

Application of artificial intelligence: benefits and limitations for human potential and labor-intensive economy – an empirical investigation into pandemic ridden Indian industry

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Abstract

Purpose – This paper aims to study the extent of use of artificial intelligence (AI) in the modern organization; to comprehend the changing nature of future jobs in the context of application of AI; and to study the impact of AI on the economy of the country with special reference to the job market. Given the critical scenario of labor intensive Indian economy, the paper intends to show how AI shall affect rather coexist with human intelligence or labor.

Design/methodology/approach – The research on implementation of AI in different industries and its effect on job market are at a nascent stage. There is a dearth of literature. Hence, this study followed a qualitative approach to have a better understanding of the research questions as Bhattacharjee (2012) confirms that employing an interpretive paradigm (qualitative analysis as the analysis of data, e.g. data from interview transcripts) is the more productive way to study social order and that it is achieved through “subjective interpretation of participants involved, such as by interviewing different participants and reconciling differences among their responses using their own subjective perspectives”. Sample selection: The selection technique utilized is purposive sampling. The respondents in this research are the general managers and HRs from different companies. A total of 14 senior professionals from various sectors were approached for the interview out of which seven people gave their consent to take interview. Seven senior HR professionals, mainly general managers and HRs from various sectors viz. oil and gas sector, manufacturing, healthcare, construction, media, power and energy and retail were interviewed to understand how they are using AI in their respective fields. Inclusion Criteria: (1) Generally, the people covered under the research are from the decision-making level of their companies so they are in a position to give strategic perspective as well as day to day implication of implementation of AI. (2) Respondents have adequate knowledge of the respective industry to which they belong. (3) Respondents have reasonable industry of dealing with Human Resource Management and national economy as a whole assessment tool and its administration procedures. A narrative approach was adopted to have a better understanding of the research questions and comprehend their views regarding implementation of AI in their respective companies. A semi structured open ended interview was administered to steer the discussion around the research questions. The respondents were interviewed over the phone and each respondent shared their stories. Analysis of data: The narrations were then transcribed by online transcriber website otter.ai.com. The common keywords as prescribed by the website are as: AI, strategy, learning and implementation. The extracts of the discussions are noted in the next segment of the paper. As and when required this research also used secondary data from the journals, literature available in the websites to understand the implementation of AI globally.

Findings – A country where the government itself admits 90% of its workforce belongs to informal sector and conspicuously exits a multi-faceted stark digital divide (Huberman, 2001; DiMaggio *et al.*, 2001; Guillen, 2006; Servon, 2002) wherein gap of digital divide is significant between the rural and urban India (Dasgupta *et al.*,



2002; Nath, 2001; Singh, 2007; Mahajan, 2003; Dutta, 2003) talking of educating, applying and implementing AI seems to be “a distant dream” but an “ambiguous ambition”

Research limitations/implications – Prior to implementation of AI that India has to ensure, the basic hygiene factors of informal sector labor force like social security, 2008, low wages and lack of legal protection, unpaid overtime and occupational health problems, poor bargaining power, working without leave under coercion, child care issues and health ailments (for which mere legislation or statutorization is just a formality executed than taking real action) to take the majority of Indian workforce to attain the motivational factor to acquire the knowledge and skill of AI and to implement it.

Practical implications – The AI and its adoption are still at their embryonic stage in Indian companies. With the adoption of such sophisticated technology, in one side, the organizations are dreaming of efficiency, higher productivity and better organizational performance whereas on the other side requirement of changing skill sets and decreasing manpower, creating fear among the mass, which results in hard resistance against the implementation process of AI. On the other hand, lack of expertise and high cost of adoption is also hindering AI to implement in the organizations. The adoption and implementation stage of AI vary from organization to organizations, as well as functions to functions. While the marketing departments of several organizations are using advanced level of AI, there, the HR departments are using AI at the very initial stage. But it is evident from the above discussions that adoption of AI in business functions is inevitable and only it is a matter of time. With the COVID-19 pandemic this has become the utmost necessity for many organizations, particularly who works across the globe. HR partners of the businesses are also adopting AI at a fast pace to do away with the mundane works and deliver efficient services to the stakeholders. It is understood from the discourse that the prerequisite for a successful implementation of AI across the industries throughout the country, needs a concerted effort from industries, academia and government.

Social implications – The answer lies in Keynesian economics. The central tenet of which is government intervention rather investment to stabilize and progress the economy by way of spreading Internet connectivity, basic literacy and computer literacy, then only truly AI can be effective in a greater scale.

Originality/value – A study on application of artificial intelligence in the pandemic era from a wider perspective, this work is an empirical investigation into the benefits and limitations of artificial intelligence for human potential and labour -intensive pandemic ridden Indian economy.

Keywords AI, HRM, Unemployment, COVID 19

Paper type Case study

Introduction

The strategic approach to effectively manage employees and increase their performances in the organizations is Human Resource Management (HRM). Over the years it has served to remain an essential aspect in the existing companies. HRM helps organizations to achieve their aims, mission, vision and goals by making them unique among their competitors and adopting innovative practices like selection, recruitment, compensation management, talent retention, performance appraisal and so on. Off late it is shifting from its administrative work and advancing toward work automation, robotics, machine intelligence, augmented intelligence that are entirely reconstituting the workforce characteristics of the organizations. Presently artificial intelligence (henceforth be called as AI in this research) is the most important word which is redesigning HR practices globally in every sector. It is an emerging technological tool which helps to improve employee performances and work productivity.

One of the main purposes of emergence of this technology is to efficiently maintain large scale data and information by organizations, to help in effective decision-making, to access employee performances, avoid repetitive work and maximize organizational output. It is a part of sophisticated computer operation process which uses machine intelligence but behaves mostly like a human brain (Mokyr *et al.*, 2015). It also helps HR personnel to automate their communications with candidates who are applying for jobs, screen candidates from the pool of application forms, conduct large number of interviews in a short span of time, efficiently recruit the right candidate for the right designation, provide performance feedback to all, providing on time training and development to employees and maximizing their work efficiency (Nun, 2019).

A lot of research is continuously taking place on AI but till now it is not known whether it is advantageous or disadvantageous to our society. With the introduction of AI, people feared of losing jobs as dependency on machines increased at a faster rate. However, slowly and gradually, industries and organizations started accepting it. Though, some people are still assuming that

AI can threaten human potential because if too much machine work increases, human labor will gradually decrease, thereby resulting in loss of jobs. Thus, this case will help to study the extent of AI utilization in the organizations and whether it is a boon or a bane for human potential and labor-intensive economy like ours.

Conceptual framework

AI, a term coined by emeritus Stanford Professor John McCarthy in 1956, was defined by him as “the science and engineering of making intelligent machines”.

AI has been described by certain approaches in relation to human intelligence, or intelligence in general. Many definitions refer to machines that behave like humans or are capable of actions that require intelligence (US NDAA, 2019; Russel and Norvig; Mccarthy, 2007; Nilsson, 1998; Fogel, 1995; Albus, 1991; McCarthy, 1988; Gardner, 1987; Newell and Simon, 1976; Minsky, 1969; McCarthy *et al.*, 1956). AI concerned with making computers behave like humans more human like fashion and in much less time than a human takes so is called as AI (Poole and Goebel, 1998).

Despite the multiple facets of AI, according to Samoili *et al.* (2020) there are a number of commonalities that the author observes which are mentioned hereunder:

- (1) Perception of the environment, including the consideration of the real world complexity (High-level expert group (HLEG), 2019; European AI Strategy, 2018; EC JRC Flagship report on AI, 2018; Tsinghua University, 2018; Nakashima, 1999; Nilsson, 1998; Poole *et al.*, 1998; Fogel, 1995; Wang, 1995; Albus, 1991; Newell and Simon, 1976).
- (2) Information processing: collecting and interpreting inputs (in form of data) (High-level expert group (HLEG), 2019; European AI Strategy, 2018; EC JRC Flagship report on AI, 2018; Kaplan and Haenlein, 2018; Tsinghua University, 2018; Nakashima, 1999; Nilsson, 1998; Poole *et al.*, 1998; Wang, 1995).
- (3) Decision making (including reasoning and learning): taking actions, performance of tasks (including adaptation, reaction to changes in the environment) with certain level of autonomy (High-level expert group (HLEG), 2019; OECD, 2019; European AI Strategy, 2018; EC JRC Flagship report on AI, 2018; Kaplan and Haenlein, 2018; Tsinghua University, 2018; Nilsson, 1998; Poole Fogel, 1995; ISO/IEC 238228, 1995; Wang, 1995; Albus, 1991; Newell and Simon, 1976).
- (4) Achievement of specific goals: this is considered as the ultimate reason of AI systems (HLEG, 2019; OECD, 2019; European AI Strategy, 2018; Kaplan and Haenlein, 2018; Poole *et al.*, 1998; Fogel, 1995; Albus, 1991; Newell and Simon, 1976) (see Table 1).

Functional areas of AI is given hereunder

Artificial Intelligence	Cognitive Science Applica	Expert systems Learning Systems Fuzzy Logic Generic Algorithms Neutral Networks Intelligent Agents Visual Perceptions
	Robotics Application	Tactility Dexterity Locomotive Navigation
	Natural Interface Application	Natural Languages Speech Recognitions Multisensory Interfaces Virtual Reality

Source(s): Khanzode and Sarode (2020)

Table 1.
Areas of artificial intelligence

Human potential is the capacity for humans to improve themselves through studying, training and practice, to reach the limit of their ability to develop aptitudes and skills. "Inherent within the notion of human potential is the belief that in reaching their full potential an individual will be able to lead a happy and more fulfilled life" (Vernon, 2009) Human potential management does not use human beings as a resource, but recognizes their potential and enables them to utilize their potential. Human potential management is an integrative and continuous process of enhancing human capabilities and capacities. In this sense, it is different from HRM, which does not essentially see various interventions as integrative and as a whole the focus is on the use of human beings as a resource. In that sense, HRM has more of a "maintenance" kind of mindset, whereas human potential management follows a continuous-growth-oriented approach (Kalra, 1997).

Labor intensive refers to a process or industry that requires a large amount of labor to produce its goods or services. Labor costs encompass all of the costs necessary to secure the human capital necessary to complete work. (<https://www.investopedia.com/terms/l/laborintensive.asp>).

Background: exploratory study

In the present times, organizations which are still following traditional processes are facing challenges as emergence of new technology is spreading worldwide. The HRM which is the pillar of any organization must immediately accept these new technological advancements and utilize them in their usual functionalities like recruitment, selection, employee retention, compensation management, performance appraisal, employee rating and deciding employee salaries and workers' wages (Wall and Wood, 2005). With proper training and development HRM helps employees to increase their work productivity and attain the goals and objectives of the organization within a short span of time. AI which was first introduced in the year 1956 by John McCarthy is an intelligent machine which acts like a human brain. It uses various algorithms which are installed in different AI tools and software which further helps the HRM personnel to ease their work (Netessine and Valery, 2012). It helps in work automation and prevents doing repetitive task thus helping HR managers to focus on other important areas where machines cannot play a role (Pickup, 2018). Organizations are run by employees who are expert and knowledgeable in their field. Thus, selecting and retaining these employees through proper recruitment process is important. The process of shortlisting from a pool of applications and selecting appropriate candidates for a job role is recruitment. With the application of AI, HRM will be able to conduct the process effectively and automatically, not having to do much of a manual task (Recht and Bryan, 2017). Skilled and experienced employees are selected with the help of Intelligent Screening Software; an AI tool which helps in analyzing the rate of turnover. AI also helps to access a candidate's body language, answering skills, choice of words and personality traits during the interview process thus helping the HR team to make the final selection. It also helps them to provide individual performance feedback within the time limit thus making the process smooth and swift (Bondarouk and Brewster, 2016). AI also helps in providing training and development programs to employees in an effective way and helps to assess the training gaps, based on which suitable measures are taken (Chamberlain, 2016). Workers need to upgrade and transform their skills and knowledge as required. As per recent research studies, sufficient jobs will be available if workers can upgrade and learn the new technological skills with proper training and development (Ball, 2010). However, the upcoming job environment may not be the same as before or may not be of the same type and thus workers will have to adapt to the new situation and adjust themselves to these challenges (Bessen, 2017). Occupations based on higher as well as middle level education both have tendency to grow in future (Broadberry and Wallis, 2016). Industries which use digitalized technologies have shown to bring positive changes in business, as well as led to improvement in the work quality. Production outcome although depends on employees, workers, stakeholders and government policies (Caselli and

Manning, 2017). Production growth will be higher in the next five to 10 years if AI applications are used judiciously and substantially. Although organizations may suffer a large amount of expense while investing in learning and training sessions for their employees but the after effect will be beneficial (Crafts, 2010). Organizations that start using this technology at an early stage will benefit overall. As advancements are taking place, the concept of AI is becoming popular in various sectors like healthcare, finance, supply chain, agriculture and so on. AI software used in the agriculture and food production sector helps to provide sufficient food supply to the country thus promoting hunger-eradication. Farm View is one such example of AI which helps in managing crops and improving breeding of plants. A heat tolerant grain Sorghum in Africa is used in this case to meet food demand of the country (Elliott, 2017). AI software is also widely used in areas of transportation, advanced analytics, improved electric signals on tracks (Eurofound, 2012). Application of AI helps organizations to increase their level of productivity and profit and eventually these profits are provided as wages to workers and other employees (Evans and Schmalensee, 2014) The profit is used in the work operations of the organizations and the output obtained is invested for more production which further leads to promotion of new jobs for employees (Fouquet and Broadberry, 2015) This will have an economic impact of the country (Nedelkoska and Quintini, 2018). AI will help to grow and upgrade the Information and Communication Technology sector thereby making its contribution important to the Indian economy. On the other hand, a group of researchers feel automation of work will have an impact on the workforce distribution and work timing of an organization. Uneducated and unskilled workers are at a high risk in terms of work automation except where they need to perform extremely vital task (Abramovitz and David, 1996). Other theoretical models predict that the ongoing productivity slowdown is likely to continue due to increased inequalities (Gries and Naudicé, 2018), learning costs (Jones, 2009) and a lower rate of disruptiveness of AI compared to other general-purpose technologies (Gordon, 2016, 2018). A forecast by think-tank Bruegel warns that as many as 54% of jobs in the EU face the probability or risk of computerization within 20 years. The effect is likely to be more nuanced, and there seems to be a consensus among researchers that there will be significant workforce shifts across sectors of the economy, accompanied by changes in the nature and content of jobs, which would require reskilling. Furthermore, job polarization is probable: lower-paid jobs that typically require routine manual and cognitive skills stand the highest risk of being replaced by AI and automation, while well-paid skilled jobs that typically require non-routine cognitive skills will be in higher demand. Studying the patterns of previous industrial revolutions indicates that job destruction will be stronger in the short and possibly medium term, while job creation will prevail in the longer term. Nonetheless, labor relations may alter, with more frequent job changes and a rise in precarious work, self-employment and contract work, which would possibly weaken workers' rights as well as the role of trade unions. The disruptive effects of AI may also influence wages, income distribution and economic inequality. Rising demand for high-skilled workers capable of using AI could push their wages up, while many others may face a wage squeeze or unemployment. This could affect even mid-skilled workers, whose wages may be pushed down by the fact that high-skill workers are not only more productive than them thanks to the use of AI, but are also able to complete more tasks. The changes in demand for labor could therefore worsen overall income distribution by affecting overall wages. Much will depend on the pace, with faster change likely to create more undesirable effects due to market imperfections. Theoretically, the more AI solutions replace routine labor, the more productivity and overall income growth will rise and the more sharply inequality will increase. This may lead to a "paradox of plenty": society would be far richer overall, but for many individuals, communities and regions, technological change would only reinforce inequalities. There are indeed fears that the current trends of shifting the

distribution of national income away from labor, which leads to deeper inequality and the concentration of wealth in “superstar” companies and sectors, will indeed only be exacerbated by AI (Szczepański, 2019). Many studies have shown AI’s negative effect on employment wherein technological unemployment and job displacement have been prevalent. Consequences for labor markets will affect workers in terms of inequality, wage-push inflation and tax base shrinkage. AI could also have a disruptive effect on the economy and its relationship with other countries as it may augment the gap globally (Szczepański, 2019). A growing body of recent theoretical work in economics builds on the literature on job polarization to consider the potential impact on labor of the implementation of AI. This literature includes Acemoglu and Restrepo (2016, 2018b), Aghion *et al.* (2017), Bessen (2017), Caselli and Manning (2017), among others. In the models discussed by Acemoglu and Restrepo (2018a) and by Caselli and Manning (2017), in the short term the substitution effect may dominate, and workers may be worse off. Here it shall not be out of context to mention that AI is likely to affect very different kinds of occupations, and so different kinds of workers, than software and robots. Whereas low skill occupations are most exposed to robots, and middle-skill occupations are most exposed to software, it is high-skill occupations that are most exposed to AI (Webb, 2020). A shared concern about robotization arose from job polarization, or the fact that middle skill, middle-income jobs are disappearing to the benefit of job creation both at the high and at the low end of the wage distribution (Autor, 2010; Autor *et al.*, 2003). Workers employed in nonrepetitive activities requiring high digital skills could increase the wages they command as their skills are in dearth of supply, while raising the productivity they contribute to their employers. In stark contrast, workforces engaged in repetitive tasks are likely to be compressed as their skill sets shall gradually and increasingly irrelevant consequently their power to negotiate for higher wages is likely to decay. In brief, a community of workers is at serious risk of being replaced by machines, while there could be scarcities of workers who can complement what machines do. AI may increase employment for specific skills that may be needed to automate the said technological change. Hence, it creates new latitudes through “creative destruction” (Morgan and Frank, 2019). It appears in general AI is likely to disrupt labor with markets modestly negative impact on long-term employment overall.

Besides, there are some researchers who point out the inherent limitation of AI. With respect to automation in general, and AI is no exception, there is another challenge regarding the issue of “potential liability”. For instance, if in the future, AI methods are used to build partial or full autonomous vehicles, if an autonomous vehicle is involved in a crash, who should be held liable in such a case? While this limitation is not merely technical in nature, it is a serious issue that needs to be addressed (Chowdhury and Sadek, 2012). One major criticism of many AI paradigms (e.g. neural networks), which was previously alluded to in the article by Van Zuylen, is that they are often regarded as black boxes that merely attempt to map a relationship between output and input variables based on a training data set. This also immediately raises some concerns regarding the ability of the tool to generalize to situations that were not well represented in the data set (Chowdhury and Sadek, 2012). Another limitation of AI-based search methods, such as genetic algorithms and ant colony optimization, is that they are never guaranteed to reach the “optimal” solution. Also when using AI-based search methods to solve a problem, it is often hard to gain true insight into the problem and the nature of the solution, as is possible for instance when using mathematical programming methods. The inability to quickly do sensitivity analyses is an important example of this limitation (Chowdhury and Sadek, 2012). For several AI methods, there is currently little guidance on how to decide upon the best values to use for a given method’s tuning parameters (Chowdhury and Sadek, 2012).

The current crisis

The report of CMIE (Centre for Monitoring Indian Economy) confirms unemployment rate in India rose to 29% since the country went into lockdown from March 2020. The picture shall be clear from the figure given hereunder (see Figure 1):

Choudhary (2020) confirms urban unemployment rate to 30.9% whereas, an ADB-ILO report’s prognosis for unemployment is 6.1 million young Indians (15–24 years) may lose jobs even if the virus is controlled by September 20 (“6.1 million youth may lose . . .”, 2020)

Unemployment rate in urban areas rose to 20.9% during the April–June quarter of 2020, more than double the unemployment rate in the same quarter the previous year (8.9%) as shown in figure below (see Figure 2):

In all aforesaid cases unemployment rate means the percentage of unemployed persons in the labor force. labor force constitutes persons who are either employed or unemployed but seeking work.

Regarding the availability of data for employment generation in the unorganized sector rural and urban, the representative of the ministry submitted in evidence as follows:

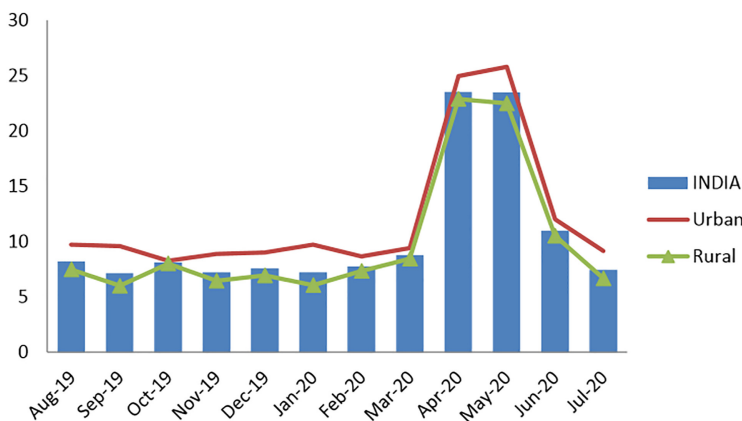


Figure 1.
Unemployment rate of India July, 2019–June 2020

Source(s): Centre for Monitoring Indian Economy Pvt. Ltd

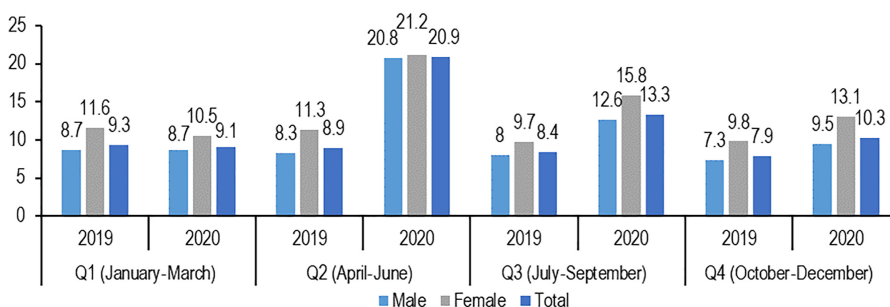


Figure 2.
Unemployment rate in urban areas during the April–June quarter of 2020

Source(s): Quarterly Periodic Labour Force Survey Reports, Ministry of Statistics and Program Implementation; PRS

“Right now, there is no area framed for this data for unorganized sector.” (Ministry of Labour and Employment, Government of India, 2021)

From the aforesaid confirmation of the central government it is established absence or ineffectiveness of a formal organizational framework for unorganized workers, their lack of representation of in associations, exclusion of workers from legal rights for minimum wages is as evident as for the domestic workers in particular as highlighted in earlier research (Bhattacharya *et al.*, 2016; Chandramouli, 2018).

However the Standing Committee on Labor (Chair: Mr. Bhartruhari Mahtab) submitted its report on the subject “Impact of COVID-19 on Rising Unemployment and Loss of Jobs/ Livelihood in Organised and Unorganised Sectors” on August 3, 2021. observed “that 90% of workers in India are from the informal sector. These workers include: (1) migrant workers, (2) contract labours, (3) construction workers, and (4) street vendors. The Committee observed that these workers were worst impacted by the pandemic due to seasonality of employment and lack of employer-employee relationship in unorganised sectors” (Ministry of Labour and Employment, Government of India, 2021).

Report from press confirms 80% of India’s informal workers lost jobs during COVID-19 lockdown and 63% survived on two meals a day (“80% of India’s informal . . .”) About 80% of the high-volume domestic workers (more than 10 jobs per week) ended up almost jobless and half of them reported poor access to medical care during the period (National Domestic Workers Alliance, 2020). In April 2020, the International Labor Organization (ILO) observed that more than 40 crore informal workers in India may get pushed into deeper poverty due to the pandemic (Kumar, Srivastava, 2021).

As per the NCRB report, a spike of 10% in the number of deaths by suicide was recorded in India in 2020 as compared to 2019–1.53 lakh suicides in 2020 – highest in the last 10 years. Daily wage earners constituted the highest share, a total of 37,666(24.6%) wage workers died by committing suicide (“India Lost More People”).

The lockdown to combat the corona virus outbreak has compelled many industries to shut down thus increasing unemployment across the country (Admin, (2020), July 21). The public health crisis outbreak at a time when India’s gross domestic product (GDP) growth was already sloping down, and unemployment was on the rise (Dev and Sengupta, 2020). Compared to 2003–2011, investment and savings rates and exports-GDP ratio declined in the 2011–2019 period. The investment rate declined from 34.31% of GDP in 2011–12 to 29.30% in 2018–19. The savings rate declined almost consistently from 34.27% of GDP to 30.51% between 2011 and 2018 (Nair, 2020). According to the advance estimates (January) of the National Statistical Office, the growth of the gross domestic product (GDP) in 2019–20 was 5%, a steep fall from the 2016–17 growth rate of 8.2% (Nagaraj, 2020). Other theoretical models predict that the ongoing productivity slowdown is likely to continue due to increased inequalities (Gries and Naudié, 2018), learning costs (Jones, 2009) and a lower rate of disruptiveness of AI compared to other general-purpose technologies (Gordon, 2016, 2018). It is pertinent to mention here although the Indian economy is the third-largest economy in the world, the unemployment rate is very high and it also differs every year due to its large labor force caused by the young working population of the country (Kumar and Murali, 2016). Despite the growth of GDP, jobless growth becomes more integral based on the findings of the periodic labor force survey of 2017–18, proving the fact that GDP growth is not an automatic transformation process for employment in the economy (Paruchuru *et al.*, 2020). One of the main causes of jobless growth in India over the years is prevailing job losses, which according to Madhavan (2018), have risen between 2016 and 2017 for as much as 1.5 million jobs lost.

Unemployment in India has been a consistent issue for years. Full-time job opportunities are decreasing day by day due to part-time and casual work (Chand *et al.*, 2017). Over the years, as technology took part in driving India’s economy, there is also job-deficient growth,

rising farm distress and youths concerned for job reservations in the public sector, hence overall employment insignificance might be caused by AI displacing human labor in the services sector, making labor demand for predictable jobs shrink (Bonsay *et al.*, 2021).

The prevailing degree of unemployment clearly indicates that there is something inherently wrong with whole economic structure. The inequalities grew because as a result of reckless inflation, the wealthy got richer and the poor became poorer. According to the Oxfam study in 2019, the top 10% of the Indian population owned 77% of the overall national income. The calculation showed 73% of the wealth produced in 2017 went to the wealthiest 1%, while 670 million Indians, who constitute the poorest half of the nation, received just a 1% rise in their income. (Oxfam International, 2021). The World Inequality Report produced by a network of social scientists estimated the share of wealth owned by billionaires has mounted by a record amount during the pandemic, with millionaires also coming up out of COVID-19. Lead author Lucas Chancel confirmed: "The COVID crisis has exacerbated inequalities between the very wealthy and the rest of the population ("Pandemic makes the super-rich richer"). Overall, the scenario is one of rising wage and employment opportunity inequality, the recent research studies of Korinek and Stiglitz (2000), Aghion and Howitt (2017) points to rising wage inequality once jobs start to be created subsequent to a technological disruption.

Problem area/issues under investigation

- (1) To study the extent of use of AI in the modern organization.
- (2) To comprehend the changing nature of future jobs in the context of application of AI.
- (3) To study the impact of AI on the economy of the country with special reference to the job market.
- (4) Given the critical scenario of labor Indian economy how AI shall coexist with human intelligence or labor

Research Methodology

Research Design

The research on implementation of AI in different industries and its effect on job market are at a nascent stage. There is a dearth of literature. Hence, this followed a qualitative approach to have a better understanding of the research questions as Bhattacharjee (2012) confirms that employing an interpretive paradigm (qualitative analysis as the analysis of data, e.g. data from interview transcripts) is the more productive way to study social order and that it is achieved through "subjective interpretation of participants involved, such as by interviewing different participants and reconciling differences among their responses using their own subjective perspectives".

Sample selection

The selection technique utilized is purposive sampling. The respondents in this research are the General Managers and HRs from different companies. A total of 14 senior professionals from various sectors were approached for the interview out of which seven people gave their consent to take interview. Seven senior HR professionals mainly general manager and HRs from various sectors viz. oil and gas sector, manufacturing, healthcare, construction, media, power and energy, retail, were interviewed to understand how they are using AI in their respective fields.

Inclusion criteria

- (1) Generally, the people covered under the research are from the decision-making level of their companies so they are in a position to give strategic perspective as well as day to day implication of implementation of AI.

- (2) Respondents have adequate knowledge of the respective industry to which they belong
- (3) Respondents have reasonable industry of dealing with HRM and national economy as a whole

Assessment tool and its administration procedure

A narrative approach was adopted to have a better understanding of the research questions and comprehend their views regarding implementation of AI in their respective companies. A semi structured open ended interview was administered to steer the discussion around the research questions. The respondents were interviewed over the phone and each respondent shared their stories.

Analysis of data

The narrations were then transcribed by online transcriber website otter.ai.com. The common keywords as prescribed by the website are as: AI, strategy, learning, implementation. The extracts of the discussions are noted in the next segment of the paper. As and when required this research also used secondary data from the journals, literature available in the websites to understand the implementation of AI globally.

Findings and analysis based solutions

The application of AI in the organization

AI is impacting every function and the modalities of business. For example, AI helps in managing various sub-stations in the energy plant which helps to study the amount of electricity load consumed or needed; power-consumption, system process through which consumption is done and obtain daily workforce updates. It also helps to prepare forecasts and prediction reports and analytics of the operations, thus making work easier for the employees. The respondent from the healthcare sector expressed that AI helps employees to work better, provide fast and efficient service to clients, diagnose problems and issues, analyze cases and provides accurate information for specific problems. Agriculture and diary sector are also using AI in their work process. AI is helping the employees to easily access the process, payment and make other operations smooth thereby preventing brokers from making money and helping in delivering products directly from producers to consumers thereby minimizing loss and maximizing output and profit of the business. One of the respondents also shared his organizational experience related to the AI application in the office canteen to reduce wastage of foods. The office canteen uses AI tools through which employees select the items and amount of food they wish to consume. With the help of a biometric automatic display of trays and coupons are provided; thereby preventing wastage of food. But the implementation of AI is not so smooth. It is comprehended from the interviews that to implement AI, the initial step needed is a change of mindset to accept the technology.

The role of AI in human resource management (HRM)

Like other business functions, HR as a business partner also adopting AI in the HR processes. It was understood from the in-depth interviews that AI is being used in many areas of HR function such as: recruitment, selection, performance management, employee retention, etc. AI is helping the managers to conduct smooth recruiting operations and conducting large scale interviews. AI helps in synchronizing the questions and analyzing the answers, providing timely feedback, study the interviewees' behavior traits, choice of words, language,

interest in the field, predicting a rate of attrition and helping in employee retention. AI also helps in performance management, employee engagement, proving training and development for employees, study the net promoters score, happiness quotient of employees; thereby increasing motivation.

As per respondents, the implementation of AI in various HR functions will be expedited with the current COVID-19 situation. Organizations' regular operations are being challenged in a big way as employees are now becoming remotely connected due to "lock downs" and there is a restricted use of employees on-site. Experts from the field of HR opined that in the current COVID-19 situation, as most of the operations are performed online, the implementation and use of AI in various HR functions, is becoming obvious and essential. In the post pandemic situation, the use of AI will be more significant to balance between organization's reduced size in terms of manpower and efficiency in terms of result. The companies are now experimenting and embedding AI to do the mundane jobs for the HR department. It uses psychometric tools, helps in augmenting and automating work by selecting suitable resumes from the pool of applications, chalks out the previous companies the employee has worked in, helps in recruitment of employees, integrate multiple data, synchronizes behavioral competency of candidates, performances, employee retention, analyze the rate of success, helps to understand which employee suits in which position and study the rate of attrition of the organization. AI is helping the HR department to perform more efficiently and strategically by performing the routine and repetitive works in a smarter and more efficient way, and thus helping the HR managers to deliver service with speed, accuracy and more bias-free way. It is evident from the responses that AI can also help the HR managers to retain potential employees correctly predicting possible details, which creates grievances even at the individual level. AI tool helps to understand the gap between organizations and individual expectations and hence help HR managers to take measures. Thus, HR department gets more time to concentrate on managing other important areas where machines cannot play a role.

AI is helping the HR partners in augmenting and automating work, and prevents repetitive and manual task and allows them to concentrate on building strategies for achieving company aims and goals within a short span of time.

The changing job nature and acceptance of AI by the Indian companies

Implementation and implementation of technology have never been easy. When computers were discovered and computerization of businesses was in force, people feared of losing their jobs and a huge resistance resulted in socially. But with time it is proven that it helped in increasing employment and changing lifestyles to a better one. Similarly, AI when merged with HRM in the modern companies is benefitting everyone in an effective way. People do not have much of a choice but to accept it, though most companies have already started using the technology. The COVID-19 has expedited the work – from – home concept and has made the gig-economy a reality today. People and organizations are becoming more accustomed to the changing context with the fast implementation of technology. It was evident from the interviews that post COVID-19, organizations will be looking for more specialty skills and the forms of work – contracts are surely going to be changed. According to the respondents, quick implementation of technology and AI, will help managers in better decision making and forecasting which is already been proven to be advantageous to the companies. After adoption of LPG economy, the IT/ITS hubs in India are flourishing while other sectors are still at a developing stage. With the implementation of AI technology, these sectors will also bring in more productivity thereby increasing jobs for people. Another respondent mentioned how companies like Google, OLA, UBER and OYO have already adapted AI technology and with the help of its tools and software people are getting benefits in their day to day lives. AI will help to manage the workforce globally. AI will help the organizations to identify skills

correctly, from a large pool of candidates. It will help the organizations to design competitive compensation packages and help the HR managers to integrate workforce across the world reducing the cultural and semantic barriers.

The viability of AI for a labor-intensive economy like India

As per experts, AI is a viable long-term proposition, even for a labor-intensive economy like India. According to the respondents, the introduction of AI will benefit all stakeholders. It helps in work automation and upgradation. Implementation of AI will change the job nature and hence the requirement of skills will be different. HR managers have to predict the future requirement of skill sets and must take corrective actions by providing training sessions to employees for learning the new technologies, help unskilled workers to upgrade their skills and utilize workforce in operating these tools and software. Several respondents feel terminating employees can never be a solution; be it in times of recession or in times of pandemic; rather they can diversify their work process and upgrade employees' knowledge and skills that can be used efficiently for production and organizational benefits.

The impact of AI in the Indian Economy and job market

India is a labor-intensive country. The cost of implementing AI is generally huge. It is generally beyond the capacity of small and medium scale to implement the AI at large scale. Our country is comprised of a huge number of blue collared workers who are less skilled and less knowledgeable. So, rapid and wide implementation of AI in all industries and in every organization is not possible in this country. Implementation of AI will lead to transform our lifestyle, work culture and communication keeping in mind certain intrinsic limitations of AI mentioned hereunder:

- (1) Sometimes it can be misused leading to mass scale destruction.
- (2) Program mismatch is sometime done opposite to the command.
- (3) Creativity is dependent upon programmer.
- (4) Lacks the human touch
- (5) Younger generation becomes lazy.
- (6) Require a lot of time and money; and
- (7) Technological dependency increases ([Khanzode and Sarode, 2020](#)).

Though the entire world is moving towards automation, India cannot resist its' implementation. But the country must plan wisely at macro level and focus on building future-skill sets among young workforces. Thus, industries and organizations must utilize these people by providing proper development and training for operating these tools and software. Employees must upgrade their skills to be able to work effectively and efficiently; thereby increasing the rate of employment. In long term the AI skill-based courses skill based course can be created and implemented in collaboration with the academics and industries. But currently working professionals in industry we must emphasize on upskilling and reorienting. Whereas sophisticated AI-technologies reduce the need for human labor in today's industry, synchronizing these technologies to the organizational needs and deliverables requires an in-depth understanding of organizational members' capabilities ([Davenport and Kirby, 2016](#)). Therefore at present development of AI competencies and its applications has become vital to help employees remain employable in the future.

Implementation of AI in different fields will improve the operational efficiencies of the industries. It is understood from the discussions that AI and robotics helps in augmenting

and automating work, reduce manual task, prevent pilferages cybercrime, work repetition and maintain large scale data and information. This will not only increase organizational productivity and output but will also provide time to employees to concentrate on other vital areas where machines cannot play a role. Thus, it will have a positive impact on the Indian economy and job market. And here comes the role of creative HRM – who cannot be reskilled must be rehabilitated by way of utilizing their existing skills by way of initiating entrepreneurial venture.

But the most vital part of the story is one can only run if the person knows to walk. A country where the government itself admits 90% of its workforce belongs to informal sector and conspicuously exits a multi-faceted stark digital divide (Huberman, 2001; DiMaggio *et al.*, 2001; Guillen, 2006; Servon, 2002) wherein gap of digital divide is significant between the rural and urban India (Dasgupta *et al.*, 2002; Nath, 2001; Singh, 2007; Mahajan, 2003) talking of educating, applying and implementing AI seems to be “a distant dream” but an “ambiguous ambition”.

Therefore the answer lies in Keynesian economics The central tenet of which is government intervention rather investment to stabilize and progress the economy by way of spreading Internet connectivity, basic literacy and computer literacy, then only truly AI can be effective in a greater scale which was duly pointed out by Bonsay *et al.* (2021) suggesting that other economies being involved in AI utilization should focus on developing high standards of an educational system that covers a wide range of skills aligned to the new job creation rooted in technology and leverage this transformation to further enhance people’s livelihood and income, as the continuous shift toward technological change is inevitable.

Prior to that India has to ensure the basic hygiene factors of informal sector labor force like social security. Low wages and lack of legal protection, unpaid overtime and occupational health problems, poor bargaining power, working without leave under coercion, child care issues and health ailments (for which mere legislation or statutarization is just a formality executed than taking real action) to take the majority of Indian workforce to attain the motivational factor to acquire the knowledge and skill of AI and to implement it.

Conclusion

The AI and its implementation are still at their embryonic stage in Indian companies. With the implementation of such sophisticated technology, in one side, the organizations are dreaming of efficiency, higher productivity, better organizational performance whereas on the other side requirement of changing skill sets and decreasing manpower, creating fear among the mass, which results in hard resistance against the implementation process of AI. On the other hand, lack of expertise and high cost is also hindering implementation of AI in the organizations. The implementation and implementation stage of AI vary from organization to organizations, as well as function to functions. While the marketing departments of several organizations are using advanced level of AI, there, the HR departments are using AI at the very initial stage. But it is evident from the above discussions that implementation of AI in business functions is inevitable and only it is a matter of time. With the COVID-19 pandemic this has become the utmost necessity for many organizations, particularly who works across the globe. HR partners of the businesses are also adopting AI at a fast pace to do away with the mundane works and deliver efficient services to the stakeholders. It is understood from the discourse that the prerequisite for a successful implementation of AI across the industries throughout the country, needs a concerted effort from industries, academia and government.

Questions for discussion

- (1) How application of AI has changed the HR functions?

- (2) How AI benefits HR functions?
- (3) Is AI desirable in a labor intensive country like India?
- (4) What is the limitation of AI in HR function?

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