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A Research Paper on Impact of AI on Employability in India

Priyanka Ranjit Sahane, Student**,** JSPM's Rajarshi Shahu College of Engineering
Vaishnavi Kulat, Student, JSPM's Rajarshi Shahu College of Engineering
Aishwarya Tonpe, Student, JSPM's Rajarshi Shahu College of Engineering
Rohit Ijgaj, Student, JSPM's Rajarshi Shahu College of Engineering
Dipak Kadve, Assistance Professor, JSPM's Rajarshi Shahu College of Engineering

Abstract: AI is a rapidly advancing technology that holds significant potential to enhance productivity and efficiency in the workforce, as well as drive innovation in various sectors. However, its impact on employability can have both positive and negative consequences. In India, the advent of AI is poised to usher in a new industrial revolution, leading to the elimination of numerous jobs. While AI can automate existing tasks and contribute to inequality and discrimination, it also has the power to transform employment opportunities worldwide. Repetitive jobs are likely to diminish with the implementation of AI, but high-skilled jobs are expected to remain in the future. This paper examines the influence of AI machines on employment across sectors, highlighting the opportunities and challenges that will shape the working environment. The study draws on scholarly research, industry reports, and reputable blogs to explore the effects of AI on employment. By providing a comprehensive overview, the research paper sheds light on the impact of AI on jobs in India, considering the rapidly changing landscape of the Indian economy driven by global challenges. The technology sector in India has witnessed remarkable growth, contributing to advancements that have improved the lives of people in numerous ways. With a constant pursuit of change and development, this sector has become a driving force in creating impactful jobs, fostering skill development, and transforming the country's economy. The research paper examines the impact of AI on Employability in India and addresses several key points. Firstly, it highlights the emergence of new job roles and industries resulting from AI adoption, offering opportunities for job seekers and the importance of upskilling programs. Secondly, it explores the transformation of existing job roles through AI, emphasizing the need for reskilling to adapt to AI-driven workplaces. Thirdly, it discusses the concept of human-AI collaboration, enhancing productivity and efficiency. Additionally, it analyzes the socioeconomic impact of AI, including its potential to bridge the skills gap and foster economic growth. Lastly, ethical considerations are discussed, emphasizing the need for fairness, transparency, and regulations to protect workers' rights.

Keywords: Employability, Artificial Intelligence, India, The National Association of Software and Service Companies, CRM(Customer relationship management), Transformation.

Introduction: The field of Artificial Intelligence (AI) is rapidly advancing, encompassing the amalgamation of "artificial" and "intelligence" components. Over the years, defining the intricate

concept of "intelligence" has proven to be a formidable challenge. Within India, renowned as a premier global sourcing destination, the Information Technology (IT) services sector holds a notable cost advantage, approximately three to four times lower than that of the United States, thus serving as a compelling proposition. India additionally boasts an extensive pool of highly skilled technical graduates, accessible to sourcing countries at a remarkable cost-saving of 60-70%. Nonetheless, the ascent of automation casts a shadow of uncertainty over the conventional model of the Indian IT sector.

Recent empirical data elucidates the profound impact of AI on employment within India. As per a comprehensive report by the World Economic Forum, it is estimated that by the year 2025, around 5.1 million jobs in India will be displaced due to the pervasive influence of automation and AI technologies. The sectors projected to endure the greatest impact encompass manufacturing, retail, and transportation. Paradoxically, the report also highlights that AI implementation has the potential to generate 2.3 million new jobs in India, predominantly within sectors such as healthcare, energy, and advanced manufacturing.

Moreover, an insightful study conducted by the National Association of Software and Service Companies (NASSCOM) delves into the AI landscape prevalent in India. The study posits that the AI market in India is poised to reach a substantial valuation of $25 billion by 2025, with a robust compound annual growth rate of 30%. This impressive growth trajectory is propelled by the heightened adoption of AI in key sectors including banking, healthcare, and e-commerce. Furthermore, the study emphasizes the capacity of AI to augment productivity within these sectors, with a projected surge of 15-20% through effective AI implementation.

However, India grapples with persistent challenges that hinder the full realization of AI's potential. A noteworthy impediment lies in the scarcity of skilled professionals proficient in AI technologies. A study by Analytics India Magazine reveals a substantial deficit of approximately 200,000 AI professionals in India, underscoring the criticality of investing in educational initiatives and upskilling programs. Such endeavors are pivotal in nurturing a skilled workforce capable of driving AI innovation and seamless implementation.

The impact of AI on employment in India presents a nuanced scenario. While certain sectors may witness job displacement, AI simultaneously unveils new avenues for job creation and economic growth. India's imperative lies in bridging the existing skill gap and cultivating a robust AI ecosystem through substantial investments. By doing so, the nation can harness the transformative potential of AI, propelling itself into a promising future.

This research aims to investigate the influence of AI on job prospects and the associated opportunities and challenges that arise as a result. By analyzing the multifaceted impact of AI on employment, this study seeks to provide insights into the changing landscape of the Indian workforce.

Objectives:

1. To examine the impact of Artificial Intelligence (AI) on employment potential in India.

2. To identify the factors attributed to AI that contribute to job opportunities and challenges in the country.

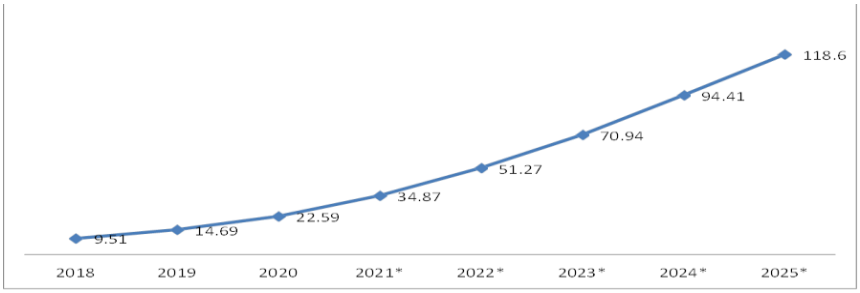
Research Methodology: The research methodology employed in this study encompasses the systematic collection and analysis of secondary data. The researcher conducted an extensive review of a multitude of articles, reports, and published papers relevant to the research topic. From a pool of 50 papers scrutinized, a rigorous selection process was undertaken, resulting in the inclusion of 20 papers that directly align with the research objectives.

The primary objectives of this research endeavor are as follows:

1. To foster awareness regarding the intricacies of Artificial Intelligence (AI).
2. To scrutinize the profound impact of AI on employment potential across diverse sectors in India.
3. To discern and comprehend the challenges posed by AI on jobs with varying skill requirements, ranging from low to high, in different sectors.
4. To explore the plethora of job opportunities that arise as a consequence of AI adoption in India.

To ensure an exhaustive analysis, this research embraces a comprehensive approach by assimilating diverse sources of information. These sources encompass scholarly research articles, industry reports, and reputable surveys. By drawing upon a multifaceted array of perspectives and data, a holistic understanding of the implications of AI on employment in India can be ascertained. The employed methodology encompasses both qualitative and quantitative analysis techniques, enabling an in-depth examination of the subject matter.

Following figure shows how India is adopting AI :



Artificial Intelligence (AI) on human life is as follows [5]:

- 71% of respondents believe that AI technology will help humans solve complex problems and improve their quality of life.
- 43% of participants think that the government will implement AI to enhance the global environment, health, and education.
- 63% of participants believe that AI will support the workforce and improve productivity.
- 60% of participants believe that AI will provide financial advisory services and tax preparation assistance.
- 56% of participants in India and 63% globally agree that AI will help solve complex disease problems in modern societies.
- 73% of participants in India and 68% globally believe that AI is important for ensuring cybersecurity and privacy.
- In terms of economic growth, 46% of participants consider AI's impact to be very high.
- When it comes to job automation, 49% of participants in India and 66% globally believe that AI will help solve cancer and other diseases.
- In terms of job prospects, most participants believe that job automation is reasonably probable, with humans retained for specific expertise.
    - The manufacturing sector (38%) and the finance sector (31%) are considered to have the highest probability of complete automation in the next 5 years.

The impact of artificial intelligence (AI) on employment in India varies across different sectors. While AI has the potential to automate certain tasks and roles, it also creates new opportunities and enhances productivity in various industries. In the following analysis, we will examine the impact of AI on employment in key sectors in India, supported by references.

Impact of AI on Employability on various sectors:

AI and data have the potential to contribute around $450-500 billion to India's GDP by 2025. Approximately 45% of this value is expected to come from three key sectors: consumer goods and retail, agriculture, and banking and finance. In agriculture, AI can play a crucial role in enhancing farmers' income by improving production planning and yield. Similarly, the BFSI sector can leverage AI for financial risk modeling and credit underwriting, while the consumer goods and retail sector can benefit from personalized campaigns and targeted marketing.

Potential contribution of data and AI towards India's GDP by 2025

Sector	Contribution (in USD bn)
Consumer Goods and Retail	90-95
Agriculture	60-65
Banking and Insurance	60-65
Telecom, Media, and IT	50-55
Energy and Industrials	50-55
Transport and Logistics	50-55
Auto Manufacturing and Assembly	40-45
Public Sector	25-30
Healthcare	25-30

Agriculture[6]: AI is set to revolutionize Indian agriculture by addressing challenges such as lack of infrastructure, knowledge, and capital for farmers.AI applications in agriculture include pest and weed detection, agricultural robotics, precision farming, crop health assessment with drones, soil monitoring systems, AI-based crop price forecasting, and weather forecasting. AI is expected to relieve stress in the agriculture sector and promote data-driven farming, leading to increased output. Various startups and organizations are leveraging AI in agriculture, with around 72 AI in Agriculture startups in India. Government initiatives and support, along with high internet penetration, are driving the growth of technology-aided agriculture. The agritech market in India is predicted to reach a valuation of US$30-35 billion by 2025, attracting significant investments from private equity and venture capital firms. This government support is expected to drive growth throughout the agricultural value chain in India.

IT sector[7]: India's IT sector, home to major global companies like TCS, Infosys, Wipro, and Tech Mahindra, is keeping pace with evolving tech avenues such as cloud, AI, and cyber and data security. These companies are focused on cutting-edge technologies like artificial intelligence (AI) and machine learning (ML), investing in research and development to cater to client needs. The industry recognizes the importance of upgrading technology stacks, leveraging cloud infrastructure, and automating software delivery to accelerate development. The future of the Indian IT landscape is expected to be AI-driven and reliant on hybrid cloud solutions, with a strong emphasis on data privacy and security. Companies like IBM have already made strategic acquisitions in areas such as hybrid cloud infrastructure and AI automation. The sector's growth will depend on its ability to seamlessly manage applications and data across platforms, analyze real-time data sets, and make data-driven decisions.

Healthcare[8]: AI is transforming India's healthcare sector, with the AI in healthcare market projected to grow significantly. AI is being applied in areas like diagnostics, personalized treatment, remote monitoring, enhanced patient experience, and predictive analytics. It is addressing the shortage of radiologists by enabling faster and accurate diagnoses. AI algorithms are developing personalized treatment plans based on patient data, leading to better outcomes. Remote monitoring tools are allowing healthcare providers to monitor patients remotely, especially those with chronic conditions. AI-powered chatbots provide instant answers and

mental health support, enhancing the patient experience. Predictive analytics identify high-risk patients, enabling early intervention.

However, challenges like data privacy, regulation, skilled professionals, awareness, and trust-building must be addressed. Creating a supportive ecosystem that fosters innovation and collaboration can revolutionize healthcare, making it more accessible and affordable for all.

CRM[9]: This study examines the factors influencing the adoption of AI-integrated CRM systems in Indian organizations, with a focus on security and privacy. Through a literature review, hypotheses were formulated and a conceptual model was developed. A survey with 324 usable responses validated the hypotheses. The results showed that perceived ease of use did not significantly impact stakeholders' attitude towards using AI-integrated CRM systems. The model achieved an explanatory power of 87% and incorporates the technological acceptance model and security/privacy considerations. This study fills a gap in the literature, providing insights and addressing specific concerns for Indian organizations.

Backing and Insurance: AI is rapidly transforming the Indian banking industry, enhancing efficiency and customer service. Start-ups are leveraging AI for chatbots and data analysis. However, India's AI industry lags behind global leaders. AI revolutionizes asset management, hiring, and customer service in banking. The Reserve Bank of India promotes new technologies, such as blockchain, to improve customer experience. India's technology landscape and fintech sector contribute to its position as a hub for innovation. AI has immense potential in banking, but further investment is needed.

Manufacturing: AI is automating certain repetitive tasks in the manufacturing sector, leading to job displacement in certain areas. However, it also creates opportunities for skilled workers to manage and maintain AI-powered systems and robotics.

Retail: AI is impacting the retail sector through personalized marketing, inventory management, and customer service. It can automate certain tasks, such as stock tracking and replenishment, and enable personalized recommendations. However, it may also lead to job displacement in traditional retail roles.

Education: AI is transforming the education sector by enabling personalized learning experiences, intelligent tutoring systems, and automated grading. It may impact teaching roles by automating certain administrative tasks, but it also creates new opportunities for educators to leverage AI technologies.

Risk of AI on Employability:

Historically, technological advancements have typically led to an overall increase in employment rather than a decrease. However, economists acknowledge that the integration of AI into our

society presents unfamiliar territory. There is a lack of consensus among economists regarding the extent to which the rise of robots and AI will result in long-term unemployment. Nevertheless, most economists agree that if productivity gains are appropriately distributed, the adoption of AI could yield a net benefit.

Estimations of the potential risks associated with AI vary significantly. For instance, Michael Osborne and Carl Benedikt Frey estimate that around 47% of jobs in the United States are at a "high risk" of automation, whereas an OECD report classifies only 9% of U.S. jobs as "high risk." However, it is worth noting that speculating about future employment levels lacks a solid evidential foundation and may wrongly attribute unemployment solely to technology instead of considering broader social policies and redundancies.

Unlike previous waves of automation, AI has the potential to eliminate numerous middle-class jobs. The Economist raises a valid concern that AI could have a similar impact on white-collar jobs as steam power did on blue-collar jobs during the Industrial Revolution. Jobs such as paralegals and fast food cooks are at particularly high risk, while demand for care-related professions like personal healthcare and clergy is likely to increase.

Conclusion: India is rapidly progressing to meet the demands of its dynamic economy and the transforming global landscape. According to experts, the advent of AI is poised to become the fourth Industrial Revolution, revolutionizing both the services and manufacturing sectors. This AI revolution in industries poses a threat to many jobs across different sectors. While cities are evolving into smart hubs with modern amenities, the transformation also spells the demise of certain jobs.

However, it is important to note that machines will not completely replace all jobs, as highlighted by other experts. Although a few positions may vanish due to intelligent automation, critical decisionmaking roles requiring high levels of skill will still rely on human intelligence. This transformation is expected to enhance India's infrastructure and contribute to economic growth in the years ahead. Nonetheless, it is anticipated that certain jobs within specific sectors will disappear within the next 5 to 10 years as a result of AI-driven transformations.

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