

## **The political economy of automation and AI technology on the impact of employment- present and future in developing economies like India**

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### **ABSTRACT**

*Automation is completely connected with the type of political economy that exists in an economy. The spread of AI has impacted all sectors of the economy, be it agriculture, manufacturing or services. The fear is that unskilled workers may be displaced, and skilled workers may have the opportunity to widen their scope and increase their earning capacity, further widening inequalities of income. It is for the Government to put in place laws and policy measures to help the unskilled workers especially in labour surplus economies like India. The paper analyses the impact that this technology has on the economy. How has the labour market, income levels and employment been affected? What is the specific effect on countries like India? How would the political system positively view this development*

**Key words:** AI, ML, Displacement of labour, increasing inequality, capitalism, democratic set up,

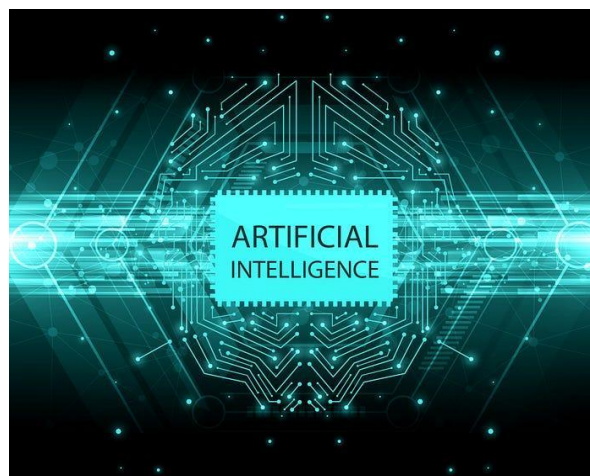
### **1.Introduction**

Artificial Intelligence is the ability of a digitally operated machine or a computer-operated robot to perform tasks that are close to an intelligent human being. The ability to think, which was early seen to be the purview of mankind has now been transcended to machines. These machines have been manufactured by humans who have installed the ability to think, make decisions, and if permitted even act like humans. They are wired to learn, reason, problem solve, perceive, understand language and take decisions.

AI has been around for centuries beginning from possibly the Greek Mythology, but the present modern AI began with the 20<sup>th</sup> century with the development of the Turing Test by Alan Turing. It formally entered in the world with the setting up a research laboratory in Dartmouth College in 1956.

AI is a broader field in the domain of computer science that encompasses tasks that normally involve human intelligence. Machine Learning (ML), comes under the domain of AI. ML teaches machines to learn from data. How and what should they identify from the available data, what are the various options, and which are the best given the circumstances. These decisions are made without any human emotion and/or bias, which in turn results in the most rational choice under the available conditions.

**Image 1 : Representation of AI**



Source: mikmacmarket

AI approaches problems with a predefined set of rules. It tries to duplicate human thought processes which may include human reaction and or human experience. AI could be programmed to play according to rules at the same time it could also be taught to learn as one proceeds.

Though the initial break through took place in 1956, it was not till the beginning of the 21<sup>st</sup> century that the boom in this field developed. This was aided by the availability of powerful computer hardware. It was in the 2020's with the introduction of language models like the *ChatGPT* that the explosion in this field began. These models started exhibiting "human like traits of knowledge, attention and creativity"(Wikipedia).

**1.1 Types of AI**

These are of mainly two types;

- ◆ Narrow AI or alternatively known as the weak AI. This intelligent system is used to perform narrow tasks like face recognition, internet searches, driving a car. All system of AI that one is familiar in daily our daily lives like 'Siri', 'Alexa', chatbots come under this category

- ◆ General or (Strong AI). This involves human cognition, it can solve problems, perform and learn new tasks. The technology that is used in AI besides ML are Natural language processing, Neural Network, and Robotics.

## **2. Research Gap and Methodology**

With the growth of this field and the ability of this technology to so to say “take over from humans “. What is the impact on the employment potential in an economy like India which is a labour surplus nation. How far has this technology helped in the Health, Education and in all the three sectors namely primary, secondary and tertiary to increase productivity without replacing labour with machines? What are the policy measures that such economies can adopt to safeguard and use its “demographic dividend”, as well as help in the creation of jobs?

The methodology used would primarily be quantitative using secondary authentic data to understand the implication of AI on the above mentioned points.

## **3. Political economy of AI**

The political economy of any aspect automatically transcends into understanding the impact on the various economic systems that exist namely capitalism, socialism and various democratic set ups. There are views that AI in fact encourages capitalism and may undermine democratic set up. The capitalist model is one that encourages collecting and owning means of production such that it makes the individual powerful, and wealthy. It is very likely that if AI is used as a tool to further capitalism and increase profit by replacing labour then it is likely to lead to a condition where workers experience threat from technology, lack of stability at their work place, possibly leading them to be happy in which ever sphere they work as the threat to be without a job is real given the possibility of them being replaced by AI.

The impact of AI on various spheres are governed by a number of factors. The thought process whenever there is an innovation in technology always moves towards asking the question “Whether it is going to replace labour?”, How fast will this transformation replace labour if at all?

But there is a great possibility that at the present AI is still a novelty. Its rate of adoption and implication is still to be clearly understood. The fear of replacement of labour looms large, but it may in fact lead to a demand for a different type of labour. Maybe the impact is being overestimated. There is a view that states that the detrimental impact is being overestimated. It is likely that the use and adoption of AI will depend on a number of factors like place, economic activity, business culture, education levels and gender.

*The most important question is whether AI will lead to automation and in the bargain lead to displacement of labour. It could very well increase productivity, innovation and maybe to the contrary increase the demand for labour instead of reducing it.*

This is an ongoing debate authors like Acemoglu and Restripo(2017) and Frey and Osborne(2017), have clearly indicated that in the USA there is a great risk that 47% of the labour will be replaced by AI. While on the other hand studies by OECD by ARNTZ et al in (2016), that given the extent of automation in the economy there is only 9% that need to fear against automation. There might be certain sectors that are positively impacted by AI but might increase the demand for labour, there may be others which are not affected at all and still other sectors which might be adversely impacted with the introduction of AI, there might be still other sphere where instead of a decrease there is in fact an increase in the demand for labour with the adoption of AI technology.

#### **4. Growth of the AI sector and its impact on Employment potential in Different Political Economy set ups**

The intensity of the impact of AI on the employment potential of an economy depends on a number of factors; some of them are the type of political governance that the country is following and the second important factor is the whether it is a populous economy. In all these set ups it is important to understand the extent of policy measures that the countries are going to adopt to safe guard the social welfare of its citizens as well as the type of jobs that may be replaced by AI, and whether it will impact the employment situation in the economy. It is important to evaluate a cost benefit analysis on the type of jobs likely to be generated and those that might be replaced as well as the use of this technology in skilling the unemployed as well as upskilling the existent labour force.

India being a developing democratic country with a GDP growth rate hovering around 6.5% per annum, a population growth rate of marginally less than 1% per annum. This rate has been declining steadily over the years but the unemployment figures indicate a different picture, This changes depending on the source from where the data is adopted.

If PLFS(Periodic Labour Force Survey) data is used, the statistics indicate a decline in unemployment rates to 3.2% in 2023-24. But CMIE(Centre for Monitoring Indian Economy) reported a rise in unemployment to 9.4% in June 2024 compared to 7% of the same year.

Looking closely at the employment scenario in India , automation and AI would be having impact depending on the sectors that it is being applied in. There is a huge potential to create employment in certain new sectors of the economy.

### **Employment Situation In India**

Given the above figures there are some unique traits in the type of unemployment situation in India. The specific and peculiar features that have to be addressed are;

Underemployment

Informal employment

Rural and Urban unemployment

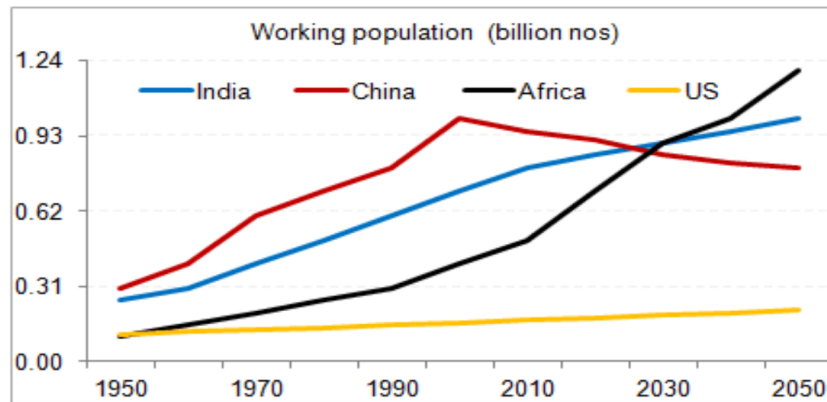
Female unemployment in the rural and urban area.

Among the most worrying issues is the large number of workers that are employed in the informal sector. Some of the reasons for this increased dependency are that there is negligible trickle down impact of the fruits of growth. In spite of the fact that India are the fourth largest economy in the world with a GDP at 6 + % per year the extent of unemployment per year as well as the backlog is a worrying issue for the Government of India. Along with it is the rampant growth and spread of AI technology which makes it an issue and it has to be channelised and addressed at the earliest as well as on a continual basis.

India still has 42% of its workforce dependent on the agricultural sector. This is most likely due to the lack of job opportunities in the secondary and tertiary sectors. There has not been adequate growth in these set of sectors that are labour intensive and at the same time not highly technical. The labour force looking for employment have to migrate from the agricultural sector to these sectors and they are lacking in skill, leaving them with no option but to move either to the informal sector or those areas which provide them with o the job training or else do not need skilled labour force.

It is important to understand the impact of AI on such sectors. There are various researchers who have analysed both sides of the effect of this widespread adoption of this technology. A large number of them are of the view that there is a likelihood that AI may replace low paying skills, which would be detrimental for countries like India, where the main issue is to effectively utilise its its demographic dividend. its demographic dividend.

**Figure 2: Representation of India’s demographic dividend( independent work force)**



Source: The economist

## 5. Perceived Impact of AI on Jobs in Developing and Developed Economies

### 5.1 Developed Economies

The major impact of AI is likely to be on the following:

- labour participation
- ,wage inequality,
- job stability
- shifts in employment setups.

Within the domain of manufacturing there is a huge potential of increasing productivity and efficiency with the adoption of AI technology. This technology enhances the capability of the manufacturing set up to prepare itself for changes in demand in an efficient manner.(Li et al.,2022). In understanding the impact of AI, on labour markets and wage differentials it is important to take into account some important factors which are the way that majority of the workers in the economy are categorised either as- high skilled or low skilled worker. Type of the economy( labour intensive or capital intensive). Whether the workers are adequately skilled enough to embrace the new technology that is being adopted.

The real life situation is akin to the Ricardo theory of Comparative Advantage, where a clear distinction has to be made between

- 1) workers’ skills and job tasks

2) The assignment of skills of the workers to the job on hand is determined at the point of equilibrium by the supply of work force, technologies, and what the task demands,( Autor et al. (2003).

The Ricardian theory explains through the adoption of ‘comparative advantage’, the way in which foreign trade occurs, similarly the widespread adoption of AI technology is likely to take over low skilled jobs, while the high skilled ones may increase.

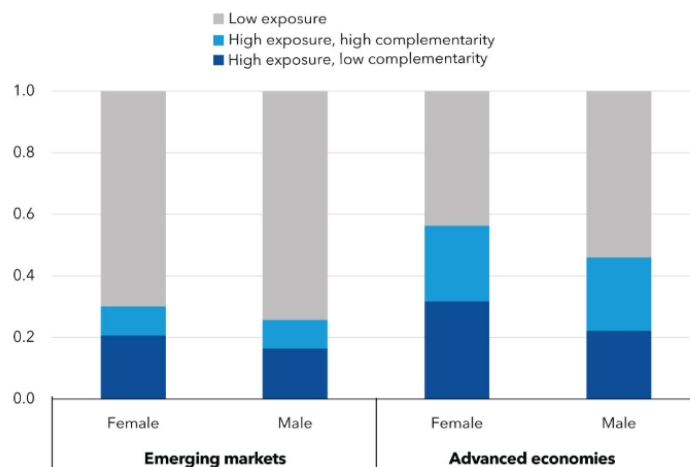
IMF reports have indicated that there are going to be major market shifts in the labour market due to the adoption and advancement of AI technology. About half of all the jobs in advanced economies are exposed to AI. But what is also apparent is that these jobs are more likely than not to be complementary with AI rather than replace it. Those employed in managerial, professional and technical roles are more likely to benefit from AI, as their synergies will lead to greater sales and revenue, resulting in higher wages for them and profits for the companies.

**Developing Economies**

In Developing economies on the other hand reports have indicated that 1/4<sup>th</sup> of the prevalent jobs will be affected by AI. Workers who work in the area of sales, service and clerical roles are more likely to face disruption.

**Figure 1: Representation of the specific categories that have been impacted by AI**

AI exposure by income and gender, percent



Source: IMF

There are various changes, that AI is expected to bring out. These are

- Increasing efficiency
- Improve decision making process, as the ability to analyse mounds of data becomes manageable resulting in better decision making.
- Helps in the creation of new avenues, products and even markets,

The negative or detrimental impact is more likely in the promotion of the development of monopolistic type of firms and industries. With this the gap between developed and developing nations will increase. The new type of super firms that are likely to emerge are correlated with wealth and knowledge. This could lead to the increasing of wages of certain set of skilled workers while at the same time making some others redundant. This could further increase unemployment, increase inequality, reduce the tax base and in the long term reduce revenues for the government, while at the same time increase the governments out flow on social welfare.

Acemaglu in his paper has argued that AI may not impact GDP to the extent that some researchers have indicated. According to him it clearly depends on which are the areas that AI is relevant. If the emphasis is on the adoption of AI in low task jobs, it is likely that technology will replace them, then AI is in its present resulting increasing inequality rather than reducing it. AI is most likely to widen the gap between the earnings of labour and capital.

But contrary to the above view there are researchers who have indicated that the AI would impact GDP in an explosive manner, as the productivity gain would be tremendous. The three most important areas are ; productivity, operational efficiency and improved engagement.

The areas that it would be most visible are the ;

### **Banking and the financial sector**

According to Citi Bank, automation and adoption of Chat GPT is likely to play a catalyst role within the Fin tech industry, impacting market share, employment and client experience, risk management and reshaping capital markets. AI would help in attaining a positive return on their assets. It is being used in predictive analytics, risk management and detecting fraud. Non Performing Assets make up a substantial part of a Banks losses, these are likely to diminish with the adoption of AI technology leading to world wide competition among banks and opportunity for them to grow and enhance their services.

### **Retail Sector**

AI in this sector enhances customer experience. Helps in optimisation of inventory leading to cost reduction. This technology helps in the supply chain correctly predicting inventory stock

thus saving on storage and excess production.Helps in increased profitability at the same time adopting sustainable practices. There could be a displacement of some workers at the same time it would augment the roles of ‘implementation consultants’ and ‘system managers’.

### **Manufacturing sector**

There would be a mixed impact with the adoption of AI in this sector. The employment of workers in lower levels would be replaced by technology, but at the same time opening up of this sector to *workers that create value to the tasks they perform*.Leading to reshaping of roles in this sector.

### **Education Sector**

A report by ‘Servicenow’, as indicated that there would be a loss of 1.8 crore jobs in the manufacturing and educational sector in India.This was corroborated when Tata Consultancy Services(TCS) announced lay offs to the tune of 12000 jobs(2% of the work force).

The adoption of this technology is essentially going to re invent and redefine equations among each sector.Which sector would have a positive balance in jobs would entirely depend on the jobs created, the profit earned and the various activities in which it is going to be spent.

### **Limitation**

The major issue is the lack of authentic data as the technology has just started spreading in various sectors of an economy. The final impact would take some time to be realised. There are various reports that have estimated huge job losses while some economist have pegged the numbers to an extremely marginal amount.

### **Conclusion**

The upskilling of workers would become essential in preventing unemployment in countries like India. Government initiatives towards improving skills of its labour force and imposing policy measures that could restrict the adoption of the technology in those areas that maximise labour employment. This cannot be controlled for long in an economy with a political set up like India as it has to allow companies to become efficient and productive so that not only can they face competition but also make inroads in other economies of the world. For the developed economies that are capital intensive in nature this technology will enhance their productivity and efficiency and at the same time open new sectors of the economy which would be employing highly technical professionals.

The enhancement of efficiency will automatically lead to increasing productivity and profits for the entrepreneur, higher revenue to the government through taxes and hopefully a judicious use of the revenue in enhancing skills of its labour force. Thus AI is a double edged sword that can take away jobs but could also be a source of increasing employment in new sectors. The positive or negative balance eventually depends on the way the political economy of a country works in understanding, reacting and implementing policies and reforms in a manner that leads to enhanced jobs and incomes for all its citizens.

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