



IMPACT OF ARTIFICIAL INTELLIGENCE ON LABOUR MARKET AND INDUSTRIAL LAW: THE INDIAN PERSPECTIVE

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Abstract

Application of Artificial Intelligence (AI) in the industrial sector is presently growing in India. The changes already brought about or awaiting to occur by the deployment and advancement of artificial intelligence in the industrial sector have triggered an interesting debate on the present and future impact of AI on the labour market and industrial law. This article aims primarily at critically analysing the transformation, whether positive or negative, brought by artificial intelligence on labour, labour market and industrial law. It further questions what sets AI apart from previous technological changes and also what sets it at par with them so as to analyse its implications for the labour market as well as industrial law. It, hence, gives out a discussion of the most pressing questions the future of labour in the AI era might bring. This article hopes to pursue a balanced approach on both the benefits and downsides of increased automation and use of AI in the industrial sector.

Keywords: Artificial Intelligence; Industrial Law; Labour; Unemployment; Technology; Employment

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I. Introduction

THE CHANGES already brought about or awaiting to occur by the deployment and advancement of Artificial Intelligence (hereinafter referred to as AI), a term coined in 1956, in the industrial sector have triggered an interesting debate on the present and future impact of AI on the labour market and industrial law. This is so because the use of artificial intelligence and machine learning technologies has the potential to bring about a revolution in labour law or completely disrupt and overthrow the existing legal framework. Several recent studies have explored the surge in developments pertaining to AI in the recent decades through an analysis of increase in AI patenting applications and other AI related scientific publications. These studies unanimously point out that the growth in the technology is dominated by countries like China, Japan, the United States of America, and South Korea. Although its emergence is concentrated majorly to certain specific sectors, it is clear that all other industries are also exploiting the opportunity as it presents itself.¹

As lies in the realm of general and historical knowledge, rapid technological and innovative progression can threaten employment. This understanding dates back to the 1930s, when John Maynard Keynes postulated his 'technological unemployment theory' suggesting therein, that technological changes have the effect of causing unemployment through loss of jobs.² It must be noted here, that technological innovations are capable of affecting employment in two rather distinct

¹ Giacomo Damioli, et al., "The Impact of Artificial Intelligence on Labor Productivity" 11 *Eurasian Business Review* 21 (2021).

² J.M. Keynes, "The General Theory of Employment" 51(2) *Quarterly Journal of Economics* 219 (1937).

ways which can be designated as the displacement effect and the productivity effect. The displacement effect depicts the role of technology in directly displacing workers from tasks they were previously and ordinarily performing and conversely, the productivity effect refers to the subsequent increase in the demand for labour in industries that arise or develop as a product of technological progress.³ AI can thus, depending on the nature of the job, augment the productivity and efficiency of some workers while simultaneously displacing the others or at the least, transforming significantly, the way they work.⁴

Even in the past, technological developments, and digitalisation, in particular, has had momentous consequences for the industrial sector. Labour law governs industrial relations which subsist on the continuance of the contract between the worker and his employer. Any advancement in technology which is perceived as threatening the security or continuity of this contract, is likely to have repercussions on industrial relations and accordingly, labour law. It, hence, becomes of perineal significance to assess the impact, real and potential, of AI for developing laws and policies that promote efficient workforce in furtherance of the benefits of workers, employers, and the labour market at large. Application of artificial intelligence in the industrial sector is presently growing in India. It has however, just begun to emerge. Hence, the impact of artificial intelligence on industrial market and labour law, even though worthy of special attention owing to its inevitable nature, is

³ *Supra* note 2.

⁴ Morgan R. Frank, et al., "Toward Understanding the Impact of Artificial Intelligence on Labour" 116(14) *PNAS* 6513 (2019).

nevertheless, under-researched and relatively unexplored, especially in the Indian context.

This article aims primarily at critically analysing the transformation, whether positive or negative, brought by artificial intelligence on labour, labour market and industrial law. After a brief overview of the meaning of artificial intelligence and its scope in the industrial sector, the primary subject of this piece of work would be the phenomenon triggered by and the changes made to the traditional labour markets by the introduction of robots powered by artificial intelligence, machine learning and deep learning. These changes do not necessarily occur within narrow legal frames but rather, in context of social and industrial relations,⁵ and would hence, be examined in similar fashion.

The article further questions what sets AI apart from previous technological changes and also what sets it at par with them so as to analyse its implications for the labour market as well as industrial law. It will focus on aspects like job displacement and consequences of automation and innovation on the jobs that would remain intact post the introduction of AI and how the same need to be tackled by way of labour law. It, hence, gives out a discussion of the most pressing questions the future of labour in the AI era might bring. This article hopes to pursue a balanced approach on both the benefits and downsides of increased automation and use of AI in the industrial sector.

⁵ Gábor Mélypataki, "Effects of Artificial Intelligence on Labour Law and Labour Market: Can AI Be a Boss?," 15(1) *European Integration Studies* 80 (2019).

The development and deployment of artificial intelligence has not happened in vacuum and other technological advances are necessarily amalgamated with it.⁶ Hence, even in the article, focus on AI is laid while treating automation as a potential consequence of it and robotics as a complementary technology to it, seeing them on their point of convergence. This article examines the meaning and capabilities of AI and what relevance they might have for the labour market and industrial law. Since AI is only in its infancy stage in India, not much empirical data with hindsight is available in this regard as yet rendering it practically impossible to conclusively and precisely state anything on the impact of AI on the industrial sector in India. It is therefore impossible for now to deliver a serious message on the impact of AI on employment. Hence, the topic has been discussed in a broader context of the potential impact of AI and machine learning on the industrial sector and labour law owing to the paucity of relevant academic literature on India's tryst with artificial intelligence.

II Conceptualizing Artificial Intelligence- Technological Change And Employment From A Historical Perspective

The first ever industrial revolution, at the beginning of the 18th century, marked the shift from an agrarian form of livelihood to an industrialised setup where special-purpose machinery was employed thereby, replacing animal power with steam engines, and consequently urbanizing the population.⁷ The second industrial revolution, on the other hand, was characterised by mass production by way of the

⁶ Valerio De Stefano, "Introduction: Automation, Artificial Intelligence, and Labor Protection" 41(3) *Comp. Lab. L. & Pol'y J.* 6 (2019).

⁷ N.F.R. Crafts, "The First Industrial Revolution: A Guided Tour for Growth Economists" 86 *Am. Econ. Rev.* 197 (1996).

expansion of electricity, steel and petroleum industries and other scientific developments. It was only around the 1950s, that the third industrial revolution emerged with latest innovations in the technological field and invention of computers and other digital technology bringing about, thus, automation in the manufacturing sector. All these developments came forth, however, with disruptions in several industries. Nevertheless, these technologies opened more doors in areas of research and technology creating employment opportunities for people affected by such disruptions. As is popularly believed, we are currently at the brink of what will be known as the fourth industrial revolution involving advanced automation through use of artificial intelligence, revolutionising production, and labour.⁸

There is not one particular and precise way to define artificial intelligence,⁹ but it can be understood generally, as referring to the science of teaching computers how to “*learn, reason, perceive, infer, communicate, and make decisions like humans do*”, with the initial goal being machine learning and lying even beyond that, deep learning. Here, where machine learning refers to allowing a machine to determine rules for itself with minimal programming, making it capable of problem solving, deep learning refers to use of way more advanced algorithms, making way for the machine to perform more abstract tasks.¹⁰ Artificial Intelligence, in India has however, just begun to emerge and the term

⁸ D. Mhlanga, “Artificial Intelligence in the Industry 4.0, and Its Impact on Poverty, Innovation, Infrastructure Development and the Sustainable Development Goals: Lessons from Emerging Economies?” 13 *Sustainability* (2) 2021.

⁹ Thomas Kirchberger, “European Union Policy-Making on Robotics and Artificial Intelligence: Selected Issues” 13 *Croatian Y.B. Eur. L. & Pol’y* (196) 2017.

¹⁰ Sterling Miller, “Part I: Artificial Intelligence & Its Impact on Legal Technology: To Boldly go Where No Legal Department Has Gone Before!” 44 *Thomson Reuters* 7(2017).

has not yet been defined by any legislation and similarly, no legal status has been rendered upon artificially intelligent entities.¹¹

The impact of artificial intelligence on industrial market and labour law is worthy of special attention owing to its special characteristics which set it apart from the impact of technology or automation in general. These characteristics are wide-ranging and not completely discovered yet but do necessarily include AI's potential to affect multiple sectors and occupations across the economy, its ability to self-improve and to expand the set of tasks that can be automated including high cognition and highly skilled tasks. This is a result of AI's problem-solving, logical reasoning and perception capabilities. The chief distinction between the technologies of previous generations of industrial development and the artificial intelligence-based machines is the latter's ability of independent thinking and decision making. Whereas, the earlier technologies were largely dependent on the set of instructions fed into their memory systems, AI is qualified to make decisions based on its own calculative analysis using several online and offline resources and its learnings from past experiences using machine-learning techniques. Thus, AI, as it is evolving, would be human-like, i.e., capable of imitating intelligent human behaviour¹²

AI has thus, been accorded the status of a general-purpose technology (GPT) by Organization for Economic Cooperation and Development (OECD),¹³ a concept that was developed by Bresnahan and

¹¹ Hritik Bhimani, "The Legal and Regulatory Impact of AI", *available at*: <https://www.deccanchronicle.com/technology/in-other-news/220618/artificial-intelligence-and-its-legal-and-regulatory-impact.html>, (last visited on October 10, 2021).

¹² *Ibid.*

¹³ *Ibid.*

Trajtenberg for technologies having potential application across a wide range of sectors and occupations, and the ability to advance over time and to generate complementary innovation.¹⁴ These characteristics allow it to surpass some of the limitations of previous technologies thereby, vesting it with the ability to magnify its impact on the labour market, whether positive or negative.¹⁵

Application of AI in manufacturing sector is presently growing in India with companies like JK Tyre & Industries Ltd., TVS Motor Company Ltd., and Asian Paints Ltd. having deployed AI-based technologies across their manufacturing units in India.¹⁶ Apart from these, global giants like Google, Amazon, Zara, Uber, and Pizza Hut already have robots working in their warehouses, driving their cars, and serving their customers.¹⁷ Moreover, the broad MNC IT/Technology/Electronic category, which covers high-end software and hardware technology, IT services, semiconductor, and electronics enterprises, has the highest market share and size for AI in proportion to the types of companies. Compared to a market size of 36.2% in 2020, the combined market share is now 32%.¹⁸

Considering the historical perspective, the three technological revolutions prior to this fourth industrial revolution have all been witness to the most typical phenomenon of machine replacing man in a

¹⁴ *Supra* note 11.

¹⁵ Marguerita Lane and Anne Saint-Martin, "The impact of Artificial Intelligence on the labour market: What do we know so far?" 256 *OECD Social, Employment and Migration Working Papers* 19 (2021).

¹⁶ Moumita Singha, "Implementation of Artificial Intelligence in Indian Industrial Sector" 3(4) *IJSRED* 238 (2020).

¹⁷ T. Dhanabalan and A. Sathish, "Transforming Indian Industries through Artificial Intelligence and Robotics in Industry 4.0." 9(10) *IJMET* 235 (2018).

¹⁸ *Ibid.*

short period of time. In the long run, however, a complete overhaul has been seen with technological changes creating new jobs and employment opportunities owing to the productivity improvement led by it followed by an increase in demand. Existing literature shows that the impact of artificial intelligence will be no different and that it inherits the laws of the previous technological advancements only, effecting in both, employment substitution and employment generation. Nonetheless, the impact of AI will be stronger, far-reaching, and relatively longer.¹⁹

III Benefits of Deploying Artificial Intelligence in The Labour Sector

The benefits of introduction of AI in the industrial sector are numerous. Such technologies can work on several processes at a given point of time, they are not susceptible to falling ill or taking leaves. Similarly, they may not go on strikes and are not affected by external factors or fatigue. Moreover, their work is generally, reliable, and accurate, making them look more attractive over human workers to employers.²⁰ With the rapid expansion in the use of artificial intelligence technologies, AI take over disagreeable, boring, and menial tasks, enabling, thereby, greater creative growth and workplace autonomy for humans. Also, with the rapid expansion in the use of artificial intelligence technologies, robots have come to being increasingly used in completing dangerous tasks that are not suitable for human beings. Further developments in the field of AI, as well as the increase of human cost and the decrease of AI cost, the scene of AI application is set to further broaden.

¹⁹ Yujie Zhang, "The Impact of Artificial Intelligence on China's Labor Legislation" 2(3) *IJFS* 25 (2020).

²⁰ Gerlind Wisskirchen, "How Artificial Intelligence impacts labour and management", CEC Seminar Management in the age of Artificial Intelligence, Employment, Economics and Ethics, 2018, pp-45.

Hence, the question as to how the use of AI would be beneficial for the industrial sector in terms of productivity has not one but many answers. Where on one hand, some scholars suggest that its use would lead to more precise results in a relatively shorter span of time considering the fact that AI can handle much more complex tasks in much lesser time frame as compared to human beings, another commendation to its introduction is that it would be immensely helpful in industries facing serious shortage of labour.²¹ Hence, employment of AI in the industrial sector contemplates cost cutting and productivity gains.

IV Implications of AI for Industrial Growth and Employment- Revisiting The False Dichotomy

When faced with the question concerning the impact of AI on economy and employment, the first answer would naturally be in such terms as suggesting that AI is good for the economy on the account that it fosters productivity and helps overcome traditional hurdles such as poor infrastructure thereby, acting as a catalyst in progress but nonetheless, has adverse impacts on employment as it essentially would replace labour with machines. Yet, in this article, the researcher shall argue that the issue runs deeper and that these effects of AI are dependant largely on the institutional and national policies and laws in this regard.²²

Majority of the existing academic and policy literature on the issue has failed to look beyond the “quantitative” approach adopted by it,

²¹ Anubhav Verma, “Labour Law in the Age of Artificial Intelligence”, *available at*: <https://legalviews.co.in/articles/f/labour-law-in-the-age-of-artificial-intelligence> (last visited on October 14, 2021).

²² *Ibid.*

trying to estimate the number of workers that could be rendered jobless as a consequence of breakthroughs in AI technologies. These studies are marred by an apparent flaw of not concentrating on the prospective benefits of induction of AI into the industry in terms of job creation and job enhancement. That is to state that these debates have not examined sufficiently the qualitative aspects connected with AI and labour markets in terms of the quality of jobs that would remain, requiring growing interactions between humans and AI tools used to manage industries and production/manufacturing processes.²³

The qualitative approach would suggest that policies focus more on ensuring that measures are taken to absorb occupational shocks which are a given when it comes to automation and AI and that the highest number of people possible acquire such skills as would be necessary to be employed in “jobs of the future” requiring more technical skills since, AI machineries would most certainly absorb routine, menial, and dangerous tasks, provided they are employed strategically.²⁴ To illustrate, advancements in the use of artificial intelligence can diminish wages and employment opportunities for manufacturing workers.²⁵

As per the International Labour Organization (ILO), technology, inter alia, is the chief driver of changes in the world of work.²⁶ AI, due to its high potential, is most likely to transform the way we work. But what

²³ *Supra* note 6

²⁴ James Manyika, et al., “A future that works: AI, automation, employment, and productivity” 4 *McKinsey Global Institute Research, Tech. Rep* 60 (2017).

²⁵ *Ibid.*

²⁶ International Labour Organization, “Future of Work - Major trends: The deployment of industrial robots is rapidly intensifying, with the potential to change production processes worldwide”, *available at*: https://www.ilo.org/global/topics/future-of-work/trends/WCMS_555548/lang--en/index.htm (last visited on April 24, 2022).

needs to be borne in mind here is the fact that AI, largely, are not absolutely autonomous entities which implies that they may still require some human intervention in order to function and that any industry would nevertheless be, dependant on humans to carry out certain tasks. Current trends and predictions about the impact of AI on our job markets foresee two possible outcomes: a scarcity of jobs leading to mass unemployment or a paradigm shift in necessary skills owing to the generation of new job descriptions.²⁷ A government of India, Ministry of Electronics and Information Technology and NASSCOM initiative 'INDIAai', estimated that 0.7 million of IT jobs will be replaced by robot process automation.²⁸ Further, as per a recent study, 42% of the skills currently possessed by workers are being significantly transformed.²⁹

The wave of artificial intelligence has, at the global level, begun to uproot labourers from their jobs.³⁰ The initial disruptive impact may be felt relatively stronger in India owing to the high employment in jobs involving routine work. This view is taken accounting for the impact of automation in the past which shook up the labour market to take up tasks that the unskilled could perform. However, there are reasons to believe that the advent of AI and related technologies, with its much broader scope, might lead to the disappearance of middle-skill jobs thus, affecting them more than it would impact low-skill jobs. A study

²⁷ Michaela Georgina Lexer and L. Scarcella, "Artificial Intelligence and Labor Markets. A Critical Analysis of Solution Models from a Tax Law and Social Security Law Perspective" 1(1) *Rivista italiana di informatica e diritto* 53 (2019).

²⁸ Parul Saxena, "AI impact on India: Jobs and Employment", available at: <https://indiaai.gov.in/article/ai-impact-on-india-jobs-and-employment>, 2021 (last visited on April 12, 2022).

²⁹ V. Ratcheva, et al., "Jobs of Tomorrow. Mapping Opportunity in the New Economy", available at: http://www3.weforum.org/docs/WEF_Jobs_of_Tomorrow_2020.pdf (last visited on April 23, 2022)

³⁰ Erik Brynjolfsson and Andrew McAfee, *The Second Machine Age: Work, Progress, And Prosperity in a Time of Brilliant Technologies* 250 (W. W. Norton & Company, 1st edn. 2016).

conducted by McKinsey and Company in the year 2014 estimated that 6–8 million workers “currently employed in routine clerical, customer service, and sales jobs could be affected by advancements in machine learning and natural language interfaces (speech recognition)”.³¹ Furthermore, the International Labour Organization (ILO) estimates that “middle-skill” jobs, such as clerical, sales, service, skilled agricultural, and trade-related work, account for 60% of India’s formal employment. These jobs are all susceptible to automation. Automation therefore affects the macro level of the economy as well as the micro level of the worker’s workplace.³²

Naturally, it would be effective to concentrate on how employees can adapt to the new skillsets needed for future occupations. These skills, as estimated by the Organization for Economic Co-operation and Development (OECD), include Information & Communication Technology (ICT) skills, enhanced literacy, and numeracy and problem-solving skills required for the effective utilization of ICT.³³ Hence, institutional and organisational streamlining of AI technologies, their development, implementation in production processes as well as regulation of ensuing consequences for the economy and society at large, is urgently needed. Trade Unions can further advocate technical training and skill-development programmes for employees so that they can be retained even after the introduction of AI. Currently, our labour

³¹ McKinsey Global Institute, “Harnessing Automation for a Future that Works”, available at: <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier> (last visited on July 16, 2022).

³² Francis Kuriakose and Deepa Iyer, “How AI will Transform India’s Job Scene”, Business Line, The Hindu, November 06, 2018, available at: <https://www.thehindubusinessline.com/opinion/columns/how-ai-will-transform-indias-job-scene/article25428983.ece> (last visited on September 8, 2022).

³³ OECD, “Policy Brief on the Future of Work - Skills for a Digital Age”, *OECD Publishing* (2016).

regulations do not govern adaptation of workers to the development of AI and are hence, unsuited for application in the new working arrangements.

On the other hand, the increase in employment opportunities in the long run as an effect of AI can be explained through four phenomena which are as follows: *First*, the productivity effect, whereby cost savings generated by deployment of AI technologies increase consumer demand triggering the demand for labour for performing non-automated tasks; *Second*, the capital accumulation effect, whereby automation surges the capital intensity of production in turn resulting in the accumulation of capital ultimately, raising the demand for labour in tasks where AI and human labour work complementarily; *Third*, the deepening of automation, whereby the use of AI technologies increases the productivity of existing machines, boosting the productivity effect and further creating a surge in the demand for labour; and *Fourth*, the generation of new high-productivity, labour-intensive tasks in the long run which counteract the initial displacement effect.

Furthermore, and more importantly so, revamped labour legislations and AI regulations will play a pivotal role in ascertaining how the introduction and advances of new technologies such as artificial intelligence will impact the levels of employment, quality of the jobs, and industrial relations that it will affect. The force of the law in the form of relevant labour legislations, collective bargaining and trade unions must play a fundamental role if the development of AI in the industrial sector is to take place in a way that respects the human dignity and the rights of

workers. These aspects are, however, under-researched and relatively unexplored.³⁴

V Artificial Intelligence And The Future Of Labour Law

It although is true that labour legislations are primarily protective in nature with their chief aim being the strengthening of position of the worker or employee on the labour market or in the course of the employment relationship. This nevertheless, is not all that such legislations do.³⁵ They also provide employers with extensive powers to manage their workforce and create a hierarchical structure of control of employers over employees, by providing assignment, directive, monitoring and sanctioning powers to the former.³⁶ As can be drawn from the very definition of “industry” from Section 2(p) of the Industrial Relations Code 2020, the term refers to “any systematic activity carried on by co-operation between an employer and worker”.³⁷

As believed by numerous scholars, the introduction of artificial intelligence in the industrial sector would lead to collective dismissals, a matter forming the subject matter of profuse international as well as national regulations. These legislations require information and consultation procedures to be followed before mass redundancies can be made for “technological reasons”. Similar provisions are envisioned by the ILO Termination of Employment Convention 1982 with the aim of creating measures “*to avert or to minimise the terminations*” and “*to*

³⁴ *Supra* note 6.

³⁵ *Ibid.*

³⁶ International Labour Organization, “The Employment Relationship”, Report V Of The International Labour Conference, 95th Session (2006).

³⁷ The Industrial Relations Code 2020, No. 35, Acts of Parliament, 2020 (India), Sec. 2(p).

mitigate the adverse effects of any terminations on the workers concerned, such as finding alternative employment".³⁸

It needs to be mentioned here that India has neither ratified this Convention nor has, at least at present, any legislative measure in place in this respect. However, 'workers' and 'employees' are not protected per se from such mass retrenchments. A reference to Section 2(zh) of the Industrial Relations Code 2020 defining "retrenchment" would show that "termination by the employer of the service of a worker" can be "for any reason whatsoever". The section provides certain exceptions, none of them extending to terminations made on technological grounds.³⁹

Furthermore, the Supreme Court in *State Bank of India v. Shri Sundara N. Money*⁴⁰, has adopted the literal meaning of the term retrenchment to hold that the definition provided under Section 2(oo) of the Industrial Disputes Act 1947 is comprehensive and exhaustive. Accordingly, the expression "for any reason whatsoever" used therein was very wide admitting practically no exceptions, other than those expressly specified. It can, therefore, be concluded that retrenchments can even be made for technological reasons. Furthermore, Indian labour laws are still archaic in the sense that industrial establishments with less than fifty workers employed in the preceding calendar month on an

³⁸ Termination of Employment Convention 1982, No. 158, International Labour Organization, 1982, Arts. 13, 14.

³⁹ The Industrial Relations Code 2020, No. 35, Acts of Parliament, 2020 (India), Sec. 2(zh).

⁴⁰ 1976 AIR 1111.

average per working day are still not liable to compensate workers who have been laid-off.⁴¹

With the advent of AI technologies in the labour market, a need for protective laws would naturally arise in order to ensure that workers are not retrenched in huge numbers without sufficient cause and notice. Trade unions will need to play a particularly important and active role in ensuring the same. They can further advocate technical training and skill-development programmes for employees so that they can be retained even after the introduction of AI.

Moreover, there are concerns about the well-being of labourers and the broader work environment attached to the idea that AI may soon become the most pervasive element in the workplace and consequently, undermine the position of humans therein. Even after AI being capable of performing some highly cognitive tasks, any industry would nevertheless be, dependant on humans to carry out certain tasks. Hence, the impact of AI on the industrial sector is likely to manifest itself in the form of reorganisation of jobs within an occupation. AI can play a significant role in facilitating human-machine collaboration by assisting workers in performance of physically demanding tasks, while allowing them to leverage their uniquely human abilities, hence, promising to generate overall productivity gains through enhanced efficiency and minimisation of costs. The same AI can, however, also entail much

⁴¹ The Industrial Relations Code 2020, No. 35, Acts of Parliament, 2020 (India), Sec. 65 r/w 67.

dreaded risks for employment if it is deployed with the singular motive of cutting costs.⁴²

When we speak of labour cost being the core consideration of 'machine replacing man', we necessarily presume that the enterprise is looking at both technical feasibility as well as economic feasibility. For AI technologies, two types of costs must be accounted for: the initial cost for AI manufacturer and the transition cost for the application of AI technology by replacing traditional modes of production, the second being directly proportional to the first. More the initial cost, at more value will the final product be priced. These costs are now to be weighed against the labour costs. If the costs of AI are comparatively higher than the employment cost of labour, then the application of artificial intelligence technologies will be delayed. However, if labour costs exceed the costs incurred in developing and applying AI technologies, the replacement will be accelerated. The role of labour laws and labour protection here seems obvious. If the labour market is rigid and its laws too strict in favour of protection of rights of labourers, artificial intelligence will replace employment quickly. Already, the cost of labour laws and policies have long been incentivising employers to escape from the formal labour relations. Provisions emphasizing on increase in worker benefits such as a minimum wage policy, excessive protection against firing of employees will only hasten the process of labour replacement. Thus, the reduction of labour costs and increasing labour

⁴² Marguerita Lane and Anne Saint-Martin, "The impact of Artificial Intelligence on the labour market: What do we know so far?", OECD Social, Employment and Migration Working Papers, No. 256, 2021, pp. 4, 17.

market flexibility are the issues labour law must deal with in the era of artificial intelligence.⁴³

In addition, labour laws must also emphasize the need to re-skill or up-skill workers, by promoting acquirement of AI-related skills for jobs that are complementary to human labour but will require such skills or of social intelligence and critical thinking skills where humans can outshine AI so as to make them capable of adapting to the reorganisation of tasks and the emergence of new tasks led by the introduction of AI into the industrial sector.⁴⁴ Currently, our labour regulations do not govern adaptation of workers to the development of AI and are hence, unsuited for application in the new working arrangements. As such, labour laws should act as a force against mass displacement and retrenchment of workers and as far as possible, displaced employees should be deployed, after such training, in new jobs that would emerge post the induction of AI in the industrial setup. Where, however, termination of service-contract becomes unavoidable, attractive voluntary retirement plans and packages should be offered as had been introduced in Coal India for coal mine workers. The employer should also be charged with the responsibility to provide for some severance compensation which would be sufficient for the laid-off worker during the transition period.⁴⁵ Furthermore, Chapter IV (Employees State Insurance Corporation) of the Code on Social Security, 2020 may be so amended as to provide for the employer to make adequate contribution

⁴³ Yujie Zhang, "The Impact of Artificial Intelligence on China's Labor Legislation" 2(3) *IJFS* 28(2020).

⁴⁴ *Supra* note 43.

⁴⁵ S.K. Datta, "Automation and Industrial Relations: Implications for Employment, Utilisation and Deployment of Workforce" 25(3) *Indian Journal of Industrial Relations* 272 (1990).

to the insurance fund to support the worker during this transition period.⁴⁶

It is beyond any doubt that the world of AI technologies is on the rise hence, requiring labour law to distinguish clearly between human workers and non-human workers. Law makers will thus, be faced with the question of determination of machine hours and man hours in order to avoid wage discrimination owing to the advent of AI. Rules 20 to 25 of the Minimum Wages (Central) Rules 1950 to the Minimum Wages Act 1948 explain man hour as the working hour provided for an adult that shall not exceed beyond nine hours a day. However, machine hours have nowhere been discussed about. Therefore, such necessary amendments will have to be made as would provide for a proper wage determination and work classification for human workers and AI based workers.⁴⁷

The advent of AI has the potential to bring with it unexpected fallouts, making it extremely important to create a social safety net capable of mitigating adverse impacts of automation on the workers.⁴⁸ Hence, another urgent need would be the devising of a comprehensive social security mechanism, since it may not always be possible to retrain employees so as to ready them for newly emerging jobs. It would be pertinent to mention here that the social security systems in India, and in most other countries have evolved to provide for social security benefits such as pensions, sickness benefits, paid holidays, etc. by and for the workers- linking them inextricably to the variable of employment.

⁴⁶ Sunil Kumar Srivastava, "Artificial Intelligence: way forward for India" 15 *JISTEM* 16(2018).

⁴⁷ Bensha C. Shaji and Angel Shaji, "Artificial Intelligence and its Impacts on Indian Employment" 4(1) *IJLMH* 150 (2021).

⁴⁸ Abishek Nippani, "Automation and Labour in India: Policy Implications of Job Polarisation pre and post COVID-19 crisis", available at: <https://osf.io/preprints/socarxiv/h9gaw/> (last visited on October 20, 2021).

Even the Code on Social Security 2020 requires the ‘employment’ of seeker of benefits such as gratuity, insurance, provident fund, etc. to open up his right to the sought benefit. As a result, it fails to factor in the hypothesis of a future where a significant portion of the society would be unemployed due to technological advances associated with the fourth industrial revolution. This forces us to reconsider the way employment so centrally features in our social security legislations. Articulating solutions like a universal assistance system or an unconditional basic pay would ensure a socially responsible robotization processes.⁴⁹

Social security measures in India, until the enactment of the Code on Social Security 2020, were available only to employees falling under the organised sector which accounts for just about 10% of the total workforce in India. A vast majority was left uncovered leaving them at such margins that even a single contingency would push them into poverty. In this context, the Code of 2020 is a forward-looking move since it aims to, as also its preamble suggests, “*extend social security to all employees and workers either in the organised or unorganised or any other sectors*”⁵⁰.

In this context, even collective bargaining may play a significant role. What remains to be seen is how? Can trade unions or employees’ representatives force the employer to deploy only a limited number of industrial AI technologies? Will employers be able to replace the work of human workers with these AI technologies in case of strikes by or absence of human workers? These questions, along with many another,

⁵⁰ The Code on Social Security 2020, No. 36, Acts of Parliament, 2020 (India), Preamble.

are awaiting legislative response so that a reasonable balance can be struck.⁵¹

The key to avoid artificial intelligence from impacting the labour market negatively is to analyse the existing legal framework and policies pertaining to labour relations from the point of view of labour cost and to amend the provisions which invariably increase labour costs. This assertion is based on the reasoning that the scale and pace with which employment will be affected by AI will depend largely upon the labour cost for an employer in an enterprise. Excessively high labour costs are naturally bound to act as a catalyst in the rupture by AI of human labour relations by speeding up the replacement of human labour by artificial intelligence powered technologies thereby, adding instability to the labour market. Also, future-oriented labour legislations should be enacted so that the impact of AI on labour markets can be managed well.⁵²

VI Conclusion

Technological progress being an evolving process, would essentially fluctuate employment from time-to-time but would ultimately improve the quality and quantity of employment as a whole. Hence, adopting a micro point of view, introduction of artificial intelligence may result in mass replacement of labour force. Nonetheless, if a macro view is put into perspective, AI will result in creation of new jobs and employment arenas. In essence, the impact of artificial intelligence on employment is

⁵¹ Dan Top, "Artificial Intelligence and the Future of Labour Law" 8(2) *Acta Universitatis Sapientiae: Legal Studies* 247 (2019).

⁵² Yujie Zhang, "The Impact of Artificial Intelligence on China's Labor Legislation" 2(3) *IJFS* 25 (2020).

a double-edged sword. Induction of AI will inevitably, at the initial level, prove to be disruptive to employment. Alternately, it will improve manifold labour and capital productivity and thereby, have the effect of generating jobs.

Also, as the researchers at OECD have pointed out, the goal of machine automation is not to replace existing jobs, but rather, to improve work efficiency, essentially, forming new types of work tasks. Hence, labour law should be used as a tool to determine the course of the obvious changes the AI has already brought about or will bring about in the industrial sector.

Replacement of human workers with AI technologies is no longer a question of if, but rather, a question of when and how. It is not anymore just a theoretical discussion, instead a reality. Dystopian conditions may ensue if labour law fails to keep step with technological advancements in AI or fails to consider the needs and rights of human workers in the coming age. A well-framed legislative framework for AI-human interaction in the industrial setup may, on the contrary, herald a bright future.

A key takeaway from the above discussion would be that even though AI will contribute tremendously to development in numerous and rather unconventional ways, it would be naive not to account for its potential risks that emerge from India's socio-economic context such as the large-scale displacement of workers. As accurately pointed out by Attorney General of the United States, Robert F. Kennedy in 1964, *"Automation provides us with wondrous increases of production and information, but does it tell us what to do with the men the machines*

displace?"⁵³ Hence, labour laws must not steer clear of such issues but instead deal with them by providing adequately for the protection of labour rights in the light of such deleterious possibilities.

Unifying the two contrasting perspectives, the doomsayer's perspective on one hand and a rather optimistic perspective on the other hand, it can be concluded that even though artificial intelligence will, in most certainty, impact the industrial market, in ways which can only be anticipated as of now, it will not necessarily produce large-scale unemployment. However, considering that artificial intelligence is only in its infancy stage, lawmakers are presented with a great opportunity to clearly define its structure, functioning and challenges as a framework so that it can later be implemented in the industry without any legal and social barriers. Such formulation, despite being a huge challenge because of AIs currently unmeasurable obstacles, is indeed a necessity.

⁵³ Kennedy RF, "Welcoming remarks to the opening session of the Interfederal Assembly of Pax Romana", US Department of Justice, Washington, DC, 1964, *available at*: <https://www.justice.gov/sites/default/files/ag/legacy/2011/01/20/07-20-1964.pdf>, (last visited on October 3, 2021).