



Technological Disruption and The Changing World of Work: Employment and Skills Challenges

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ABSTRACT

The current technological developments are affecting not only those jobs that involve routine tasks, but also those that require cognitive skills, analytical skills or decision-making skills. Artificial intelligence and digital technology in the workplace have ushered in changes that the labour market is struggling to adapt to. Inability to develop new skills, restructuring of jobs and lack of job security or social protection are key concerns for policy makers and organisations. The paper intends to examine the ramifications of technological innovations on employment structures and workplace processes. The methodology of the paper is analytical and descriptive, and it is based on secondary sources.

The paper concludes that technological change is shaping jobs through partial job automation, not total job automation, and will see jobs continue to evolve rather than disappear. An increase in digital platforms, gig employment and remote working has made it easier for people to work more flexibly. The Artificial intelligence is, in fact, enhancing human contributions in production processes, which are complicated, rather than replacing them. However, there is concern for skill development, transparency and data security in the process of digital transformation. Job security, worker wellness and social protection, especially for gig workers, are alarming concerns. The paper argues that appropriate policies are required to address these challenges and ensure the equitable diffusion of technological benefits.

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1. Introduction

The global economy is witnessing a transformative technological change-which is very likely to change the work culture and - man machine relationship. This technological transformation is profound as it may perform various cognitive tasks like decision-making, problem-solving, and analysis, not just physical work. This technological change one hand will render many jobs redundant but simultaneously create new avenues¹¹. This dual effect implies that technological disruption results in structural transformation rather than an overall loss of employment. But this change isn't happening evenly, and it often hits low-skilled workers the hardest, which raises worries about inequality and social stability. It is often argued that technological changes are likely to widen the income inequalities and make jobs less secure (World Economic Forum, 2025). In brief that the paramount concern is not the potential replacement of human labour by technology, but rather how societies can adapt to guarantee that technological advancement fosters inclusive economic growth.

2. Objectives of the Study

The study is directed by the subsequent objectives:

- To critically analyse the impact of on-going technologies changes on employment trends, job functions, and the requisite skills of the workforce

¹¹ The World Economic Forum (2020) estimates that the technological change like - automation and the integration of technology will get rid of about 85 million jobs while also creating about 97 million new ones (World Economic Forum., 2020)

- Suggest policy frame work to address the human machine relationship issue and to foster innovation to generate decent employment.

3. Review of the Literature

The scholarly and policy literature regarding the future of work illustrates a complex interaction between technological progress and labor market dynamics. It is argued that automation will change current jobs, but it will also create new jobs, especially in fields that rely heavily on technology. This shows the idea of "creative destruction," which says that new ideas can both create and destroy jobs. (World Economic Forum. , 2025). Empirical Studies demonstrates that about 14% of jobs are at considerable risk of automation, while an additional 32% are expected to experience substantial transformation. This indicates that the principal effect of technology is on task composition rather than job elimination. (Organisation for Economic Co-operation and Development.(OECD), 2019)

The study of McKinsey Global Institute says that even almost half of all work tasks can be automated with current technologies, but full job automation is still limited. This difference between tasks and jobs is very important for understanding how technology has really changed things. (Mckinsey Global Institute. , 2017)

From a macroeconomic point of view, it is argued that ongoing technological progress will boost productivity and economic growth, but it may worsen income inequality- provides suitable policies are not in place to share the benefits are not shared fairly. (International Monetary Fund. (IMF), 2018) Likewise labour organizations and unions stress on the importance of social protection systems and labour market policies that help workers in the phase of transition – i.e. acquiring new skills and seeking new employment. (International Labour Organization (ILO), 2022). Serious ethical concerns about AI system are also being raised - about the transparency, privacy and algorithmic basis and accountability. This worries show that the future of work is not just an economic issue, but also a social and moral one. (European Parliament., 2021)

Therefore, there is an urgent need to put policies to devise and implement policies to solve these issues so that the current technological change is become sustainable.

4. Results and Discussion

The analysis of data collected from international reports, such as the World Economic Forum (2020, 2025), OECD (2019), IMF (2018), McKinsey Global Institute (2017, 2024), and the World Bank (2019), shows that disruptive technologies have a profound effect on the structure and functioning of the labour market. The results suggest that the influence of these technologies is not linear but multi-dimensional and includes both benefits and drawbacks. One of the most interesting findings that can disruption by technological changes has dual impact – it creates new jobs, and make earlier insignificant or redundant. In skill-based economy with increasing using disruptive technologies, the changes in job market are swift. These processes entail short- problems, such as frictional unemployment.^{2 2}

From the data shown in the table indicate that the labour market will restructure instead of declining. In the restructuring process, employment will move into technology-driven industries and hence Individuals will need re-skilling to change occupations. Historically, people were employed for particular jobs or there was job for life but in the contemporary context employability requires constant skill upgrading and acquisition of new skill. According to the World Bank (2019) and WEF (2025), demand will grow for the manpower equipped with digital skills, analytical thinking and problem-solving abilities. The data collected from various reputed sources as indicated at the bottom of the table indicates that technological disruption leads to a reconfiguration of the labour market. This paper has on the basis of secondary data

² **Frictional unemployment** is a form of unemployment reflecting the gap between someone voluntarily leaving a job and finding another.

analysed three important factors of labour market reconfiguration: i.e. 1. Job creation, 2. Replacement, 3. automation of the work.

The table below indicate that job displacement though is a significant concern – as more and more works (about 50 per cent) in near future will be automated. Thus, it is expected that people engaged in these jobs will be displaced. However, as indicated in the following table technological transformation poses high risk to only about 14 percent jobs rest of the jobs are either in category of low risk (50 percent) or in moderate category (33 per cent)³. The important finding that emerges from these secondary data is that technological transformation will create more jobs than displace. For instance, it has been estimated in an OECD study that in 2020 technological transformation, created more jobs (about 9.7 million) than it displaced (8.5 million). Thus, it can be concluded that technological transformation is creating new roles in job market – which will eventually impact the skill formation and reward system. Disruptive technologies affect individual work activities more than entire jobs. Thus, the distinction between tasks and jobs⁴ is likely to be more and more sharp. Automation primarily affects specific tasks within jobs, leading to role evolution rather than elimination. Banking industry is an apt example of this process, in which automation is replacing data entry roles but boosting the demand for advisory and relationship management.

It has also been well proved that technologies boost productivity by eliminating costs and increasing efficiency (IMF, 2018). Companies implementing technologies of automation and artificial intelligence can make decisions faster and generate better results. It well establishes that machines are very efficient in performing tedious, monotonous, and data-oriented activities, whereas humans demonstrate superiority in creativity, critical thinking, and empathy. It is expected that this collaborative approach will continue for long as machine in foreseeable future may not acquire the above mentioned these attributes - like empathy and providing emotional support with a personal touch.

This leads to a trade-off between positives in the short run: productivity, and negatives in the long run: job displacement. It is important to note that productivity improvement has its pros and cons, but its proper management could help avoid adverse implications for society like unemployment and income inequality.

Table 1

Employment Transformation*	Jobs Created	97M
	Jobs Displaced	85M
Automation Risk Distribution**	High Risk Jobs	14%
	Moderate Change	32%
	Low Risk Jobs	54%
Task-Level Automation***	Automatable tasks	50%
	Non- Automatable Tasks	50%

Source: (Organisation for Economic Co-operation and Development.(OECD), 2019)
(McKinsey Global Institute. , 2017), (World Economic Forum., 2020)

The flipside of the technology disruption is increasing income inequality and job polarization. Skilled employees gain from the high demand and salary rates, whereas unskilled workers see their prospects deteriorate (IMF, 2018; OECD, 2019). This process is three dimensional. (First) Multiplication of skilled occupations with better pay. However, multiskilled occupation is function of quality education and updating the skill sets, which is again a function of family income i.e. better family income better are the chances of acquiring quality education and skill (Second) Diminishing of middle-class jobs and (third) increasing number of low-paying

³ There is common consensus that HIGH RISK Jobs are: such as Plant and machine operators, Assembly line workers, Clerical/data entry jobs, Routine manufacturing jobs, Basic administrative support roles. MEDIUM RISK category Jobs are such as Sales workers, Customer service roles, Technicians, Office support staff. LOW RISK Jobs are Healthcare professionals (doctors, nurses), Teachers and education roles, public sector jobs, Managers and leaders, Creative and analytical roles.

⁴ A **task** is an activity that needs to be accomplished within a defined period of time or by a deadline to work towards work-related goals. A **job** is any legal activity that allows an individual to perform a service and in return earn credits they can use to buy things.

service-oriented jobs. This process of Job polarization could cause socio-economic instability in the future if there are no appropriate interventions.

It is also pertinent to mention that disruptive technologies are creating alternative employment forms, and making it possible to work independently and from remote i.e. from any place of their liking and consent of the employers (Microsoft, 2022).

It can be safely argued that generally, the analysis reveals that disruptive technologies do not necessarily have a negative impact on employment; rather, their management and adaptation may be considered challenges. Moreover, the major challenge for today's society is to close the gap between technological development and workforce development.

5. Challenges and Issues

Despite their numerous advantages, the incorporation of revolutionary technologies into the workforce poses an intricate web of obstacles that go beyond mere economic repercussions into social, ethical, and psychological spheres. Despite the benefits of this approach, it may bring such challenges as: uncertainty, lack of employment stability and social security certainty. The pertinent case in this context is of Gig worker –rarely having and health, retirement benefits and provisions to meet any exigencies (International Labour Organization (ILO), 2022). Besides there are some other challenged mentioned below -

5.1 Structural Unemployment and Job Polarization

The challenge of structural unemployment emerges when the skills of workers become incompatible with market needs. Technologies automate routine and low-skill jobs, thus causing job polarization and making both high-skill and low-skill jobs more common than middle-skill positions (OECD, 2019). In other words, the introduction of new technologies causes the labour market's "hollowing out," making it increasingly difficult for workers in conventional occupations to adjust to new jobs. (World Economic Forum, 2020)

5.2 Skill Gap and Workforce Readiness

Furthermore, the speed at which innovative technologies emerge has led to a significant disparity between the current skills of workers and those necessary to work with novel technologies. For instance, emphasizes that digital literacy and advanced cognitive skills are indispensable but inaccessible for a vast majority of the workforce. (World Bank (2019) This gap is particularly severe in developing economies, where educational systems often fail to keep pace with industry demands. As a result, workers face reduced employability, while organizations struggle to find qualified talent.

5.3 Rising Economic Inequality

Technological advancement tends to disproportionately benefit highly skilled workers and capital owners, leading to widening income inequality. The *IMF (2018)* notes that automation increases return to high-skilled labour while reducing demand for low-skilled workers. This creates a dual economy in which skilled workers experience wage growth and Low-skilled workers face stagnation or decline.

It is historically established that technological changes have diverse impact on the economies. The advanced or developed countries, which incur good investment in Research and Development therefore most of the technological innovation take place in these derive early and more benefits of new technologies vis-à-vis the, developing countries which have few innovation and struggle with to adopt new technologies. This further widen the chasm between developed and developing countries (ADB, 2025).

5.4 Ethical and Governance Concerns

The use of AI and automation raises critical ethical issues, such reinforcing existing biases, threat to data privacy, algorithmic bias, and lack of accountability. Hiring algorithms may unintentionally discriminate *European Parliament (2021)*. These concerns highlight the need for strong governance frameworks to ensure responsible technology use.

6. Conclusion

The above analysis led to the conclusion that disruptive technologies are changing the nature of work but this does not necessarily involve job losses, in fact it results in redesignation, which requires a policy of re-skilling the workforce. The other important conclusion is the movement to a technology-led benefits flow from top to bottom and this trickle down is often very slow (ministry of finance, 2026). In brief technological disruption benefits, more to the innovator and early adopter and in this process developing economies as well as underprivileged families and generally lag behind. This process may widen the existing inequalities. These issues need to be debated and sorted out at highest policy level in the governments and corporates.

Other significant learning that technological gives it there is need to focus on constant learning or reskilling. This requires a shift from job security to skill security. This requires a radical change in the education and labor policy as well as on the regulatory frameworks.

In summary, the future of work largely depend societies will react to technological changes to achieve sustainable and equal development through appropriate government policies, international cooperation, investment in human, development and ethical governance. ■

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