“ROLE OF TECHNOLOGY IN RESHAPING INCOME DISTRIBUTION FOR UNEDUCATED LABOR IN INDIA: OPPORTUNITIES AND CHALLENGES”

ABSTRACT

India's technological growth has kept on changing various layers of the workforce and, the uneducated laborers being a major chunk of the workforce in India, are some of the most affected due to India moving towards a higher technological level. They are thus a focal point for both the promises and challenges of technology-mediated gains and inequalities in income. This paper studies the impact of technology on income distribution within this group. The gig economy, run on the back of Swiggy, Zomato and Uber, aka flexible employment for semi-literate workers, follows closely behind. Furthermore, schemes like UPI and Jan Dhan Yojana contributing to financial inclusion have opened the formal financial space allowing an unskilled rural economy to participate economically as well.

That said, the challenges do not go away. Automation endangers ~20–30% of low-skilled jobs in manufacturing and agriculture which displace uneducated workers who cannot find a new job as they lack the required skills for new roles. Moreover, as unskilled workers, we have seen only 5% annual wage growth, compared to 12–15% for skilled workers; wage disparities are growing. Skill India and PMGDISHA are some of the government programs that have been enforced to upskill the uneducated laborers but the gap between the training and the availability of jobs still restricts its efficacy.

The study highlights that India needs to provide tailored solutions to attain equitable income for the increasing number of unskilled workers and suggests policies that promote improved human capital, digital literacy, and inclusive technology-led solutions.

Keywords: Technology, Income Distribution, Uneducated Labor, Gig Economy, Automation, Wage Disparity, Financial Inclusion, Skill Development.

I. INTRODUCTION

India is the fastest growing economy in the world today but income inequality and social stability is a big challenge in front of the country, especially with uneducated labor. Yet 90% of the workforce are still unskilled, and as a result forced to work in low-paid informal sector jobs that only serves to exacerbate income inequality. While many urban poor workers are semi-skilled or skilled, rural uneducated laborers have no access to stable jobs and remain marginalized in a technology led economy. Those members of the workforce are especially suited for the concepts of technology as employment and income and the environing environment change.

Technological advancement has made significant changes in India labor market which leads to various opportunities and challenges. Platforms like Swiggy, Zomato, Uber, among other gig economy jobs, have offered jobs to semi-literate and untrained people. Furthermore, schemes like Jan Dhan Yojana have ensured better access to banks for the lower-ladder laborers, and UPI has aided financial inclusion as well. But at the same time this technological advance has also amplified inequalities. Low-skilled jobs in key sectors like manufacturing and agriculture are being replaced by automation, leaving low-educated workers unable to keep up. In addition, the imbalanced accessibility of technology, especially in the remote areas has segregated the untrained workers from the advancement benefit.

Problem Statement

The disparity in technological access and the rise of automation have exacerbated wage inequalities and job insecurities for uneducated laborers in India.

Research Objectives

1. To assess how technology creates job opportunities for uneducated labor.
2. To analyze the challenges posed by automation and digital divides.
3. To study the effectiveness of government interventions like **Skill India** and **PMGDISHA** in addressing these issues.

Scope of the Study

This study focuses on the Indian context and relies solely on secondary data sources, including reports from government agencies, international organizations, and industry studies. The analysis examines the opportunities and challenges presented by technology for uneducated laborers and identifies gaps that need to be addressed for equitable economic growth.

II. LITERATURE REVIEW

The intersection of technology and income distribution has been widely discussed in recent years. Several studies explore the implications of digital penetration, gig economy growth, and automation on employment for unskilled and uneducated laborers. This literature review highlights existing research findings while identifying gaps in understanding income distribution among uneducated laborers, particularly in rural India.

1. Digital Penetration and Employment Opportunities

According to the IAMAI & Nielsen Report (2022), internet penetration in India has shown significant growth because of affordable smartphone supply and increasing rural connectivity. Urban internet penetration is now 69% while the figure for rural areas is only 37%, showing how far behind rural internet remains despite improvements. In addition, digital penetration has provided a window to the world in terms of information and job platforms but it is still not being attempted by many uneducated laborers as many are not aware of digital literacy. While digital tools are improving financial inclusion, such as UPI and Jan Dhan Yojana, the report points out that they do not address the employment challenge stemming from a skills gap.

2. Gig Economy as an Employment Generator

According to BCG Report (2021), the gig economy helps generate employment for semi-literates and illiterates. Companies like Swiggy, Zomato, Ola and Uber have created more than 80 lakh jobs, of which about 40% are semi-literate. Gig work is attractive for the unskilled workforce because it delivers flexibility and instant pay, the report states. Despite the higher wages, the loss of job security, social protection, and upward mobility avenues make gig economy jobs precarious for the uneducated worker.

3. Automation and Its Impact on Unskilled Labor

According to the McKinsey Global Institute (2022), automation especially threat to unskilled and low-skilled workers. According to the research 20–30% of unskilled labor positions in manufacturing, farming, and logistics can been automated by 2030. Automation boosts productivity and drives down the costs, but it creates negative externalities for unskilled workers who are unable to learn the new set of skills needed to fit into the new tech-services economy. Moreover, the study stresses that automation exacerbates labor market inequality through the increased labor demand for skilled workers and falling labor demand for unskilled workers.

Research Gaps

Although existing literature on issues such as digital penetration, gig economy employment and automation and its impact are widespread, there are two key gaps:

- **Ignore income distribution among the unskilled laborers in the rural India:** Recent woks highlight the employment opportunities but they miss in the direction of discussing income distribution among the unimportant laborers.
- **Lack of sufficient analysis of tech-based initiatives:** There is an array of technocratic government programs like Skill India, PMGDISHA, etc. intended to overcome the digital and skill divide but not enough analysis if they are helping in reducing wage gap and ensuring sustainable employment of uneducated laborers.

This literature review highlights the requirement of extensive studies, which elucidate the effects of innovation on the distribution of income and the challenges faced by unskilled workforce in India in the context of automation, income polarization and access to digital economy.

III. RESEARCH METHODOLOGY

The research employs a **descriptive and analytical research design** to examine the role of technology in reshaping income distribution for uneducated labor in India. The study is conducted using **100% secondary data**, which allows for a comprehensive and evidence-based analysis of opportunities and challenges presented by technological advancements.

Data Sources

The research relies on credible and authentic secondary sources, including:

1. **Government Reports**:
    - *NITI Aayog* reports on digital inclusion and employment.
    - *Ministry of Skill Development* reports on initiatives like Skill India and PMGDISHA.
2. **International Organizations**:
    - *International Labour Organization (ILO)* studies on automation and wage disparity.
    - *World Bank* reports on digital penetration and financial inclusion in India.
    - *McKinsey Global Institute* research on the impact of technology on unskilled labor.
3. **Industry Analyses**:
    - Reports by *Boston Consulting Group (BCG)* on the gig economy.
    - *Deloitte* studies on technological trends and workforce transformation.

Analytical Approach

Through a comparative analysis, the study assesses the opportunities and challenges that are created by technology. Data is showcased in the form of tabulated results and a few Graphical representation to underscore important growth trends like Digital penetration, automation impact and wage gap etc. It makes it clearer and facilitates a fair discussion on how technology impacts uneducated workforce of India. To provide a structured, data-driven examination that leads to actionable insights regarding the research topic.

IV. FINDINGS AND DISCUSSION

This section highlights the key findings of the study based on secondary data and analysis. The discussion focuses on digital penetration, opportunities in the gig economy, automation's impact, wage disparities, and government interventions to address these challenges. Relevant tables and graphs support the analysis for clarity.

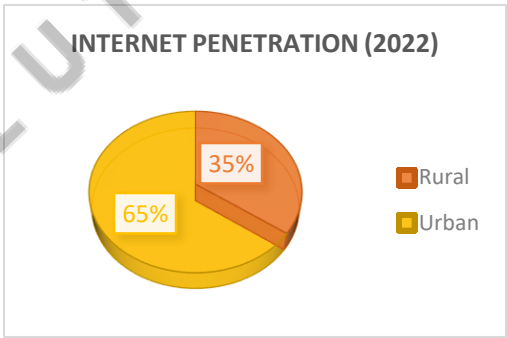
1. Digital Penetration and the Digital Divide

In India, the proliferation of digital infrastructure has created new avenues for work and access to livelihood. Yet, there exists a vast gulf of digital divide dividing urban from rural areas. As per IAMAI & Nielsen Report (2022), internet penetration in urban area is 69% but it is still lagging in the rural areas with the number sitting at 37%. This gap prevents unskilled workers situated in rural areas from being able to access digital platforms that may provide jobs, financial services, and training programs.

With no digital literacy, this only makes matters worse for unskilled workers who cannot benefit from technology. Even though urban unskilled workers gain from options like gig economic situation tasks, backwoods employees are mainly left out, thus widening revenue inequality. This chasm needs to be spanned by providing affordable internet access and effective digital literacy programs.

Table: Internet Penetration in Rural vs Urban India

Region	Internet Penetration (2022)
Rural	37%
Urban	69%



Graph 1: Rural vs Urban Internet Penetration

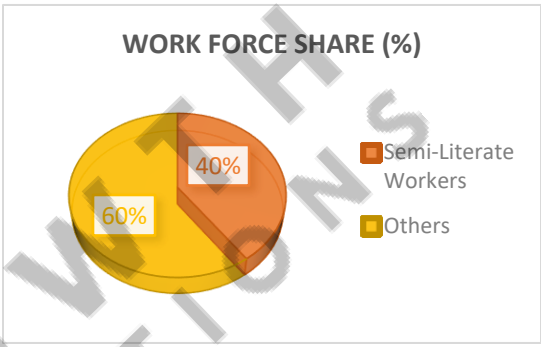
2. Gig Economy: Job Opportunities for Semi-Literate Workers

Unskilled and semi-literate workers in India are being supported by the rise of the gig economy which they are making use of as a force for positive change. Platforms such as Swiggy, Zomato, Ola, and Uber have generated 8 million jobs, 40% of which are for semi-literate workers (BCG Report, 2021). This has been emerged out of a need for flexible work at suites and low barriers of entry for uneducated laborers to make a living where these platforms provide flexible employment opportunity.

Urban and semi-urban areas where technology adoption has been faster have been the most impacted by the gig economy. Immediate income generation and access to work: Workers in sectors such as food delivery, ride-hailing and courier services can start earning income immediately and contribute to economic activity. Nonetheless, there are still challenges: low security of employment, social protection, and limited ascension, constraining these workers' long-term income opportunities.

Table: Gig Economy Workforce Breakdown

Workforce	Share (%)
Semi-Literate Workers	40%
Others	60%



Graph 2: Gig Economy Workforce Share

3. Automation and Its Threat to Low-Skilled Jobs

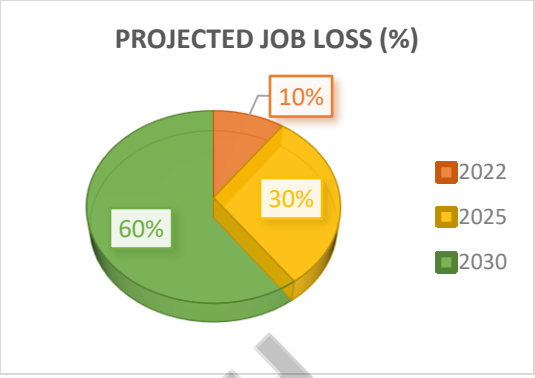
Technology also creates many jobs, but it is important to note that technology can replace low skilled jobs by automating tasks. McKinsey Global Institute Report (2022) estimate that by 2030, automation could eliminate 20–30% of unskilled jobs in manufacturing, logistics, agriculture, and other similar sectors. This dislocation hits unskilled workers the hardest, as they have little to offer in the way of adaptation to technology-oriented jobs.

As an example, in manufacturing, automated machinery and robotics decrease the need for workers to perform manual labor. Just as in logistics, where mechanization and AI are streamlining and replacing functions now traditionally done by unskilled workers. We are seeing this in the agriculture sector as well with respect to the automated tools and smart-farming solutions being brought in.

On one hand automation generates productivity and lowers costs for companies, on the other hand it skews the income distribution to wage differentials the latter favoring skilled workers capable of working with technology. Without reskilling initiatives, it leads to uneducated laborers being more vulnerable to job loss so face further restrictions to economic opportunities.

Table: Projected Job Loss Due to Automation

Year	Projected Job Loss (%)
2022	5%
2025	15%
2030	30%



Graph 3: Automation Job Loss Projections

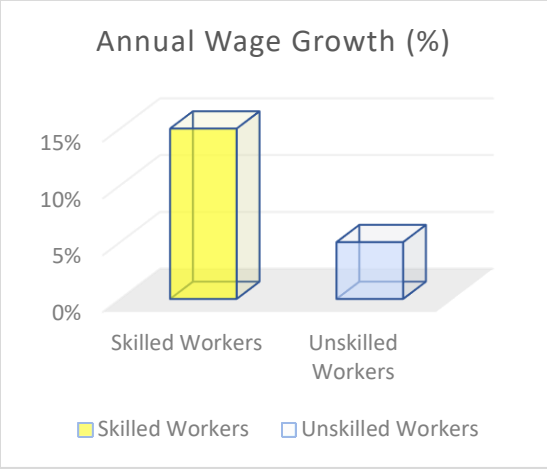
4. Wage Disparities Between Skilled and Unskilled Workers

Skills-biased technology change has increased wage differentials between skilled and unskilled workers. The ILO Report (2022) shows that technology sector skilled workers receive 12–15% per year wage growth; unskilled laborer only 5%.

This gap illustrates the growing focus on technical skills, and how those in lower-skilled positions are becoming less valuable in the labor market. Uneducated laborers will continue to be forced into menial, low-skilled jobs with no hope of climbing the economic latter, deepening income inequality. Bridging that will require developing specific programs to develop skill to ensure equitable wage growth.

Table: Wage Growth Comparison

Worker Type	Annual Wage Growth (%)
Skilled Workers	12-15%
Unskilled Workers	5%



Graph 4: Wage Growth Comparison

5. Government Interventions: Skill Development and Digital Inclusion

To address the challenges faced by uneducated labor, the Indian government has launched programs like Skill India and PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan). As of 2023, over 10 million individuals have been trained under these initiatives.

While these programs aim to enhance digital literacy and provide employable skills, their effectiveness is hindered by job-skill mismatches and low employment rates. Approximately 30% of trained individuals remain unemployed, highlighting the need for industry-aligned training programs and increased rural outreach to ensure meaningful employment for unskilled workers.

Table: Skill Development Program Outcomes

Program	Individuals Trained	Employment Rate
Skill India Mission	10 million	70%
PMGDISHA	5 million	N/A

Summary

The findings demonstrate that while technology provides employment opportunities through the gig economy and financial inclusion, it also intensifies challenges such as job displacement due to automation and wage disparities. Government interventions, though impactful, require further refinement to bridge the skill gap and address digital exclusion, particularly in rural areas.

V. CONCLUSION AND RECOMMENDATIONS

The study highlights how technology is reshaping income distribution for uneducated laborers in India by creating both opportunities and challenges. On one hand, digital platforms, such as Swiggy, Ola, and Zomato, have opened avenues for semi-literate labor to participate in the gig economy, offering flexible employment opportunities. Financial inclusion initiatives like UPI and Jan Dhan Yojana have further enabled economic participation for marginalized groups.

On the other hand, challenges remain significant. Automation is displacing low-skilled jobs in sectors like manufacturing, agriculture, and logistics, with job losses projected to reach 30% by 2030. The digital divide, particularly in rural areas, prevents uneducated labor from accessing the opportunities created by technological advancements. Additionally, wage disparities between skilled and unskilled workers continue to widen, leaving uneducated laborers in low-paying, insecure roles.

To address these challenges, targeted policies must focus on:

1. **Expanding Digital Infrastructure**: Ensure affordable internet access and digital tools in rural areas to bridge the digital divide.
2. **Upskilling Programs**: Strengthen initiatives like **Skill India** and align them with industry requirements to enhance employability.
3. **Social Security for Gig Workers**: Introduce measures to provide job security, social protection, and long-term income stability.

By implementing inclusive and skill-oriented solutions, technology can become a driver of equitable growth for uneducated laborers in India.

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