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Impact of AI on Employment and Job Creation in the Era of Globalization 4.0

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ABSTRACT

The rise of Globalization 4.0, characterized by the fusion of digital technologies and global economic integration, has brought about transformative changes to employment. Among these changes, Artificial Intelligence (AI) plays a pivotal role. This paper examines the dual impact of AI on employment and job creation. It highlights the opportunities AI generates in emerging sectors and addresses the challenges of job displacement, skill gaps, and economic inequality. The study concludes with strategies to harness AI's potential for inclusive and sustainable growth.

Keywords: *Artificial Intelligence, Globalization, Employment. economic integration, Job Creation, Sustainable growth.*

Introduction

Globalization 4.0 refers to the current phase of global economic and technological integration, driven by advanced digital technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), blockchain, and robotics. Unlike previous phases, it focuses on the seamless connectivity of systems, automation, and real-time data sharing across borders.

This era represents a shift from traditional globalization, characterized by trade and industrialization, to one where knowledge, innovation, and digital infrastructure are at the forefront. Globalization 4.0 is reshaping industries, altering job markets, and fostering new global connections while presenting challenges in inclusivity and regulation.

Role of AI in Shaping the Global Workforce

AI is a transformative force in the global workforce, automating repetitive tasks, optimizing business operations, and creating new roles requiring specialized skills. It enables businesses to operate more efficiently, enhances decision-making through data analysis, and supports global collaboration through AI-driven platforms. AI has led to the emergence of high-demand roles such as data analysts, machine learning engineers, and AI ethicists. Simultaneously, it disrupts traditional employment in sectors like manufacturing and customer service by replacing manual jobs with automated solutions. Thus, AI is both a driver of innovation and a disruptor, requiring a recalibration of workforce strategies.

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Purpose and Scope of the Study

The purpose of this study is to examine the dual impact of AI on employment and job creation in the context of Globalization 4.0. It aims to explore how AI fosters economic opportunities through innovation and efficiency while addressing challenges such as workforce displacement, skill gaps, and inequality. The scope includes analyzing the positive contributions of AI to emerging industries, understanding its disruptive effects on traditional jobs, and proposing strategies for balancing innovation with inclusivity. The study also highlights case studies and real-world applications to provide actionable insights for policymakers, businesses, and educational institutions.

Job Creation in Emerging Industries

AI has fuelled the creation of new job roles across various sectors. Careers such as data scientists, machine learning engineers, AI ethicists, and algorithm auditors are now in high demand. These roles require specialized skills in programming, data analysis, and ethical governance, paving the way for innovative career paths. For example, AI ethicists ensure that AI systems are unbiased, transparent, and aligned with societal values.

Case Studies of Industries Transformed by AI

- **Healthcare**: AI-driven tools like predictive analytics and robotic surgeries have revolutionized healthcare, creating jobs for developers of AI diagnostic systems and clinical data analysts.
- **Finance**: In the finance sector, AI-powered fraud detection, automated trading systems, and personalized financial advice have led to increased demand for AI architects and compliance experts.

Enhanced Productivity and Efficiency

AI automates repetitive and time-consuming tasks such as data entry, customer support (via chatbots), and inventory management. This allows employees to focus on creative and strategic activities, driving innovation and improving job satisfaction. For instance, automated supply chain systems free up human resources for research and development.

AI systems augment human capabilities by providing tools for faster decision-making and problem-solving. In the retail industry, AI analyses customer preferences, enabling human marketers to design more targeted campaigns. Similarly, in engineering, AI-assisted design tools streamline complex processes, enhancing both speed and accuracy.

Global Access to Opportunities

AI-powered platforms like Upwork and Fiverr have created a global gig economy, connecting freelancers with clients worldwide. These platforms leverage AI to match skills with projects, allowing individuals to earn income from anywhere. This model benefits both skilled workers in developing nations and businesses seeking cost-effective solutions.

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AI facilitates remote work by enabling virtual collaborations and automating administrative processes. For example, AI-based project management tools help remote teams coordinate effectively, while AI transcription services support real-time communication across languages. This democratization of job access empowers workers in rural or underserved areas to participate in the global economy.

Job Displacement

AI and robotics automate repetitive and predictable tasks, replacing roles in sectors like manufacturing, retail, and logistics. Machines now perform tasks such as assembly line operations, inventory management, and basic customer service with greater efficiency and precision, leaving many workers redundant.

Statistics on Sectors Most Affected

- **Manufacturing**: Reports indicate that automation could replace up to 30% of jobs in this sector by 2030.
- Retail: The rise of self-checkout systems and virtual assistants has reduced cashier and sales associate roles.
- **Transport**: Autonomous vehicles could displace millions of drivers globally within the next decade.

Skills Gap

- **Lack of Workforce Readiness For AI-Driven Roles**

  AI-related jobs demand advanced technical skills in areas like programming, machine learning, and data analytics. Unfortunately, many workers lack these skills, making it challenging to transition into AI-driven roles.

- **Analysis of Education and Training Inadequacies**

  Traditional education systems often fail to emphasize AI-related subjects, leaving graduates underprepared. Additionally, access to reskilling programs is uneven, especially in developing countries, where infrastructure and resources are limited. This perpetuates the mismatch between job market needs and workforce capabilities.

Economic Inequality

- **Geographic and Demographic Disparities in AI Benefits**

  Developed nations and urban centre's benefit disproportionately from AI advancements due to better infrastructure, education, and investment. In contrast, rural areas and developing countries face slower AI adoption, widening the global divide in job opportunities.

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- **Role of AI in Exacerbating Income Inequality**

  AI creates high-paying jobs for skilled workers while automating low-skill roles, leading to a growing wage gap. For example, software engineers and data scientists earn significantly more, while low-income workers in automated industries face unemployment, deepening economic inequality within and across nations.

Balancing AI's Impact on the Workforce

Reskilling and Upskilling:

- **Investment in Lifelong Learning Programs**

  To address job displacement, governments and organizations must fund continuous learning initiatives that equip workers with AI-relevant skills like programming, data analysis, and critical thinking.

Partnerships Between Governments, Corporations, and Educational Institutions

Collaborative efforts are crucial to designing and implementing skill development programs tailored to industry demands. For example, tech companies partnering with universities to offer AI certifications.

Promotion of AI-Augmented Roles

- **Hybrid Human-AI Roles Across Industries**

  These roles blend human creativity with AI efficiency. For example, doctors use AI for diagnosis but rely on human judgment for treatment plans.

- **Case Studies Demonstrating Successful Integration**

  In retail, AI-powered tools assist sales staff by providing customer insights, enhancing the shopping experience while retaining the human touch.

Policy and Ethical Considerations

- **Regulation to Protect Workers and Ensure Fair Practices**

  Governments should implement labour policies that safeguard workers' rights and provide safety nets for those affected by automation**.**

- **Ethical AI Adoption to Minimize Biases and Inequality**

  Organizations must prioritize ethical AI practices, ensuring algorithms are free from bias and accessible to all sectors of society to prevent marginalization.

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Case Studies and Real-World Applications

Successful AI Adoption in Developed and Developing Nations

- **Developed Nations:** Countries like the USA and Germany leverage AI to enhance productivity, with widespread adoption in healthcare and manufacturing**.**
- **Developing Nations:** India and Kenya use AI in agriculture (e.g., predictive weather analytics) and financial inclusion (e.g., mobile-based AI banking solutions), creating opportunities for growth.

AI's Role in Creating Sustainable Economic Ecosystems

AI contributes to sustainability by optimizing resource usage, reducing waste, and supporting green technology innovations. For example, AI-driven renewable energy management systems ensure efficient power distribution and consumption, creating jobs in clean energy sectors.

Estimating Jobs Loss/Gain Due to AI for India

Capgemini (2017), in their report based on an extensive survey in 9 countries (including India), found that countrywide, India (with 58 % of companies surveyed already implementing AI) is the global leader in implementing AI at scale, followed by Australia (49 %), Italy (44 %), Germany (42 %), UK (35 %) and USA (32 %).

According to the report, the main reasons for India becoming a leader could be the establishment of large number of innovation centres by organisations (which focus on AI) and the presence of a favourable regulatory environment in light of the government's support through initiatives like "Digital India".

The report also stated that 83 % of the executives of large organisations surveyed said that AI has created new job roles and 67 % of such new jobs were created at the level of manager or above. A majority of organisations (63 %) surveyed stated that AI has been augmenting human output and hasn't negatively impacted jobs. In the survey, it was also found that 71 per cent organisations have proactively initiated up-skilling and re-skilling employees with new skills to deal with the impact of AI.5 Accenture (2017), based on its analysis, stated that AI has the potential to add USD 957 billion, or 15 per cent of current Gross Value Added (GVA), to India's economy in 2035. It also argued that there will be no negative impact on long-term employment and it will remain constant. BCG (2018) in its analysis, based on global survey of over 1000 executives from 12 countries including India, found that percentage of early AI adopting companies in India (19 %) is third highest in world, only after the USA (25 %) and China (23 %), while the share of Indian companies planning to implement AI within the next three years is 96 %, ahead of USA (87 %) and China (94 %). percentage of early AI adopting companies in India (19 %) is third highest in world, only after the USA (25 %) and China (23%), while the share of Indian companies planning to implement AI within the next three years is 96 %, ahead of USA (87 %) and China (94 %).

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Infosys (2018), based on a survey of 1,053 global C-level executives as well as IT decision makers, across seven countries, namely Australia, China, France, Germany, India, UK and USA, found that about 75 per cent of the Indian enterprises are already experiencing a positive return on their AI investment followed by USA (71 per cent) and China (61 per cent). The major drivers identified are better insights to improve time efficiencies, increased production, reduced operating costs, improved customer retention etc.6 Though there are variations on the actual data of the share of Indian AI implementing companies, one thing is clear that the Indian companies are quite forthcoming in terms of adopting AI. Some studies have estimated the impact of AI on jobs at sectoral levels including the job levels. Capgemini (2017), based on their extensive survey of 993 respondents from companies implementing AI across a range of sectors in nine countries (including India), stated that sector-wise the share of AI deployment at scale has been as follows (Table 1). The study found that the sectors such as telecom, retail, and banking have seen the highest implementation of AI at scale.

CIS (2018), in its report on "AI and the Manufacturing and Services Industry in India" has stated that it has been been estimated that "employment opportunities will increase from 38 million to 46-48 million by 2022 in the organised manufacturing and services sector with the rise in AI technologies".

Gent (2017) has argued that "rapidly improving automation technology is allowing software to carry out routine IT support work and repetitive back-office tasks previously performed by humans". These are the very tasks that global MNCs have originally outsourced to India and where the bulk of India's ITeS workforce is employed. Thus, there exists a real danger of widespread job loss in the IT sector, as AI becomes more pervasive. However, he argued that this impact will go hand-in-hand with the creation of new job opportunities in emerging areas such as data scientists, artificial intelligence programmer and big data analyst, but these will require new skills and probably fewer employees.

Table: Share of AI Implementers That Are Deploying AI at Scale (By Sector)

Sector	Share (in %)
Telecom	49
Retail	41
Banking	36
Utilities	34
Insurance	31
Automotive	26
Manufacturing	20

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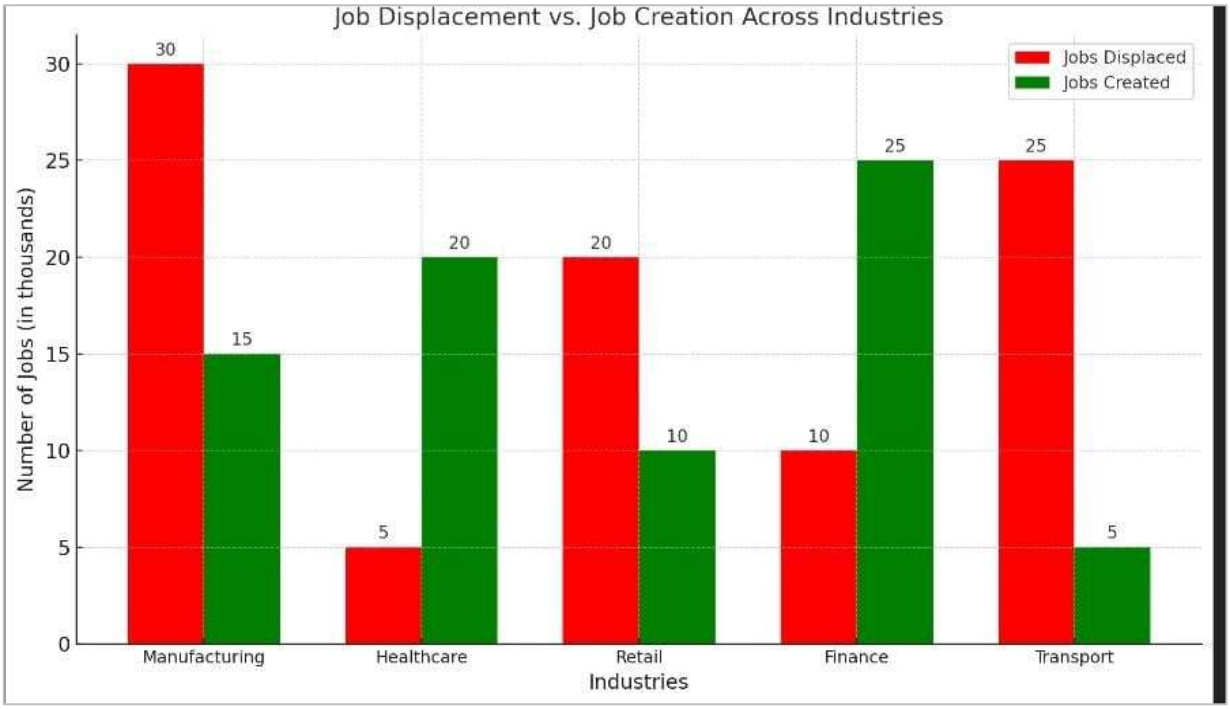

PwC (2018) also shared the similar stance and stated that the IT/ITES sector may potentially be the most disrupted sector by AI/machine learning solutions, indicating that the sector may replace repetitive manual jobs. The report further argued that with the increasing implementation of AI in organisations, there could be some concerns regarding displaced jobs. But there will be long-term benefits of leveraging AI in businesses as productivity increases, which in turn, "*would create higher value involvement opportunities for the workforce*", thus outweighing the potential short-term employment concerns". The Task Force on AI, constituted by the Ministry of Commerce and Industry, in its report (MoCI, 2018) had identified ten important domains of relevance for India, wherein AI can play a critical role in India's economic transformation. These domains are namely manufacturing, fin-tech, healthcare, education, national security, cyber security, manufacturing, transportation, Smart Cities, environment as well as in enhancing accessibility for the differently-abled, and suggested that the greater adoption of technology should be incentivised.

According to the report, setting up AI focused innovation centres in India has been facilitated with initiatives such as "Digital India" and "Make in India" in the recent times. Among the surveyed companies, more than 36 % of large financial establishments have already invested in these technologies and around 70 % have planned to embrace it in the near future.

AI and New Job Roles in the Indian Context

Many studies have pointed out that there will be creation/generation of new jobs in light of the deployment of AI in work places.

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The **NASSCOM-FICCI-EY (2017)** study on future of jobs in India, in light of the increasing deployment of exponential technologies such as AI, projected that 9 % of the workforce in India would be deployed in the new jobs that do not exist today while 37 % would be deployed in jobs that have radically changed skill sets and 54 % will fall under unchanged job category. The report also argued that the impact of these three primary forces is expected to be disruptive on sectors such as IT-BPM (Information Technology Business Process Management) and BFSI (Banking, Financial Services and Insurance) and relatively lower on core manufacturing sectors such as apparel and leather. Going deeper at the sectoral levels, the report presented the following changed job scenarios in 2022 for the sectors namely IT-BPM, automotive, Retail (food and grocery), textiles and banking in India.

According to study done by Broadband India Forum (BIF), in consultation with the Electronics Skill Council of India, Agriculture Skill Council and Healthcare Sector Skill Council, Internet of Things (IoT) and Artificial Intelligence (AI) based applications will create over 2.8 million jobs in rural India over a period of 8 to 10 years with an annual value of INR 60,000 crore (app. USD 9 Bn). Out of the 2.8 million jobs, at least 2.1 lakh jobs will be created in the agriculture sector and the other 0.7 million jobs in the rural healthcare sector (BIF, 2019). NASSCOM (2018) in its report has classified job roles in AI and Big Data Analytics into five major job families, viz. architecture, administration/governance, engineering, analysis and decision making.

Conclusion

Summary of Findings:

AI is a transformative force that creates opportunities in emerging industries while posing challenges like job displacement, skill gaps, and inequality. Proper measures are needed to balance these effects.

Recommendations for Inclusive AI-Driven Workforce Growth:

- Invest in reskilling and lifelong learning programs.
- Encourage hybrid human-AI collaboration.
- Implement equitable labour policies and ethical AI frameworks.

Future Directions for Research:

Future studies should focus on the long-term societal impacts of AI on employment, strategies for equitable global adoption, and the development of ethical AI practices to ensure inclusive growth in a technology-driven era.

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