCCs - HR Katha, <https://www.hrkatha.com/special/editorial/indias-it-services-industry-built-the-talent-its-biggest-clients-are-now-hiring-it-directly-through-gccs/>
16. AI@Work: Driving Productivity, Jobs, and Innovation - PIB, <https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=157310&ModuleId=3>
17. Periodic Labour Force Survey (PLFS) – Annual Report [July, 2023 – June, 2024] - PIB, <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2057970>
18. Gen-AI: Artificial Intelligence and the Future of Work (2024) - IMF Staff Discussion Note, <https://digitalskills.mdia.gov.mt/skills-intelligence/gen-ai-artificial-intelligence-and-the-future-of-work-2024-imf-staff-discussion-note/>
19. National Strategy for Artificial Intelligence - NITI Aayog, https://www.niti.gov.in/sites/default/files/2023-03/National-Strategy-for-Artificial-Intelligence.pdf?utm_source=substack&utm_medium=email
20. India's IT Dream Is Not Dying. It Is Being Repriced. - Kotak Neo, <https://www.kotakneo.com/investing-guide/insights/india-it-sector-ai-repricing-tcs-hiring/>