Technological Advancement and Its Impact on Workers

Jefrine Juliana J
Student, Sastra Deemed University

ABSTRACT:
This study is primarily concerned with "technological advancement" in the workplace and the effects it has on workers. Technological development in the workplace essentially refers to the introduction of new technologies to improve and enhance the work process, which will eventually lead to an increase in productivity and make the overall office environment more efficient and streamlined. Technological improvements have had a tremendous impact on the workforce in numerous industries over the years. Because of the rising use of technology, there is a greater demand for the uniquely human qualities that people develop throughout time. Job quality may improve as labour becomes less routine, repetitive, and tiresome. Though the use of technology in the workplace has resulted in significant changes in the way work is performed, and this has had a profound impact on workers such as privacy concerns, labour job displacement, and so on, this paper provides solutions for the dilemma faced by workers as a result of technological advancement in the workplace. Further automation and artificial intelligence have recently changed nearly every business area. This article covers the role and significant ramifications of AI and automation in the workplace, as well as ideas for amending Indian labour legislation to address the future effects of AI and automation on workers.

Keywords: Technological Advancement, impact, dilemma, solutions, AI and Automation, Indian Labour Law.

INTRODUCTION:
The inexorable march of technology has ushered in a new era of creativity and efficiency in the dynamic environment of modern businesses. The impact of technological advances on workplace harmony is determined by how firms use and manage these technologies. Technology can improve workplace harmony by boosting communication, flexibility, and efficiency when applied intelligently and with consideration for employees' well-being and requirements. Organizations must achieve a balance between technological integration and strategies that foster a good and inclusive workplace. To create a healthy and effective work atmosphere, workplace harmony must be achieved. It boosts not only job satisfaction and employee morale, but also productivity and creativity. Employers play a critical role in developing and maintaining a harmonious workplace by fostering a culture of respect, trust, and open communication. Technology can have an impact on the workplace in both positive and negative ways. On the one hand, it can boost efficiency and give staff access to a variety of information. On the other side, it can cause diversions, diminished face-to-face communication, and, in some situations, job loss. The paper's first stance and second addresses the beneficial and bad effects of technology in the workplace. According to McKinsey research, there is an increasing polarization of labour-market options between high- and low-
skill jobs, as well as unemployment and underemployment, particularly among young people, stagnant income for a big proportion of households, and income inequality.\textsuperscript{1} It is critical to take a proactive strategy in order to overcome these quandaries. One method is to invest in training and development programs that assist workers in acquiring new skills that are in demand in the employment market. This will assist them in remaining relevant and competitive in the face of technological change. Another strategy is to foster an environment of creativity and experimentation within the organization. This is addressed in the third stance of this study. Automation and artificial intelligence (AI) have the potential to drastically alter Indian labour laws and workers' rights. While these technologies provide numerous advantages, they also present substantial problems to the workforce. Labor laws may need to be amended in response to preserve workers' rights and job security in the face of automation and AI. The impact of artificial intelligence on labour legislation and worker protections in India is being debated. Artificial intelligence is increasingly being utilized to automate ordinary work, which may result in employment displacement in certain industries. The fourth and fifth stances of the paper deal with the role and the impacts of artificial intelligence (AI) on employment legal areas such as discrimination, wage and hour legislation, and workplace safety, as well as suggests certain changes in Indian labour law to deal with future technological advancement.

I. THE IMPORTANCE OF TECHNOLOGICAL DEVELOPMENT IN THE WORKPLACE

In today's information-based world, information is a critical resource for all organizations. Technology provides us with tools to facilitate workplace communication and production. Also, workplace technology is well-suited to assisting businesses in growing, achieving goals, and improving employee experiences, resulting in improved staff retention and attraction methods. According to a recent JLL report, approximately 80\% of companies expect to adopt more than ten technologies into their organizations by 2025, including workplace apps, virtual reality, and remote-work technology.\textsuperscript{2} Having access to the latest technology allows today's businesses to work more efficiently, focus on what matters, and remain ahead of competitors, much as the inventions of the industrial revolution led to rocketing productivity increases. The importance of workplace technologies is;

Interaction and communication

- Technology has dramatically changed the way we communicate, allowing us to connect with people on the other side of the world in only a few clicks. Also, technology aids in the creation of a collaborative information environment at work. Information is organized in one single location in this environment, allowing everybody at work to access and use it as needed. This arrangement facilitates and speeds up the flow of information in the workplace.
- For example, a sales team member can instantaneously connect with workers from other teams with the touch of a button to improve communication, interpersonal skills, and productivity. It would never have been possible without the assistance of technology.
- Messaging platforms such as email and instant, as well as more recent inventions like Teams, Slack, and Zoom, have enabled employees to stay in touch and collaborate on projects even when they are based remotely.\textsuperscript{3}

\textsuperscript{1} Technology, jobs, and the future of work | McKinsey
\textsuperscript{2} 80\% of Companies will Adopt Intelligent Automation by 2025 (analyticsinsight.net)
\textsuperscript{3} The 10 Best Instant Messaging Platforms for Remote Teams (makeuseof.com)
Recruitment

- Since the introduction of technology and the internet, managers and leaders have found it easier to hire and recruit. Companies can now quickly post job openings to the general public thanks to the internet and job boards.
- Employers who expect a significant flow of resumes can screen candidates using application tracking systems, which automatically review and filter potential hires via software known as Application Tracking Systems (ATS). As a result, technology has altered how firms recruit by making it easier to reach out to a larger pool of candidates online.

Efficiency

- People can save time and effort by using technology. As a result of the deployment of technology in the workplace, efficiency has reached a whole new level. Since computers, software, and machines have become the human prototype of the future, the term "efficient" has been radically redefined.
- As workplace technology have improved, companies' productivity and efficiency levels have increased dramatically. Previously assumed to be wholly manual and time-consuming administrative tasks are now carried out using digital tools, programs, and software systems. Employees may now concentrate on tasks that generate revenue and move the firm forward.

For example, productivity packages such as Office 365 and Google Docs enable teams to work on projects in real time rather than exchanging drafts.

Security

As the technology we use in the workplace grows, so do the risks to businesses from online fraud, data breaches, theft, and cyber-attacks, among other things. To avoid this increase, security measures should be adopted to secure files and systems. Security measures such as:

- Strong passwords can help protect critical information from unauthorized access.
- Updating software and hardware on a regular basis can aid in the prevention of cyber-attacks.
- Use a Virtual Private Network (VPN) to privatize the Network Connection.
- Install a firewall to prevent unwanted network traffic.

Comfort and convenience

- While it's easy to think of technology as a tool for increasing productivity, it's also made many tasks more convenient and comfortable.
- Remote working has also grown in popularity as a result of technological advancements.
- Remote workers were 5% more productive than those working in a physical workplace, according to Stanford University research done in the summer of 2020. To provide a comfortable remote working experience, a solid digital infrastructure, fast internet connections in the office and at home, and seamless collaboration technologies are required.

---

1. What Are Applicant Tracking Systems? The Ultimate Guide | Indeed.com Australia
3. How hardware impacts cyber security - CyberTalk
4. What is a VPN? | Virtual Private Networks Explained | Norton
5. Workers Are Less Productive Working Remotely (At Least That’s What Their Bosses Think) (forbes.com)
Profits have increased
- Many companies have cut manufacturing costs by relying on technology rather than human labour. As a result, it adds to higher profits and returns.
- According to The AME Group, automation of some production processes might result in increased consistency and cost savings.\(^9\)
- We're all aware that machines aren't rewarded. Machines, unlike human staff, do not require pay, benefits, or breaks once acquired. It eliminates the need for human labour and the inconvenient practice of paying high wages to skilled seasonal workers. While the initial investment in technology may be significant, the long-term operational costs may be lower than the cost of sustaining a workforce.

Enhanced Safety
- Advanced machinery and equipment with built-in safety features can minimize workplace accidents and injuries.\(^10\)
- Wearable technology and sensors also help monitor worker safety in hazardous environments.

II. ADVERSE EFFECTS OF TECHNOLOGICAL ADVANCEMENT IN THE WORKPLACE
Technology has transformed the way we work, making jobs easier and more efficient to execute. It does, however, have detrimental effects on the workplace that must be overlooked.

Employees are expected to be online at all times, which can interfere with their rest and leisure time. However, Technological improvements have had an impact on the workplace, both positively and negatively. Laborers risk the following unfavourable consequences are:

Job Displacement
One of the negative effects of technology in the workplace has been job loss and unemployment as a result of the rise of automation. It produced a situation in which automation and modern machinery could eventually replace specific job functions, resulting in job loss or redundancy for humans whose jobs could be automated. According to a recent World Economic Forum report, technology will eliminate 85 million jobs globally by 2025.\(^11\)

A comprehensive investigation in the United States discovered that 25% of Americans work in jobs where 75% of tasks might be automated using currently available technologies.\(^12\) People who have lost their jobs owing to automation-driven unemployment have experienced difficulty and worry as a result of this. However, technology has the potential to create millions more jobs than it destroys. Policymakers and businesses must respond to employment losses caused by technology by investing in education and training programs that assist individuals in acquiring new skills and transitioning into new industries.

\(^9\) AME-3D Taps AMFG Automation Software to Strengthen 3D Printing & Vacuum Casting - 3DPrint.com | The Voice of 3D Printing / Additive Manufacturing
\(^10\) How Using Automation in Facilities Helps to Reduce Workplace Injuries | Better MRO (mscdirect.com)
\(^11\) The jobs most likely to be lost and created because of AI | World Economic Forum (weforum.org)
\(^12\) How Americans View Their Jobs | Pew Research Center
Cybersecurity Dangers and Data Breach
Technology has brought numerous advantages to the workplace, but it also introduces cybersecurity concerns and data breaches, which can have a detrimental impact on enterprises. New attack surfaces have been revealed as a result of more knowledge workers working remotely and increased usage of the public cloud, highly networked supply chains, and cyber-physical systems. A data breach may be costly for businesses, with the average global cost of data breach recovery being $3.86 million. A data breach can cause reputational harm and a loss of client trust in addition to financial losses. The chance of a catastrophic event occurring to a company's information and communications infrastructure is used to calculate cyber risk. The chance of a catastrophic event occurring to a company's information and communications infrastructure is used to calculate cyber risk. The 2021 attack on Colonial Pipeline delayed gas supply for many days, demonstrating the real-world consequences of cyberattacks on key infrastructure. As a result, firms should invest in artificial intelligence and other cybersecurity solutions to prevent wasting time and resources in the aftermath of a data breach.

Workplace Stress and Burnout
According to an American Psychological Association survey, nearly three-quarters of employees experienced negative effects of work-related stress, such as a lack of interest, motivation, or energy, as well as a lack of effort at work. Job burnout can be induced by repetitive or chaotic work conditions, a lack of social support, and a work-life balance that is out of balance. Workplace burnout symptoms and job stress can result in physical health problems such as excessive stress, exhaustion, a higher risk of heart disease, and high blood pressure. Burnout affects job productivity while increasing absenteeism and turnover. For example, the return to the office following remote work thanks to technology during the epidemic (COVID19) has also had a negative influence on certain employees' mental health. Employers must notice these challenges and take action to address them in order to foster a healthy work environment.

Health Concerns
Prolonged use of computers and other devices can cause health problems such as:

- **Eye strain**: Extended screen time can cause eye strain, dry eyes, blurred vision, and headaches, which are referred to as Computer Vision Syndrome (CVS). To reduce strain, it is critical to take short breaks and alter screen settings.

- **Musculoskeletal disorders**: Musculoskeletal ailments such as neck and back pain, carpal tunnel syndrome, and tendinitis can be caused by poor posture and repeated movements while using electronics. Also, sedentary jobs and excessive screen time may add to stress, anxiety, and depression. Taking pauses and fostering a friendly work environment can have a good impact on mental health.

- **Weight Gain and Cardiovascular Issues**: Sedentary work conditions with prolonged gadget use can contribute to weight gain and raise the risk of cardiovascular disease.

---

13 Cost of a Data Breach Report 2020 Highlights (ibm.com)
14 Colonial Pipeline Cyber Incident | Department of Energy
15 Burnout and stress are everywhere (apa.org)
16 Job Stress Health Effects | Total Worker Health for Employers | CPH-NEW | Research | UMass Lowell (uml.edu)
17 Computer Vision Syndrome: Symptoms, Treatment & Prevention (clevelandclinic.org)
18 Musculoskeletal Disorders: Definition and Patient Education (healthline.com)
The Perils of Workplace Technological Dependence

While technology has brought many benefits to the workplace, it can also lead to over-reliance on technology and a loss of worker autonomy. This can have negative consequences such as:

- **Reduced Autonomy:** When technology is used to dictate work processes rather than enabling individuals to make decisions based on their expertise and judgment, employee autonomy may be reduced.

- **Job Dissatisfaction:** When technology overpowers work processes, employees may become disengaged, resulting in lower job satisfaction due to a lack of control or input.

- **Greater Stress:** Employees who are constantly connected to technology may experience greater stress. The pressure to be available or responsive at all times might contribute to burnout and stress-related health problems.19

Organizational leaders can take an active part in building workplaces that promote healthy technology habits and prevent over-reliance on technology. It is critical to understand the risks of technological dependence and to take actions to mitigate them, such as placing limits on technology use and fostering face-to-face connection.

Work Depersonalization

Work depersonalization as a result of highly automated procedures can have a negative impact on employee morale and satisfaction in various ways:

- Employees may feel their personal touch or craftsmanship is decreased or disregarded in the end result when tasks are highly mechanized. This can result in feelings of alienation or less identification with the work they generate.20

- Employees who do not feel personally invested in their work or who do not perceive the immediate consequence of their efforts may have lower job satisfaction. Disengagement and low motivation can be exacerbated by a lack of a sense of ownership or personal contribution.

- Feeling separated from the end result might have a detrimental impact on employee motivation.

Resistance To Change

Many workplaces face resistance to change, particularly when it comes to new technologies. It can be caused by a variety of circumstances, including:

- Employees may be concerned that technology may automate their jobs, resulting in redundancy or unemployment. Fear of losing job security might lead to resistance to learning or implementing new tools. 21

- Employees who are unfamiliar with new technology may feel uncomfortable or inadequate. They may resist change because they are unsure of their ability to adapt and effectively employ the new tools.

- Humans want familiarity and regularity. Any disturbance to established routines or procedures, even if for the better, can be met with opposition simply because change is uncomfortable.22

---

19 Full article: Benefits and stressors – Perceived effects of ICT use on employee health and work stress: An exploratory study from Austria and Hong Kong (tandfonline.com)
20 Office employee satisfaction: the influence of design factors on psychological user satisfaction | Emerald Insight
21 Will The Rise Of Automation & AI Threaten Job Security? (forbes.com)
22 We Are Hardwired to Resist Change (emersonhc.com)
III. RESOLUTIONS TO OVERCOME WORKMEN’S DILEMMAS

The introduction of new technologies in the workplace can certainly bring a variety of issues for employees. Here are some resolutions for the dilemmas faced by the workmen due to the technological advancement in the workplace.

Labor Law Revisions

Because no explicit provisions have been made to safeguard workers from technological advances in the workplace, governments can alter labour laws to protect employees from future job losses due to automation or technological advancement. This could include provisions for retraining programs, reskilling initiatives, or layoff prevention measures. Also, government can enforce and update labour laws and regulations to safeguard workers’ rights, prohibit discrimination, and assure fair treatment in the face of technological progress.

Training and Education Programs

Governments may work with educational institutions and employers to develop training programs focusing on the skills required in a technologically advancing employment market. Funding for retraining efforts may also be made available. These can benefit the workers from training and upskilling options that help them adapt to new technologies and work processes. This can help lessen job-loss anxiety and boost productivity. Further fostering a culture of continual learning and upskilling within firms, will encourage employees to embrace lifelong learning in order to adapt to changing technology.

Worker Retraining and Support

Governments may implement programs that provide financial assistance to employees affected by technological advances, assisting them in transitioning to new employment or industries.

Flexible Work Arrangements

Legislation to encourage or regulate flexible work arrangements may be implemented, allowing employees to adapt to technological developments while maintaining work-life balance. Remote work and flexible hours, for example, can assist employees in balancing their personal and professional lives. This can help to reduce stress while also increasing job satisfaction.

Social Safety Nets

Social safety net policies, such as unemployment benefits, Income Support, may be expanded by governments to offer a safety net for employees harmed by technology disruptions. Can create methods to assist workers affected by technological advances, such as counselling, job placement services, and financial assistance during work transition periods.

Worker-Centric Technological Integration:

Involve workers in the planning and implementation of new technologies, ensuring their input, feedback, and understanding are fundamental to the process to reduce resistance and anxiety. Furthermore, managers can emphasize how new technology can improve worker productivity and well-being. For example, they can emphasize how new technology can make workers’ employment easier, more pleasurable, and more
productive. Managers are able to influence the workers adoption and engagement with new technology in this way.

**Labor Market Data**
Governments may invest in data collecting and analysis in order to anticipate technological upheavals in the employment market, allowing for improved workforce development and policy planning.

**Privacy and Data Protection Laws**
As technologically is rapidly growing it may lead to misusing to data hence Governments can create or enhance legislation to protect employee data privacy and prevent misuse of personal information as technology becomes more integrated into work procedures.

**Worker Support Networks and Research**
Create networks and support groups for employees who are confronting obstacles as a result of technological improvements, offering assistance, mentoring, and peer support. Also, resources can be allocated to research and development in order to anticipate future job market trends and skill demands, thereby assisting in preparing workers for anticipated changes.

**IV. Automation And AI**
- In the twenty-first century, artificial intelligence (AI) and automation are experiencing a new Spring. While these technologies have sparked debate on a wide range of social, ethical, policy, and legal issues, few have attracted more attention than their implications for the future of labour.
- Numerous experts, as well as an increasing number of business and governmental bodies, have suggested that contemporary technical breakthroughs in AI and automation mark a watershed moment in human history. According to these interested parties, automation technologies have the potential to revolutionize both the private and public sectors, opening up radically new opportunities but also raising the risk of social, ethical, and security consequences.
- AI has the potential to alter the workplace by automating repetitive jobs, increasing productivity, and decreasing human error.
- Although, AI can undertake some of the basic data entry and administration chores previously performed by secretaries and clerks, AI technologies cannot succeed unless they are properly developed, trained, and maintained over time.

**Role Of AI In Workmen Jobs**

**Positive Impacts**
Microsoft co-founder Bill Gates believes that artificial intelligence (AI) will enable a three-day work week in the future. Likewise, AI and Automation have many positive impacts such as,
- Workers who can use machines are more efficient than those who cannot; this lowers the costs and

---

23 The impact of automation and artificial intelligence on worker well-being - ScienceDirect
24 AI in government: Capturing the potential value | McKinsey
25 The Future of Work: How AI is Transforming Job Roles and Industries (linkedin.com)
26 Bill Gates Says 3-Day Work Week Possible with AI (ndtv.com)
prices of goods and services, making customers feel wealthy. As a result, consumers spend more money, resulting in the development of new jobs.  

- Another positive effect of AI automation on jobs is the creation of new technology jobs. As more businesses use AI and automation technologies, there is a greater need for qualified experts to design, install, and maintain these systems. As a result, new job possibilities in sectors such as data science, machine learning, and AI engineering have emerged.

- Automation can also minimize or eliminate the need for humans to undertake dangerous jobs, resulting in safer working conditions in industries such as mining, construction, and transportation. The deployment of self-driving cars, for example, has the potential to reduce accidents caused by human error in the transportation business.

### Negative Impacts

Although there are some good effects and advancements for workers, some experts argue that AI may result in job losses, particularly for low-skilled people. Here are some negative impacts of the AI and Automation,

- The loss of employment in some industries is one of the most major negative effects of AI automation on jobs. Human labour may be replaced by automation in tasks such as data entry, customer service, and manufacturing, resulting in job loss and unemployment. Furthermore, the increased use of automation in production has resulted in the displacement of human labour on factory floors.

- Another detrimental effect of AI automation on jobs is the increase in economic disparity. Automation can enhance productivity and output, but it can also raise economic inequality because jobs that are especially susceptible to automation are typically lower-paying. This can exacerbate the difference between talented and unskilled individuals, as well as those who can and cannot adapt to a changing job market.

- Also, the growing use of AI and automation in numerous industries has raised concerns about the potential for computers and software to replace human workers. Certain parts of the population may face job loss, unemployment, and limited economic possibilities as a result of this displacement.

### Policy Implications

AI will exacerbate the issues that many workers will experience as a result of automation, while also contributing to greater living standards through increased worker productivity. Simultaneously, a much more robust set of policies will be required to ensure that labour can adapt and that the benefits of automation are broadly shared.

- New and improved policies in the following areas should be implemented: education and training, "good job" creation by companies, and wage supplements for employees.

---

27 Understanding the impact of automation on workers, jobs, and wages | Brookings
28 The Impact of Artificial Intelligence on the Job Market | by daanoo | ILLUMINATION | Medium
29 The Safety Benefits of Automation - JHFOSTER
30 AI Jobs Statistics 2023 [The Impact on The Job Market] (businessolution.org)
31 AI is making inequality worse | MIT Technology Review
32 The jobs most likely to be lost and created because of AI | World Economic Forum (weforum.org)
33 Understanding the impact of automation on workers, jobs, and wages | Brookings
Workers who can increase their education and training, either on the job or elsewhere, can acquire new skills and become more compatible with robots. While robots have displaced unskilled assembly line workers, they have also created new opportunities for machinists, expert welders, and other technicians who maintain the machines or use them to perform new tasks.34

Wage supplements can assist people displaced by automation and AI in transitioning to new occupations.

V. INDIAN LABOUR LAW & AI AND AUTOMATION

Automation and artificial intelligence (AI) have the potential to drastically alter Indian labour laws and workers' rights. While these technologies provide numerous advantages, they also present substantial problems to the workforce.

To face this situation, labour laws may need to be amended in response to preserve workers' rights and job security in the face of automation and AI. Here are some suggested modifications to labour laws to protect worker rights in the face of automation,

Suggestions

- As automation replaces many manual jobs, the traditional notion of work is shifting. To protect workers' rights, governments must broaden the definition of work to encompass non-traditional types of work such as gig and freelance work.35
- Labour laws must be modified to provide rights for gig workers who are not currently covered by standard labour regulations. The government can engage with gig economy corporations to create new regulations that protect workers' rights.
- Automation has the potential to increase productivity and profits for businesses. The government can introduce regulations that require companies to share the benefits with their employees. This could include profit-sharing schemes or bonuses for employees.
- The government may enact rules or partner with companies or businesses to identify the skills required for such a business or corporation, as well as to implement a variety of training programs to assist in obtaining those talents.
- Automation has the ability to develop new types of discrimination based on criteria such as age, gender, or education. To protect workers' rights, the government must improve anti-discrimination legislation and ensure that they are enforced.36
- The potential for automation to blur the distinctions between work and leisure time is significant. Working hours restrictions must be implemented and enforced to protect workers' rights. The government can pass laws limiting the number of hours worked each day and requiring employers to give breaks and rest periods.

Hence, to defend workers' rights in the face of automation, Indian labour laws must be modified to include protections for gig workers, working-hour limitations, benefit-sharing systems, anti-discrimination legislation.

34 Robots in the workplace | Safety+Health (safetyandhealthmagazine.com)
35 Impact of automation on Indian labor laws (taxguru.in)
36 Discrimination in the age of artificial intelligence | AI & SOCIETY (springer.com)
CONCLUSION
Overall, the impact of technology on the workplace and labour is a complex problem that must be thoroughly examined. While technology has the ability to generate new possibilities and boost productivity, it can also result in job loss and other negative consequences. Policymakers and corporations must carefully assess the influence of technology on the workplace and labour, and take steps to prevent any negative consequences.

As a result, in this study, we examined the significance and negative consequences of expanding technology on workers, as well as how they might be mitigated. We also talked about the role of AI and automation, their effects, and how Indian labour laws can be altered in the future to protect the rights of the workers.