Artificial Intelligence: Employment and Society

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Abstract: In the globalized world no part of the universe is untouched from the impact of technology. Either it's an Artificial Intelligence (AI), or Internet of things (IOT), in every sphere of life somehow humans have been dependent upon machines. Before 21st century one could not imagined that complex tasks that have been taking hours to complete and that too with the involvement of n number of manpower has been quickly replaced with an smart machine. Today's era is an era of AI and world is surrounded by usage of smart machines our daily routines. This research paper will be highlighting the importance of AI on employment and society so far. And to study the impact of industrial robots on the employment.

I.LITERATURE REVIEW

Keynes (1937), has stressed in his 'Technological Unemployment Theory' the concept of displacement & productivity effect that is caused by usage of technological innovations. According to study technological change is both the creator as well as the destroyer of the jobs in labor markets. Further study by Levy & Murnane (2003), have suggested that technology can only replace the tasks which are of routine in nature. Goos & Manning (2007) have also supported the rise in the demand of those jobs which require non routine manual skills. Darvas & Wolff (2016) have taken EU countries in their research & has divided the jobs into three categories on the basis of education & their studies has revealed that only the middle education related jobs (machine operators, assemblers) can be replaced through AI whereas the high education jobs (managers, health professionals) & low education jobs (shop workers) which requires cognitive skills are difficult to be replaced by automation.

Studies conducted by the researchers has also claimed that automation has almost taken over the e-commerce almost in every region of the world. Which has directly impacted the incremental growth of employment in the retail across the globe. To study the real impact of displacement & productivity on labor markets caused by AI there are 3 approaches Petropoulos (2017) which support this problem. According to the first approach there may be displacement effect in the short run but in the long run when markets are fully adapted to automation productivity effect would prevail which also would be generating employment in the long run. But, Mckinsey Global Institute is of different view according to them disruption caused by automation is almost 10 times of productivity.

Second approach basically is more inclined towards displacement effect. According to studies conducted by Frey & Osborne (2013, 2017) have provided that nearly 47% occupations in United States are on the risk of automation. However Arntz, Gregory & Zierahn (2016, 2017) have shown contrasted results. Their viewpoint has revealed that task automation is different from occupation automation & concluded their studies with only 9% of the occupations. Empirical research by Bessen (2017), has shown that growth in technology only leads to job cutting in manufacturing industries but not in other. Acemoglu & Restrepo (2016) have come over with a different view point from all other previous studies. Their model says that aggregate labor market impact caused by AI would be different. As per them displacement of workforce which have been caused by the automation would be consumed by the other sectors of the economy.

Organizations won't be adopting AI in their operations blindly. They've to see that what impact AI would be creating simultaneously on payment of wages. This has brought the third approach for assessing AI impact.

Studies have also shown out that most industrial robots are found in European Union followed by US & China.EU uses most industrial robots in their production processes followed by plastics & chemical industries. As far as the productivity gain is concerned Graetz & Michael (2015) have given certain figures in their studies conducted between 1993-2007. They've shown that stock of robots per million hours work has increased by more than 150% taking 17 countries in their sample size which has also lead to growth in labor productivity thereby supporting the first approach. Their studies have also shown that automation can only reduce the number of hours of work done by the low skilled workers as compared to middle & high skilled workers.

Researchers like Acemoglu & Restrepo (2017) have used post 1990 era data in their study & found that 1 industrial robot per 1000 workers reduces employment ratio by 0.18-0.34% & wages by 0.25-0.5% which is almost negligible. But the coming era won't be showing same results as automation is going on a high pace. Brynjolfsson, McAfee (2012) & Ford (2015) have focused more on regional approach in their studies as compared to the country centric approach in earlier studies & have arrived to the negative impact of AI i.e.; Displacement effect>Productivity Effect.

Dauth et al. (2017) have taken forward the research of Acemoglu & Restrepo (2017) & have revealed that although there's negative impact of automation on employment in German markets but simultaneously there's also positive impact in the economy.

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So the negative impact is counterbalanced by the positive impact.

II.OBJECTIVES

- To study the importance of AI on employment and society.
- To study the impact of industrial robots on the employment.

Importance of AI

This section discuss about the long term scenario of this technological up gradation in the following categories:

The far most important situation that predicts the advancement of technological up gradation, institutional norm development, and social acceptance and cultural up gradation, all these factors have impact upon initial technology implementation:

- The 'First order' belongings of adoption would be taking the immediate effects of automation which the organization would be facing. Whereas,
- The 'Second order' effects would be covering the longer-term impact, including firms fully reorganizing their production activities because of AI, anticipating as well as studying consumer replies to any of these things on the value and worth of services and goods, changes in the living standards, social responses, also substantial social and institutional changes.

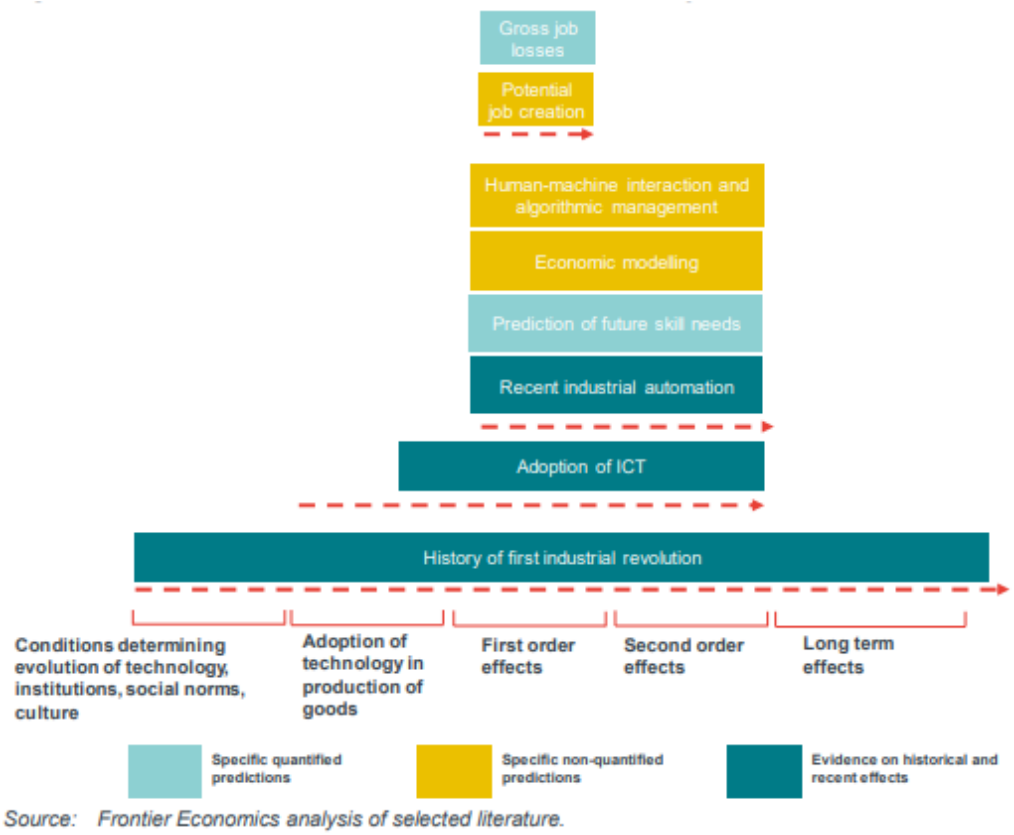


Fig. 1 Impact of AI on employment and society

Modern progression confirms the upsurge an active ideals might have happened after 1850, later than had been once believed (Allen, 2009; Temin & Voth, 2005) might offer the gap – even if 'this time' (the time of technological change linked to AI) 'has not been isolated' here might still be purpose aimed at apprehension about how deviations from the budget might impact the worker force, mostly at the small end of the revenue flow. Though, for the knowledge enhancement, the literature review depicts the diverse results on this concept. Fouquet & Broadberry (2015), highlighted that lack of development in active ethics at a period of populace progress was a enhanced effect than what had usually materialized in the past in analogous conditions – that is, a drop down in the living and expenditure standards.

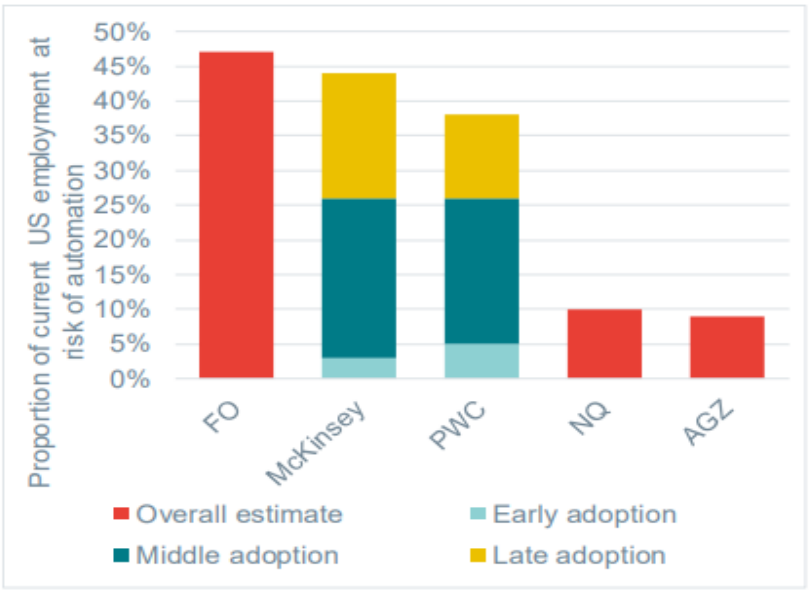
The excessive inclination of technology has greatly impacted the nature, behavior and modified the relationship among the people. The collaboration of social and technical considerations affects the use of technology, and this is linked to social changes (which can then be relevant for the definition and adoption of new technology). The ultimate advantage of using the technology have consequences on the interaction among the technical and the social team those are implementing the work and bringing the change. Firmly this has lead towards the utmost important factor that helps in predicting that can future job losses be related with advancement of AI. Airbnb and Uber are emerging as novel forms of digitalized technology and acting as a platform for enhancing the research in this field. Research by Pasquale (2016) suggests that courtesy to the role that narratives acted as a channel for manipulating the future outcomes. This article distinct two descriptions for policy makers regarding

the role of technology and impact of stages that would have very different implications.

Impact of AI

Speedy technological developments and inventions can threaten employment. This aspect has not been new but years back to the 1930s, when John Maynard Keynes assumed that 'technological up gradation of unemployment theory' – technological revolution may act as foundation for loss of jobs (Keynes 1937). Technological advances might impact occupation in two key areas: by openly shifting workers from tasks they were formerly carrying out (displacement impact) and by growing the mandate for labor in trades or jobs that progress due to technological progress (productivity effect).

2030 has been set as the time frame by McKinsey for automation of work, while other report by PWC predicts that by the 2030s mid, and other agencies like FO, AGZ and NQ have not given an estimated time duration for the implementation of automated technology.



Source: *Artnz et al. (2017), Frey and Osborne (2017), McKinsey (2017), Nedelkoska and Quintini (2018), PWC (2017).*

Note: *The figure focusses on the US as FO do not provide estimates of automation probabilities for other countries, and McKinsey do not provide estimates comparable to FO, NQ and AGZ for the UK.*

Fig. 2 Estimated percentage of employee engagement at high techno up gradation

The concept of AI is not new but yes as per the statistics there are some early, middle & late adapters. Developing economies like India & China has recognized the importance of AI before 2020s. The midpoint adoption by the end of year 2030 has been estimated or automated employment is 26% as predicted by survey done by McKinsey. Data set varies from early adopters of technology that is 5% to late adopters of technology that is 44%. PWC's overall estimation of automation likely by the mid-2030s is given by the inclusive height of the bar (38%). Hereby one can conclude that 'early', 'middle', and 'late' adopters of technology signify possible technology adoption by the early 2020s, the late 2020s, and by the mid of 2030s probably.

III.CONCLUSION

All these studies have shown that as world is approaching towards fourth industrial revolution one can't deny that automation is increasing at a very faster rate thereby creating an impact on labor markets in various countries. Some researchers have pointed out the positive impacts while others are of negative view point. So it's been hard to forecast the rigorous influence of AI as this is still in its developing stage but one can't totally ignore the automation therefore it's necessary to initiate an open discussion on this topic with all the related parties which are concerned. Policy makers ie; government must understand AI & its potential impact on economies. Rules, laws & policies should be defined and refined for Machines and usage of automation techniques, so that they must have been used in a constructive manner to benefit the human race in the long run. Educational policies and academics should be designed and planned in such a way that must supports positive outrage of AI in its implementation. Trainings & counselling sessions must be provided to existing employees so that they take best benefits of using AI. When productivity would increase this would simultaneously led towards creation of more job opportunities in the future rather than job wounding. Need of the hour is to look into the positive aspects of technological advancement actively rather than having a passive approach towards it.

Research Contribution

This research paper has highlighted the importance of AI on employment and society so far. And showed the impact of industrial robots on the employment status

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