

The Impact of AI On Jobs

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Abstract - Artificial Intelligence (AI) has become one of the most powerful technologies of the 21st century, influencing industries, economies, and societies worldwide. With the ability to analyze data, identify patterns, and make decisions on its own, AI is being adopted rapidly in workplaces. This adoption is reshaping the global labor market, especially by reducing the need for human workers in routine and repetitive jobs.

Although AI improves productivity and efficiency, it also raises concerns such as job loss, outdated skills, and increasing income inequality. Jobs that are repetitive will decline, while demand will grow for roles requiring creativity, critical thinking, emotional intelligence, and strong digital skills. Reports from the World Economic Forum (2023) and McKinsey Global Institute (2022) predict that by 2025, **85 million jobs may be lost**, but **97 million new roles** related to human-AI collaboration will be created.

In India, AI is expected to bring both major opportunities and significant challenges. Automation may replace many existing jobs, but at the same time, AI-driven innovation will create new high-skilled employment across sectors. This research examines how AI affects employment, the changing nature of job roles, and the skills needed for future work. It aims to provide a clear understanding of AI's impact on jobs in India, especially as the country continues to adapt to global technological changes and strengthen its economic growth.

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

1. INTRODUCTION

In modern times, technology has become one of the strongest forces shaping global economies and societies. Over the past few decades, rapid growth in digital systems, automation, and advanced computing has transformed industries and changed how work is done. Technology has shifted from being just a support tool to becoming the foundation of production, management, and communication. Because of these changes, researchers and policymakers are studying how technology affects job opportunities, skills, and the role of human workers. This research is based on **secondary data** from academic papers, government reports, surveys, and industry studies. These sources show how different countries and sectors, including India, have adapted to technological change. Using multiple sources gives a clearer and more balanced understanding of trends such as automation, digital transformation, and their influence on employment.

Technological progress has improved efficiency and reduced costs in areas like manufacturing, record-keeping, and customer service. Many tasks once done by humans are now performed by machines or software, raising concerns about job security—especially for low-skilled and repetitive work. Studies show that automation affects routine jobs the most, while creative and specialized professions remain safer. As a result, demand for digital, technical, and analytical skills is increasing, while traditional jobs decline. International organizations like ILO and WEF note that technology does not eliminate jobs entirely—it **changes** them. New roles are emerging in fields such as software development, AI, robotics, and digital marketing.

In India, the impact is particularly visible. Growth in IT, telecommunications, and digital services has created many new opportunities but also challenges. Secondary data from NITI Aayog, NASSCOM, and the Ministry of Labour shows that automation is spreading across manufacturing, finance, education, and healthcare. To prepare workers, the Indian government launched programs like **Skill India** and **Digital India** to improve technical skills and digital literacy. However, developing countries like India still face issues such as unequal access to resources, limited training, and a large informal workforce. The rise of gig platforms has created income opportunities but also concerns about security, fairness, and social protection.

Secondary data also shows that technology affects not just the number of jobs, but the **quality** of work. When repetitive tasks are automated, workers can focus on creative and strategic tasks, which improves satisfaction. But only workers with access to education and digital skills benefit from these new opportunities, creating a divide.

In conclusion, technology acts both as a **disruptor** and an **enabler** in today's labor market. It replaces some jobs but creates new ones that require higher skills. The overall outcome will depend on how education systems, training programs, and public policies prepare the workforce. The study highlights the need for lifelong learning, inclusive growth, and well-planned strategies to ensure that technological progress benefits everyone.

2. Pre-AI Job Structure:

Before the rise of Artificial Intelligence, employment structures across the world were shaped almost entirely by human labor, traditional tools, and manual methods of working, which made organizations deeply reliant on physical effort and clerical accuracy. Most industries—whether manufacturing, banking, education, healthcare, retail, transport, or government—

functioned with large teams of workers who handled repetitive, routine, and time-consuming tasks on a daily basis. Job roles such as data entry operators, record keepers, typists, receptionists, filing clerks, telephone assistants, cashiers, manual machine operators, and assembly-line workers formed the backbone of many companies. Because computers and digital technologies were not advanced enough to perform complex functions, workers had to carry out every step of a process manually—from collecting information, verifying documents, updating registers, preparing physical reports, and maintaining printed records, to coordinating work between different departments through handwritten notes, telephone calls, or in-person meetings. Decision-making in organizations was slow and entirely human-driven, based on individual experience, intuition, and small sets of manually collected data. Business forecasting, planning, and problem-solving required long discussions, physical paperwork, and careful cross-checking to avoid mistakes. Communication was also more time-consuming, as employees depended on letters, memos, files, and face-to-face meetings to share information, which slowed down workflows and increased the chances of miscommunication. Skilled labor meant knowledge of typewriting, filing, bookkeeping, basic mathematics, or operating simple machines rather than advanced technical or digital capabilities. Human errors in calculations, documentation, and coordination were common due to the repetitive nature of work and the absence of automated checking systems. Industries also required larger workforces because every small task—from sorting documents and verifying bills to entering thousands of records—needed human effort. Productivity was comparatively lower, and companies had to invest significant time and money into training employees for routine tasks, maintaining physical storage systems, and managing paper-based processes. Manufacturing units were labour-intensive, with workers physically assembling products, inspecting materials, monitoring machinery, packing goods, and working long shifts to meet production targets. Similarly, service sectors like banking, insurance, and retail depended heavily on manual documentation, ledger writing, passbook entry, personal customer interaction, and long queues, which made services slower but deeply human-centered. In healthcare, doctors and nurses maintained handwritten patient records, conducted manual calculations for medicines, and spent substantial time sorting files and documents. Even in education, teachers prepared notes manually, graded papers by hand, and used chalkboards as the primary mode of instruction. The absence of advanced automation meant that the speed, accuracy, and efficiency of any workplace were directly tied to the capabilities, energy, and attention span of human workers. Workplace hierarchies were stable, skill requirements were predictable, and job security was relatively high because machines lacked the intelligence to replace or automate large segments of labor. The overall work environment moved at a slower pace, and technological change was gradual, giving workers time to adapt. In this pre-AI world, employment was characterized by stable roles, human-centered operations, strong

dependency on manual skills, and limited technological intervention, creating a labour market where human involvement was essential for almost every task, from the simplest to the most complex.

What is Artificial Intelligence (AI)?:

Artificial Intelligence (AI) is a branch of computer science that focuses on creating machines that can think, learn, and make decisions like humans. It allows computers to perform tasks that normally require human intelligence. These tasks include understanding language, recognizing images, solving problems, analyzing data, learning from experience, and even making predictions. AI works by using algorithms, mathematical models, and large amounts of data to identify patterns and make logical decisions. At its core, AI tries to mimic the functioning of the human brain—but with much greater speed and accuracy. AI systems can learn over time without being explicitly programmed for every small detail. For example, instead of telling the system every rule, we give it data and let it improve on its own through machine learning. When AI learns from millions of samples, it becomes more accurate and efficient. Because of this capability, AI is used in many areas like healthcare, finance, transportation, education, entertainment, security, and customer service.

AI is present in our daily life more than we realize. When we use Google search, YouTube recommendations, Instagram filters, face unlock, voice assistants like Siri or Alexa, or even autocorrect on mobile keyboards—all of these use AI. In industries, AI helps in analyzing business trends, detecting fraud, improving manufacturing processes, predicting customer behavior, and automating repetitive tasks. In hospitals, AI assists in diagnosing diseases by scanning medical images faster than humans.

AI can be categorized into different types. **Narrow AI** is the most common, designed to do one specific task such as facial recognition or translation. **General AI** (still a dream) would be able to perform any intellectual task like a human. **Super AI** (theoretical) could surpass human intelligence in every field. AI uses several technologies such as machine learning, deep learning, natural language processing (NLP), robotics, and computer vision. Deep learning uses complex neural networks that function somewhat like neurons in the brain, enabling smarter and more accurate decision-making.

AI also helps automate tasks that are repetitive, time-consuming, or too complex for humans to handle continuously. Businesses save time, reduce errors, and improve productivity through AI systems. However, AI also raises concerns like job displacement, data privacy, ethical issues, bias in algorithms, and over-reliance on machines. Therefore, responsible use of AI is important to ensure fairness and safety.

In simple terms, AI is a technology that allows machines to behave intelligently, understand their environment, make decisions, learn from mistakes, and continuously improve. It is transforming the world at a rapid pace and becoming one of the most powerful technologies of the 21st century.

3. Impact of AI on Jobs:

Artificial Intelligence (AI) has created one of the biggest changes in the job market in recent decades. It has transformed the way companies work, the skills employees need, and the types of jobs that exist. AI can automate tasks that are repetitive, time-consuming, or rule-based, which means many traditional roles are being replaced or reshaped. For example, data entry, basic customer support, and routine administrative tasks can now be done by AI tools faster and with fewer errors. This automation reduces the need for humans in low-skill jobs and increases efficiency for companies.

At the same time, AI is also creating new job opportunities. While some roles disappear, many new roles such as AI engineers, data scientists, machine learning experts, prompt engineers, AI trainers, and automation specialists are emerging. Industries like healthcare, finance, manufacturing, transportation, retail, and education are actively hiring workers who understand AI tools and can work with them. So, AI does not only remove jobs—it also creates new ones. The challenge is that people need to upgrade their skills to match these new opportunities.

AI has also changed the way workplaces operate. Many companies now use AI to analyze big data, predict trends, improve decision-making, and personalize customer experiences. As a result, employees need to understand how to use AI systems effectively. Jobs now demand digital skills, problem-solving abilities, creativity, and critical thinking rather than just manual work. Roles that require emotional intelligence, human judgment, or complex decision-making—like doctors, teachers, managers, counselors, designers—are still safe because AI cannot replicate human empathy or creativity fully. However, AI has also increased competition in the job market. People must constantly learn new technologies to stay relevant. Workers who do not adapt may face job insecurity. Additionally, AI can widen the skill gap: workers with high-tech skills get better jobs and higher salaries, while others struggle. Some industries, such as manufacturing and customer service, are seeing large-scale changes as more companies shift to automation and robotics.

On the positive side, AI reduces human errors, improves productivity, and makes workplaces safer by taking over dangerous tasks. It can also help employees by handling boring repetitive work, allowing humans to focus on creative and meaningful tasks. Many businesses now rely on AI to boost efficiency, cut costs, and deliver better services to customers.

In summary, AI has both positive and negative effects on jobs. It replaces some roles but creates new opportunities that require advanced skills. The future job market will favor people who learn continuously, adapt to new technologies, and combine human qualities with AI tools. AI is not just changing jobs—it is completely reshaping the world of work.

5. Literature Review:

The recent literature on AI and employment converges on two broad themes: **disruption** of routine work through automation, and **creation/reshaping** of higher-skilled roles that complement intelligent systems. Brynjolfsson and McAfee in *The Second Machine Age* argue that digital technologies are driving an exponential change in productivity and economic structure—creating both large gains (bounty) and unequal distribution (spread) of benefits; they emphasise that skills such as creativity and broad pattern recognition will rise in value as routine tasks are automated. [SoBrief](#)

Martin Ford's *Rise of the Robots* provides a cautionary counterpoint: while automation raises productivity, it can also produce long-term structural unemployment and increased inequality if policy responses are weak. Ford stresses that technological advances may hollow out middle- and lower-skill jobs faster than markets can create alternatives, calling for policy measures (e.g., social safety nets, re-skilling) to mitigate social cost. [SuperSummary](#)

Several practitioner-oriented texts (e.g., *Still Room for Humans* by Malcolm Frank and *The Future of Work: How AI Can Augment Human Capabilities*) shift the emphasis from replacement to **augmentation**—how organisations can redesign jobs so humans and AI complement each other. These works highlight practical strategies for career planning, re-skilling, and organisational change that enable workers to supervise, interpret, and add uniquely human value to AI-driven processes. [Business Expert Press+1](#)

Large-scale empirical and review studies reinforce these theoretical positions. The OECD's literature review and Employment Outlook (2021 & 2023) shows mixed effects: AI can both displace tasks and raise labour demand where AI complements human skills. The OECD documents the rapid growth of AI-related occupations and warns that a substantial share of tasks across occupations are susceptible to automation—while calling for policy responses in education, active labour market programs, and social protection. [OECD+1](#) The World Economic Forum's *Future of Jobs Report 2023* synthesises employer surveys and projects both job displacement in routine roles and net job creation in new technical and hybrid categories (data, AI, cloud, cybersecurity, green economy roles). WEF's evidence underlines a skills mismatch: employers expect rising demand for analytical, digital and social skills even as many workers lack access to training. [World Economic Forum](#)

Across these sources, key patterns emerge: (1) **task-level change** is more informative than occupation-level predictions—AI affects some tasks within jobs, transforming roles rather than simply deleting whole occupations; (2) **skill-biased change**—demand rises for digital, analytical, and socio-cognitive skills; (3) **distributional concerns**—without active policy, benefits concentrate among high-skill workers and capital owners; and (4) **institutional heterogeneity**—countries with stronger training systems and social safety nets adapt better. These conclusions are supported by both theoretical analysis and

empirical evidence reported in OECD and WEF studies.

[OECD+1](#)

Methodologically, the literature mixes conceptual books, employer surveys, and task-based empirical studies. Strengths include rich theoretical framing and large-sample employer data (WEF) and cross-country labour analysis (OECD). Weaknesses and research gaps remain: long-term dynamics of AI adoption are still uncertain; many studies rely on short-run surveys or scenario projections; and there is limited microdata linking firm-level AI adoption to worker outcomes in developing-country contexts—an important gap for India and similar economies.

[World Economic Forum+1](#)

Policy and practical implications repeatedly noted are: invest in lifelong learning and vocational upskilling; redesign education to emphasise digital-literacy plus creativity and critical thinking; strengthen active labour market programs and career services; and craft redistributive/social-protection measures to ease transitions. Books emphasise entrepreneurship and education reforms, while OECD/WEF reports provide empirical urgency and programmatic recommendations. [SoBrief+1](#)

In sum, the literature provides a balanced view: AI is a powerful engine of productivity and job transformation—not simply a “job killer.” The dominant message is conditional: outcomes will depend on how businesses, education systems, and policymakers manage the transition. Future research should prioritize longitudinal firm-worker datasets (especially in the Global South), experiment-based evaluations of reskilling programs, and task-level measurement of AI’s effects across industries

6. Research Gap:

Despite a growing body of literature on artificial intelligence and employment, several important research gaps remain unaddressed. **First**, the existing evidence lacks global uniformity. Most influential studies and empirical datasets focus on advanced economies such as the United States, the United Kingdom, and Western Europe. In contrast, there is limited systematic research from developing countries, where labour markets are more informal, technological adoption varies, and automation risks may differ significantly. **Second**, many studies primarily analyse short-term displacement effects of automation but offer limited insight into the long-term impacts of AI, particularly its potential to generate new industries, create hybrid job roles, and reshape economic structures over decades.

Third, there is insufficient research on how different populations adapt to technological change. Only a few studies examine the speed at which workers can reskill or upskill through training programs, digital education, and lifelong learning initiatives. The adaptability of vulnerable groups—such as informal workers, older employees, or those with limited digital literacy—remains especially underexplored. **Fourth**, the ethical and governance dimensions of AI in the labour market

require deeper investigation. Existing literature provides limited analysis of how AI policies can safeguard workers from algorithmic discrimination, data misuse, surveillance, and biased decision-making in recruitment or performance evaluations.

Collectively, these gaps highlight the need for more inclusive, long-term, and interdisciplinary research to fully understand how AI will shape the future of work across diverse global contexts.

Research Methodology

3.1 Research Design

This study descriptive and analytical research design

A descriptive design is chosen because the study aims to describe the present and emerging trends if AI’s influence on employment without manipulating any variables .It involves analyzing how Artificial intelligence has affected job structures ,skills demand ,and labor market dynamics across the world

The analytical component examines and interprets secondary data from multiple global reports ,comparing job displacements with job creation to draw meaningful conclusions .This approach allows for understanding both quantitative changes and qualitative changes .

3.2 Nature And Type of Data

The study relies exclusively on secondary data collected from authentic and credible global sources .

These sources include ;

1. International Organizations : World Economic Forum , International Labour Organization for Economic Co-operation and Development and , Mckinsey Global Institute .
2. Academic journals :Peer- reviewed research articles and conference papers on AI an employment
3. Government and Industry reports :Publications from countries such as U.S. , India ,China ,and European Union detailing national AI strategies and workforce reports.

4. Online Databases : Google Scholar , JSTOR , Research Gate and scopus -indexed journals for empirical findings and statistical insights .

3.3 Research Approach

The research adopts a mixed -method approach , which includes both quantitative and qualitative analyses :

- **Quantitative Analysis :**

Statistical data is used to measure the extent of job displacement ,automation potential ,and economic contribution of AI . Reports from WEF and McKinsey provide numerical evidence of trends ,such as the percentage of automatable tasks or AI – driven job creation by sector .

- **Qualitative Analysis :**

The qualitative aspect explores expert opinions ,policy discussions ,and case studies from multiple countries .It identifies patterns ,perception ,and strategies regarding AI adoption ,focusing on workforce adaptability and ethical implications.

3.4 Data Collection Sources

Source Type	Examples of Data Sources	Purpose
International Reports	World Economic Forum (2023), OECD (2023), PwC (2022)	Global statistics on automation, job creation, and AI impact
Research Journals	Journal of International Studies, arXiv preprints	Empirical studies and theoretical frameworks

Institutional Publications	McKinsey Global Institute, Brookings Institution	Sector-specific case studies
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3.5 Scope and Limitation of Study

SCOPE

- The study focuses on global employment trends ,with particular attention to major economies such as the unites states , China ,India ,and the European Union .
- It covers multiple sectors including manufacturing ,healthcare ,education finance and transportation
- The timeline primarily spans 2015-2025 ,capturing ,healthcare ,education ,finance ,and transportation
- The timeline primarily spans 2015-2025 ,capturing the decade of rapid AI evolution

Limitation Of Study

- The study relies solely on secondary data ,which may not fully capture real time labor market variations
- Some reports differ in methodology ,making direct comparisons challenging
- The long-term impacts of AI beyond 2025 remain speculative due to evolving technologies and policies
- The effects of AI vary by regions ,which might limit the generalization of findings to all countries .

OBJECTIVE:

1. To examine how Artificial Intelligence (AI) contributes to both job creation and job displacement across different sectors of the economy.

This objective focuses on understanding the dual impact of AI on employment. While AI-driven systems and automation technologies replace many repetitive, manual, or routine tasks, they also generate new roles that require

technical, analytical, and creative abilities. The aim is to study how AI eliminates certain job categories—such as clerical work, basic manufacturing, or data entry—while simultaneously creating new opportunities in fields like machine learning, cybersecurity, robotics, data analytics, and digital services. This objective helps reveal the balance between job loss and job creation, allowing researchers to assess whether AI ultimately leads to net employment gain or loss across sectors.

2. To identify industries most affected by AI-driven automation, highlighting where job losses and new opportunities are emerging.

This objective examines which industries experience the greatest transformation due to AI adoption. Sectors such as manufacturing, retail, transportation, customer service, and finance are significantly impacted as automation reduces the need for human labor in repetitive tasks. At the same time, industries like healthcare, education, e-commerce, IT, and digital marketing see new roles emerging due to increased use of intelligent systems. By identifying these patterns, the study can highlight sectors that are at risk of job displacement and sectors that offer promising new employment opportunities.

3. To analyze the global impact of AI on employment trends, including variations across developed and developing countries.

This objective aims to understand how AI is changing employment differently across the world. Developed countries generally have advanced technological infrastructure, better digital education, and stronger social security systems, which help workers adapt more quickly to automation. In contrast, developing countries may face greater challenges such as limited access to technology, informal labor markets, and slower skill development. The study compares these regional differences to analyze how AI reshapes global labor markets, affects income distribution, and influences the future of work in diverse economic contexts.

4. To understand the changing nature of work as AI transforms job roles, work processes, and skill demands.

This objective focuses on how AI reshapes the structure of work itself. As intelligent systems take over routine tasks, human workers are required to perform jobs that demand creativity, problem-solving, emotional intelligence, and digital literacy. Work processes become more automated, data-driven, and technology-integrated, requiring employees to continuously update their skills. This objective examines how job descriptions, workplace expectations, and organizational workflows are evolving due to AI, and what new competencies workers need to remain relevant in the modern job market.

5. Result:

The present research indicates that modern technological development has been causing major changes in employment all over the world. The use of automation, digitization, and advanced data technologies has facilitated industries to finish many activities in quicker time and with higher accuracy than ever before. According to information collected from various international labour reports and government publications, while technology reduced the demand for routine jobs, it also facilitated the growth of new forms of work related to technical, analytical, and service areas. Over the last few years, various research organizations like the World Economic Forum and the International Labour Organization have pointed out that though a large share of traditional occupations are being replaced by automated systems, new roles which require more technical and problem-solving skills are emerging. This proves that the overall impact of technological advancement on employment is not completely negative; it has been changing the pattern and nature of work.

Different industries vary in the way they are affected. For instance, manufacturing and logistics have machines and automated systems that undertake activities like the assembly of products, quality testing, and packaging with minimal human input. The effect is a reduction in demand for manual work but an increase in demand for technicians, engineers, and supervisors able to operate and maintain these systems. In other areas-like healthcare, finance, and education-technology brought positive transformation. For instance, healthcare has become more efficient with modern diagnostic tools, electronic medical systems, and online consultation platforms. New professional opportunities were created in health data management and the maintenance of medical equipment. Similarly, education opened up more teaching opportunities with digital classrooms and online learning platforms, changing the traditional style of teaching. These financial institutions are

increasingly relying on digital payment systems, online banking, and data management tools, thus creating employment in cybersecurity, software maintenance, and digital customer services. This is also borne out by evidence from national sources such as NITI Aayog, NASSCOM, and the Ministry of Labour and Employment that job displacement and creation are both happening in India due to technological changes: routine-based jobs, especially in manufacturing and clerical areas, are getting contracted, while new jobs associated with data handling, software development, and digital communication are emerging. Most Indian industries, from automobile production to information technology services, have started using automated machines and digital systems for efficiency. This has made their production processes faster and cost-effective but at the same time pointed out the need for skill development among workers. Government programs such as “Digital India,” “Skill India,” and “Make in India” have been initiated to facilitate technical education and prepare workers for the changing occupational environment. Social and ethical issues have been raised by several studies: increased use of technology at workplaces often creates unequal opportunities, at least for workers without technical training. Another related problem is job security since short-term or contract employment has become more prevalent. Quite a few researchers have warned that without proper training and social protection for workers, they will face difficulties finding stable work in an economy undergoing technological changes. Therefore, it becomes essential to take policy measures so that workers are not left behind and the fruits of technological growth are distributed more widely.

6. Conclusion

Conclusions from this research have underlined the fact that technological changes, in today's context, have become a strong force for changing job structure in most parts of the world. It is no doubt that modern digital systems, data processing tools, and automated operations raise productivity and enhance precision but simultaneously have visible impacts on the structure of skill demand and availability of different types of jobs. While it may be true that some traditional roles have become less relevant, it is not the end of work but a different organization where human creativity, decision-making, and emotional intelligence will still be highly relevant to complement technology.

The secondary source data from global and national levels indicate that this technological development is a mixed consequence with its positive and challenging aspects. While there is the creation of new employment opportunities in fields of data management, information services, health care, education, finance, etc., a contraction of occupations that are repetitive or routine-based, especially those manufacturing and clerical sectors, has been felt. This brings the imperative for a continuous improvement of skills and subsequent educational reform in developing workers who can be competent enough for the digital economy of today. The need for such skill development itself demands an interlinked and joint endeavor on

the part of the governments, private institutions, and the education system. Already, technology-driven growth has begun to change the industrial and employment landscape of India. According to reports from NITI Aayog, NASSCOM, and the Ministry of Labour and Employment, the introduction of advanced technologies in both the public and private sectors increased efficiency while creating demand for technically skilled professionals. Programs like Digital India, Skill India, and Atmanirbhar Bharat are highly important in equipping youth with digital and technical knowledge. If implemented properly, it will go a long way in reducing job losses on account of technological changes and maximizing employment in new and emerging sectors. It is also evident from secondary research that machines cannot altogether replace human capabilities. While automated systems can certainly act faster and more accurately in performing tasks, they cannot replace the creativity, judgment, empathy, and ethical reasoning that characterizes human intelligence. Therefore, in the future, work would most probably be with humans and machines. That's where technology will handle the routine operations, while humans will focus on critical thinking, innovation, and leadership. The transition to a technology-based economy demands strong policy measures and appropriate social support systems. Training programs, reskilling initiatives, and awareness campaigns should be created which would help workers cope with the changing demands of the job market. In addition, all educational institutions need to revise their curricula to include more digital literacy and problem-solving components while businesses should invest in lifelong learning opportunities for their workforce.

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