The Future of Indonesian Employment: Legal Protection and Effectiveness for Workers in Facing AI Transformation

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How to Cite:
Anisah, Nur Fadiah, Septy Amelia Handayani, R. Wahjoe Poernomo, Desak Andini Parameswari, Manggala Nimara Sogi, and Lisa. 2025. "The Future of Indonesian Employment: Legal Protection and Effectiveness for Workers in Facing AI Transformation". *Shautuna: Jurnal Ilmiah Mahasiswa Perbandingan Mazhab* 6 (2) ; 286-303. https://doi.org/10.24252/shautuna.v6i2.56577.

Abstract

In the current digital transformation era, many industrial companies are competing to utilize sophisticated technology based on Artificial Intelligence (AI) as a form of digital automation to replace repetitive tasks that aim to reduce dependence on human workers and budget efficiency for companies. This study focuses on the problem of the presence of AI replacing the role of workers because competition is no longer limited to humans between humans, but must also compete with the sophistication of AI technology that is increasingly rapid and in greater needed by companies. This study aims to see how well the Indonesian employment law system is able to handle the challenges of the automation era, which has become an urgent reality and is no longer predictable. This study was compiled using a qualitative method with a literature study approach that aimed to build a critical analysis of digitalization and its impact on employment and industrialization policies. The results of this study showed that digital technology would not deterministically shape a new future, but the choices and logical consequences of a digital work pattern model that was different from the old pattern. The response to industrialization policies in the digital era must be able to answer the wave of disruption for the workforce. Policies in the aspect of education and training for affected workers are an urgency that cannot be ignored in the era of industrial automation.
Keywords: Employment; Legal Protection; Workers; Artificial Intelligence.

Abstrak

Pada era transformsi digital saat ini, banyak perusahaan industri berlomba-lomba memanfaatkan kecanggihan teknologi berbasis Artifical Intelligience atau AI sebagai bentuk otomotisasi digital dalam menggantikan tugas-tugas repetitif yang bertujuan untuk mengurangi ketergantungan pada tenaga manusia dan efisiensi anggaran bagi perusahaan. Penelitian Ini berfokus pada permasalahan kehadiran AI yang dapat menggantikan peran pekerja karena persaingan tidak lagi hanya sebatas manusia antar manusia tetapi juga harus bersaing dengan kecanggihan teknologi AI yang semakin pesat dan lebih dibutuhkan bagi

perusahaan. Penelitian ini bertujuan untuk melihat seberapa baik sistem hukum ketenagakerjaan Indonesia mampu menangani tantangan era otomatisasi yang telah menjadi kenyataan yang mendesak dan tidak lagi dapat diprediksi. Penelitian ini disusun dengan metode kualitatif dengan pendekatan studi pustaka yang bertujuan untuk membangun analisis kritis tentang digitalisasi dan dampaknya terhadap ketenagakerjaan dan kebijakan industrialisasi. Hasil studi ini menunjukan bahwa teknologi digital tidak akan secara deterministik membentuk masa depan baru tetapi pilihan-pilihan dan konsekuensi logis dari model pola kerja digital yang berbeda dengan pola lama. Respons kebijakan industrialisasi di era digital harus mampu menjawab gelombang disrupsi bagi tenaga kerja. Kebijakan dalam aspek pendidikan dan pelatihan bagi tenaga kerja terdampak merupakan urgensi yang tidak dapat diabaikan di era automasi industri.

Kata Kunci: Ketenagakerjaan; Perlindungan Hukum; Pekerja; Artificial Intelligence.

Introduction

Rapidly developing technology has brought about major changes in various aspects of human life, including the way we think, work, and interact.[1] One of the most significant achievements of this development is the emergence of Artificial Intelligence (AI), which allows machines to imitate human intelligence in various forms.[2] AI is no longer just a futuristic concept but has become an inseparable part of modern life, ranging from industrial automation, data analysis, to decision-making that previously could only be done by humans. However, behind all the progress offered, the development of AI also raises big questions about its impact on the workforce, ethics, and the limits of human control over the technology it creates. Not only that, AI has penetrated almost every aspect of human life at a speed that is not always balanced by social, economic, and legal readiness.[3] Its ability to process data on a large scale and make complex decisions has not only changed the way humans work and interact but also led humans to deeper dependence without clear control over its long-term impacts.

The main problem that arises is the unpreparedness of employment law regulations in Indonesia in anticipating the impact of this technological disruption. The existing Employment Law still focuses on the traditional paradigm that has not accommodated new issues such as termination of employment due to automation, the loss of certain types of jobs, and the absence of company obligations in reskilling and upskilling affected workers. This shows a gap between the reality of industrial transformation and the ideality of the

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[1] Ade Fricticarani et al., "Strategi Pendidikan Untuk Sukses Di Era Teknologi 5.0," *Jurnal Inovasi Pendidikan Dan Teknologi Informasi (JIPTI)* 4, no. 1 (2023): 56–68, https://doi.org/10.52060/pti.v4i1.1173.

[2] Zamzam Mustofa et al., "Pengaruh Penerapan Artificial Intelligence Pada Kehidupan Masyarakat Di Indonesia," *Lisyabab : Jurnal Studi Islam Dan Sosial* 4, no. 1 (2023): 106–16, https://doi.org/10.58326/jurnallisyabab.v4i1.184.

[3] Lalu Adi Adha, "Digitalisasi Industri Dan Pengaruhnya Terhadap Ketenagakerjaan Dan Hubungan Kerja Di Indonesia," *Journal Kompilasi Hukum* 5, no. 2 (2020): 267–98, https://doi.org/10.29303/jkh.v5i2.49.

employment law system, which should be adaptive and protective. Ideally, the employment law system is able to anticipate structural changes due to AI by providing comprehensive protection for affected workers, as well as encouraging collaboration between the state, industry, and educational institutions in designing an integrated national reskilling strategy. However, in reality, the government's approach still tends to be reactive and does not yet have a clear roadmap for responding to automation.

According to the McKinsey Global Institute report (2017), automation has the potential to replace up to 800 million jobs globally by 2030, indicating that this technological transformation is not without social risks.[4] Therefore, adaptive and socially just regulations are needed to prevent the negative impacts of uncontrolled AI implementation. Based on a survey conducted by the WEF (2020), it is estimated that by 2025, at least 80% of companies worldwide will adopt AI, which includes machine learning and natural language processing.[5] This fact not only shows the benefits of AI but also reveals the bitter reality that many jobs will be affected. The impact is not only replacing human workers but also creating great uncertainty about the future of the world of work. The decrease in working hours, decrease in income, and horizontal and vertical shifts in the workforce are proof that AI is not just a tool for innovation but also a tool for changing the economic structure, which does not always favour workers. The uncontrolled application of AI has forced the workforce to adapt to changes in tasks and skills that are often not supported by adequate investment in education or vocational training.[6] Instead of bringing prosperity to all, AI actually further emphasizes the gap between those who are ready for technology and those who are marginalized due to non-inclusive development.

In accordance with Article 27, Paragraph (2) of the 1945 Constitution of the Republic of Indonesia, which in its mandate states that every human being has the right to decent

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[4] Komang Jaka Ferdian, Dodi Faedlulloh, and Ibrahim Ibrahim, "Birokrasi, Disrupsi, Dan Anak Muda: Mendorong Birokrat Muda Menciptakan Dynamic Governance," *Jurnal Transformative* 7, no. 1 (2021): 112–27, https://doi.org/10.21776/ub.transformative.2021.007.01.5.

[5] Ronnie S Concepcion et al., "The Technology Adoption and Governance of Artificial Intelligence in the Philippines," in *2019 IEEE 11th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management (HNICEM)*, 2019, 1–10, https://doi.org/10.1109/HNICEM48295.2019.9072725; Indira Priyadarsani Pradhan and Parul Saxena, "Reskilling Workforce for the Artificial Intelligence Age: Challenges and the Way Forward," in *The Adoption and Effect of Artificial Intelligence on Human Resources Management, Part B*, ed. Pallavi Tyagi et al. (Emerald Publishing Limited, 2023), 181–97, https://doi.org/10.1108/978-1-80455-662-720230011.

[6] Kristin Handayani, "Strategi Adaptif Untuk Mempertahankan Tenaga Kerja Di Era Society 5.0: Menghadapi Tantangan Cobot," *Jurnal Penelitian Multidisiplin Bangsa* 1, no. 3 (2024): 185–200, https://doi.org/10.59837/jpnmb.v1i3.50.

work.[7] In this case, the state is fully responsible for the availability of employment. However, in reality, what is expected by the constitution is far from reality. The unemployment rate is increasing, as well as regulations that are less effective and do not match field conditions. According to data obtained from the Central Bureau of Statistics, the number of unemployed people in Indonesia increased to 6.88 million people in February 2020. This proves that Indonesia is still far from prosperous. In this increasingly modern era, the role of the government is very much needed to minimize the unemployment rate in Indonesia.[8] Moreover, there are many predictions that state that the workforce will one day be replaced by AI. This prediction is no longer just discourse but a real threat that has begun to occur. If the government continues to be passive, the unemployment rate will increase and the social gap will widen. Unfortunately, until now, the regulations that protect workers are still far from optimal.

Existing regulations have only focused on worker protection without any concrete solutions.[9] This proves that Indonesia still tends to be reactive rather than proactive in facing technological disruption. If existing regulations only focus on traditional work protection without considering major changes in the world of work, then the social and economic gap will increase.[10] Slowly, human workers will be marginalized not only because they are less competitive with machines but also because there is no legal certainty that can ensure their rights and survival after losing their jobs. In addition, the lack of regulatory readiness in facing automation actually creates new uncertainty in the world of work. On the one hand, the industry will continue to develop following technological developments, while on the other hand, affected workers will find it increasingly difficult to adjust to an economic system that is no longer on their side. If this condition continues, the unemployment rate could soar sharply, not only triggering an economic crisis but also threatening social and political stability in Indonesia.

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[7] Joko Cahyono, "Force Majeure Dalam Pemutusan Hubungan Kerja Terhadap Karyawan Di Masa Pandemi Covid-19," *Dinamika Administrasi: Jurnal Ilmu Administrasi Dan Manajemen* 4, no. 1 (2021): 43–52, https://terbitan.sasanti.or.id/index.php/jda/article/view/72.

[8] Junaheni Afifah and Mirna Nur Alia Abdullah, "Kebijakan Pemerintah Dalam Membangun Ketenagakerjaan Yang Berkelanjutan Untuk Mensejahterakan Kehidupan Masyarakat," *SABANA: Jurnal Sosiologi, Antropologi, Dan Budaya Nusantara* 3, no. 2 (2024): 84–92, https://doi.org/10.55123/sabana.v3i2.3306.

[9] Muhammad Junaidi and Khikmah Khikmah, "Perlindungan Hukum Dan Penempatan Pekerja Migran Indonesia Di Luar Negeri," *JURNAL USM LAW REVIEW* 7, no. 1 (2024): 490–501, https://doi.org/10.26623/julr.v7i1.8127.

[10] Imam Zaenudin and Ade Bani Riyan, "Perkembangan Kecerdasan Buatan (AI) Dan Dampaknya Pada Dunia Teknologi," *Jurnal Informatika Utama* 2, no. 2 (2024): 128–53, https://doi.org/10.55903/jitu.v2i2.240.

Unlike previous articles that generally discuss Artificial Intelligence (AI) in a general context, such as technological progress, industrial efficiency, or the potential for digital innovation, this study specifically places the issue of AI within the framework of employment law. Previous articles tended to focus on the technical aspects and developments of the technology itself without paying adequate attention to the fate of workers who were directly affected by automation. As a result, the legal dimension, especially regarding legal certainty, protection of rights, and the responsibilities of the state and companies towards workers who are replaced, is often overlooked. This study is here to fill this gap by providing a special focus on how the Indonesian employment law system must respond to the digital transformation that threatens the sustainability of human jobs. Not only discussing the impact of automation in general, this article explicitly prioritizes protection for workers by emphasizing the importance of regulatory updates so that workers' rights remain guaranteed amidst the wave of technological change. With a legal and comparative approach, this study positions itself as a relevant and urgent legal contribution in facing the era of digital disruption.

Therefore, the development of Artificial Intelligence (AI) in the world of employment is not only a technological transformation but also a phenomenon that has a broad impact on economic and social stability. Although AI offers efficiency and innovation, its application raises serious challenges, especially in terms of the uncertainty of the future of the workforce, increasing unemployment rates, and widening social disparities. If not anticipated with the right policies, AI-based automation can accelerate economic polarization and worsen injustice in access to jobs. Thus, there needs to be collective awareness that this technological revolution is not only about progress but also about how to ensure that its benefits can be felt evenly without sacrificing worker rights and social welfare itself.

This study aims to formulate the main problems related to the effectiveness of legal protection for workers in facing the AI transformation in Indonesia. The focus of this study is how the current regulatory system responds to digital disruption and how future legal strategies can be formed to be able to answer the challenges of the Industrial Revolution 5.0 inclusively and sustainably. The novelty of this study lies in the critical analysis of the regulatory vacuum in the Indonesian employment law system amidst the massive AI transformation and in the offer of solutions based on global policy comparisons that have been successfully implemented in other countries such as Germany, Singapore, and Sweden. The urgency of this research is very high considering the increasing adoption of AI in the world of work, which is inversely proportional to legal protection for affected workers. Without a

rapid and structured policy response, Indonesia is at risk of facing high structural unemployment rates that can disrupt national economic and social stability.

Research Methods

This research employed a normative legal method with an analytical and conceptual approach. The analytical approach was used to examine the effectiveness of applicable positive legal norms related to worker protection in the era of Artificial Intelligence (AI)-based technological transformation, while the conceptual approach is used to explore legal ideas that develop in academic literature and public policy. The data sources included primary, secondary, and tertiary legal materials. Primary legal materials included relevant national and international laws and regulations (e.g., the Employment Law, data protection regulations, and AI policies). Secondary legal materials were obtained from academic literature, indexed scientific journal articles, and research results from research institutions. Meanwhile, tertiary legal materials included legal dictionaries, encyclopedias, and legal bibliographic indexes.

The data collection technique was carried out through library research by conducting an inventory and classification of relevant legal materials. All data were collected systematically based on the categories of themes and issues of employment law that arose due to the integration of AI technology in industrial relations. The data processing process was carried out through data reduction techniques to filter relevant information, then arranged thematically and chronologically according to the focus of the study. Furthermore, the data was analyzed qualitatively-descriptively, namely by interpreting legal norms, comparing relevant legal theories, and evaluating applicable legal practices and policies in a global and national context.

Results and Discussion

1. AI and Employment Disruption in Indonesia

Technological developments have now become an inseparable part of human life. All aspects of life have been affected by technological developments, ranging from education, government, health, to the employment sector, especially in the industrial sector.[11] Rapid technological transformation has had a significant impact on industry players, both in terms

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[11] A Syifa Syarifah and Ade Kusuma, "Globalisasi Sebagai Tantangan Identitas Nasional Bagi Mahasiwa Surabaya," *Global and Policy Journal of International Relations* 4, no. 2 (2016): 61–72, https://doi.org/10.33005/jgp.v4i02.1917.

of opportunities and challenges. One of the biggest innovations of this development is the emergence of Artificial Intelligence (AI), which is slowly changing the work structure and role of human resources in various sectors.[12] In the era of digitalization, employment dynamics are inseparable from environmental changes that demand fundamental transformations in work patterns and organizational structures. Employees, managers, and organizational leaders must continue to adapt to fast-moving and often unpredictable technological disruptions.[13] However, readiness to face these changes is uneven, creating a wider gap in competency and access to job opportunities. In addition, uncertainty due to technological disruption and the global economy can lead to workforce instability, giving rise to new challenges such as increasing contract-based work, exploitation of digital workers, mass layoffs, and decreasing certainty of worker welfare.

In Indonesia, the dynamics of employment are at the crossroads between technological advances and social challenges. Although automation and digitalization have not completely replaced human workers, signs of workers' exploitation are beginning to appear, especially in the form of job uncertainty, flexible but uncertain working hours, and high productivity pressures. Many companies implement digital-based work systems under the pretext of efficiency and innovation, but without adequate protection for workers.[14] As a result, worker rights such as wage certainty, social security, and legal protection are increasingly eroded. This phenomenon creates an increasingly exploitative workers landscape where human workers are forced to adapt to technological developments without clear regulations to ensure their welfare. This statement was then supported by the Chairman of the Working Council of Siemens AG Dusseldorf, Germany, Mimon Uhamou, CEO of Bahaso, Tyovan Ari Widagdo, and CEO of Daily Social, Rama Mamuaya, who, in the Labour 4.0 seminar: "Digital Economy and its Implications for Employment" in Jakarta, both agreed that the implications of the massive use of Artificial Intelligence will reduce the number of workers and threaten a number of professions.[15] Uhamao from Siemens said that the 4.0 revolution

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[12] Yeni Nuraeni, "Analisis Terhadap Undang-Undang Ketenagakerjaan Indonesia Dalam Menghadapi Tantangan Revolusi Industri 4.0," *Jurnal Ketenagakerjaan* 15, no. 1 (2020): 1–12, https://doi.org/10.47198/naker.v15i1.47.
[13] Debora Silvia Hutagalung, "Transformasi Digital Dan Integrasi Kecerdasan Buatan Dalam Manajemen Strategis: Analisis Dampak Dan Strategi Adaptasi Di Era Disrupsi," *OPTIMAL Jurnal Ekonomi Dan Manajemen* 5, no. 2 (2025): 293–301, https://doi.org/10.55606/optimal.v5i2.5885.
[14] Putri Kareena Nugis and Diah Ayu Sanggarwati, "Implementasi Strategi Inovatif Manajemen Sumber Daya Manusia Dalam Adaptasi Terhadap Era Digital (Studi Kasus PT. Mitra Tata Kerja)," *JOURNAL OF ECONOMICS, BUSINESS, MANAGEMENT, ACCOUNTING AND SOCIAL SCIENCES* 2, no. 4 (2024): 195–205, https://doi.org/10.63200/jebmass.v2i4.134.
[15] Nurdianita Fonna, *Pengembangan Revolusi Industri 4.0 Dalam Berbagai Bidang* (Guepedia, 2019).

that will replace the previous industrial revolution requires smart factory operations, smart services, and innovative products. There are at least 15 professions that are most affected by the Industrial Revolution 4.0, including machine operators, engineering planners, and maintenance operators. Tyovan, the Founder and CEO of Bahaso, also reminded several professions that will disappear when artificial intelligence is increasingly used massively, such as accountants and factory operators, to several types of experts who will be used with artificial intelligence expert systems.[16] He also emphasized that several jobs of doctors and journalists are starting to be done by Artificial Intelligence systems, even online media editors in the US have been replaced by systems with artificial intelligence. Meanwhile, the World Economic Forum (WEF) predicts a reduction in the number of workers of 5 million people before 2020 as a result of automation in the industrial world.

Digitalization and automation not only have negative impacts on the workforce but also become a tool for companies to avoid their obligations to workers.[17] Technological innovation cannot be used as an excuse to ignore workers' rights, but must be a momentum to create more adaptive and protective regulations. The potential loss of jobs requires concrete steps to create new jobs that are in line with the times. Reduction in the workforce due to automation cannot be used as a justification for companies to further suppress the rights of remaining workers. The industrial revolution 4.0 presents smart factories and smart services, so that the welfare of the workforce must also increase, not decline. The government cannot sit idly by and be a spectator in the flow of digitalization that increasingly benefits capital owners while workers are victims of efficiency that leads to exploitation. If automation is truly aimed at increasing productivity, then the impact should not only be in the form of cutting the workforce but also increasing the welfare of workers in the form of decent wages and more humane working hours. The narrative of the digital economy that only focuses on profit and efficiency without considering workers' rights is a form of structural inequality that widens the gap between capital owners and workers. The government must act decisively by ensuring that technological transformation is not merely a tool for accumulating profits for a handful of economic elites but also an instrument for creating a fair, sustainable, and human welfare-oriented work ecosystem.

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[16] Manerep Pasaribu, "Artificial Intelligence: Perspektif Manajemen Strategis," 2022.
[17] Yunita Althin Natanael et al., "Dampak Digitalisasi Pada Profesi Akuntansi: Tantangan Dan Peluang Bagi Akuntan Masa Depan," *Mandiri : Jurnal Akuntansi Dan Keuangan* 4, no. 1 (February 2025): 1–15, https://doi.org/10.59086/jak.v4i1.593.

2. Analysis of Legal Regulations in Addressing AI Transformation in Indonesia's Employment Sector

The development of Artificial Intelligence (AI) increasingly exposes the weaknesses of Indonesia's employment law system, which is still trapped in outdated regulations and fails to anticipate the major impacts of automation. Recent studies show that around 23% of jobs in the formal sector are at high risk of automation in the next five years, especially in administration, production, and customer service. However, the existing Employment Law does not adequately regulate worker protection mechanisms in the face of this digital transformation. Article 164 concerning layoffs due to efficiency only applies to cases of company closures, but does not touch on the fate of workers who are replaced by AI. In other words, the Employment Law in Indonesia is not only slow but also tends to allow companies to arbitrarily utilize technology without clear social responsibility.

If analyzed more deeply, the Employment Law in Indonesia is still unable to respond to the major challenges posed by AI. One of the main weaknesses is the absence of an operational definition of "jobs lost due to automation." This causes ambiguity in the protection of affected workers, both in the context of layoffs and in their career transition efforts. For example, Article 164 of the Employment Law regulates layoffs due to efficiency, but only in the scenario of company closure, and does not cover structural changes due to digital transformation. Thus, companies that reduce their workforce due to automation do not have a clear legal obligation to provide compensation or transition support to affected workers. In addition, current regulations do not require companies to provide retraining (reskilling) and skills improvement (upskilling) programs for workers whose jobs are affected by AI. The Indonesian Center for Law and Policy Studies (2023) shows that the majority of companies in Indonesia prefer to provide severance pay to workers who are laid off rather than investing funds in retraining. This proves that the incentive system in regulations is still weak and fails to encourage businesses to invest in developing workforce skills. If this condition continues, Indonesia is at risk of facing a spike in structural unemployment and falling further behind in global labor competition.[18]

Some countries have been much more advanced in responding to the impact of AI on the employment sector, while Indonesia is still lagging behind with minimal regulations and a

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[18] Aina Putri Ayu and Nikmah Dalimunthe, "Pengaruh Perubahan Teknologi Terhadap Regulasi Hukum Ketenagakerjaan," *Innovative: Journal Of Social Science Research* 3, no. 2 (2023): 5785–96, http://j-innovative.org/index.php/Innovative/article/view/901.

reactive approach. One example is Singapore, which has already implemented the SkillsFuture program, where the government provides training subsidies for individuals so that they can improve their digital skills.[19] This program has succeeded in improving the digital skills of 60% of Singapore's workforce in the last five years. In addition, Germany has implemented the Kurzarbeit model, which allows for reduced working hours with partial wage compensation from the government by providing intensive training for workers during the transition period.[20] Sweden has also developed Job Security Councils, which provide career assistance for workers affected by automation with funds from company and government contributions.

At the regional level, ASEAN countries have also begun to adopt more progressive policies.[21] For example, Vietnam has required companies with more than 100 employees to provide digital training for their workers, while Thailand has integrated AI curriculum into vocational education Looking at the proactive policies of these countries, it is clear that Indonesia is still lagging behind in building a workforce system that is responsive to technological transformation. Without more targeted and strategic policies, the Indonesian workforce will be increasingly vulnerable to AI disruption, trapped in uncertainty due to mass layoffs without a clear transition strategy.[22] Therefore, the government must stop being reactive and start designing employment policies that not only focus on post-layoff compensation but also ensure long-term investment in workforce reskilling and upskilling. Policies that have been implemented in other countries should not only be a reference but also a trigger for Indonesia to immediately carry out more adaptive and future-oriented employment reforms.

3. Case Study of AI Transformation in Indonesia's Employment Sector

The current Industrial Revolution 4.0 is marked by increasing automation that demands increased skills for workers, especially those at risk of being laid off due to their jobs being replaced by machines. According to the International Labor Organization (2017),

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[19] Adnan Adnan and Nurul Azizah, "Artificial Intelligence (Ai) Dan Masa Depan 7, 99 Juta Orang Menganggur: Kebijakan Negara Terhadap Revolusi Industri 4.0 Dan Society 5.0," *Prosiding Seminar Nasional Unars* 3, no. 1 (2024): 10–17, https://unars.ac.id/ojs/index.php/prosidingSDGs/article/view/4707.

[20] Eliza Della Kanaya Della Kanaya et al., "Perlindungan Hukum Bagi Buruh Yang Di Phk Akibat Otomatisasi Di Era Revolusi Industri 4.0 Berdasarkan Undang-Undang Cipta Kerja," *Prosiding Serina* 1, no. 1 (2021): 919–28, https://doi.org/10.24912/pserina.v1i1.17505.

[21] Montayana Meher et al., "Akibat Hukum Perjanjian Perdagangan Bebas Di Asean Indonesia-Malaysia," *Jurnal Ilmiah Penegakan Hukum* 11, no. 1 (2024): 81–94, https://doi.org/10.31289/jiph.v11i1.11993.

[22] Oemar Attallah et al., "Optimalisasi Kebijakan Ketenagakerjaan Untuk Mengatasi Dampak PHK Massal Dan Meningkatkan Perlindungan Pekerja," *Media Hukum Indonesia (MHI)* 2, no. 4 (2024): 643–54, https://ojs.daarulhuda.or.id/index.php/MHI/article/view/955.

around 56% of jobs are at risk of being lost due to automation and the use of robots, which pose a serious threat to the sustainability of workers, especially laborers.[23] The phenomenon of automation is increasingly evident, along with advances in Artificial Intelligence (AI) technology that allows machines to think like humans and is even able to match the performance of the human brain in various aspects. A study conducted by Oxford University students revealed that around 47% of current human jobs have the potential to be replaced by AI.[24] Putri Dwima Ernis and Fadli Firdaus (2022) provided real examples of the impact of automation on employment.[25]

Changying Precision Technology Company, a company in Dongguan, decided to drastically reduce its workforce and replace them with robots in order to increase production efficiency. As a result of this policy, 90% of workers lost their jobs, while the use of robots has been proven to increase company productivity by up to 250% compared to human workers.[26] This is in line with research from Oxford University, which revealed that around 47% of the work currently done by humans has the potential to be replaced by Artificial Intelligence or AI.[27] One real example of the impact of this automation is seen in Changying Precision Technology Company in Dongguan City, which decided to lay off most of its workers in order to increase production efficiency. 90% of the workforce in the company was laid off, and their positions were replaced by robots.[28] As a result, only around 60 human workers remain with the main task of overseeing the operation of production machines.

This change has been proven to significantly increase productivity. Before automation, the company was only able to produce around 8,000 mobile phones per month. However, after using robots, production volumes jumped to 21,000 units in the same period. In addition, the level of product defects has also decreased drastically. Previously, around 25%

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[23] Fuat Edi Kurniawan and Norman Luther Aruan, "Digitalisasi Dan Pola Kerja Baru: Dampak Bagi Industrialisasi Dan Respons Kebijakan Ketenagakerjaan," *Jurnal Sosioteknologi* 20, no. 3 (2021): 395–409, https://journals.itb.ac.id/index.php/sostek/article/view/15361.

[24] Sri Adiningsih, *Transformasi Ekonomi Berbasis Digital Di Indonesia: Lahirnya Tren Baru Teknologi, Bisnis, Ekonomi, Dan Kebijakan Di Indonesia* (Gramedia Pustaka Utama, 2019).

[25] Putri Dwima Ernis and Padli Pirdaus, "Dampak Teknologi Artificial Intelligence Pada Profesi Akuntansi," *EKOMA: Jurnal Ekonomi, Manajemen, Akuntansi* 2, no. 1 (2022): 131–37, https://doi.org/10.56799/ekoma.v2i1.1154.

[26] Adha, "Digitalisasi Industri Dan Pengaruhnya Terhadap Ketenagakerjaan Dan Hubungan Kerja Di Indonesia."

[27] Ita Hartati, "Strategi Pembangunan SDM Kementerian Keuangan Republik Indonesia Dalam Menghadapi Tantangan Era Disrupsi 4.0," *Jurnal BPPK: Badan Pendidikan Dan Pelatihan Keuangan* 13, no. 1 (2020): 109–29, https://doi.org/10.48108/jurnalbppk.v13i1.493.

[28] Afifa Yustisia Firdasanti et al., "Mahasiswa Dan Gig Economy: Kerentanan Pekerja Lepas (Freelancer) Di Kalangan Tenaga Kerja Terdidik," *Jurnal PolGov Vol* 3, no. 1 (2021): 195–234, https://doi.org/10.22146/polgov.v3i1.2866.

of products experienced production failures, but with the automation system, this figure dropped to 5%. This shows that the use of robots not only increases production volume but also reduces operational costs by minimizing production errors. The shift from human labor to machines seems to be an inevitable change. Many workers are at risk of losing their jobs due to automation, while employers are increasingly interested in using this technology for efficiency and reducing production costs. As a result, the wave of layoffs among workers is an impact that is difficult to avoid, along with the increasing development of Artificial Intelligence in the industrial world.

In Indonesia, referring to a research report conducted by McKinsey & Company in 2019, it is estimated that around 23 million jobs have the potential to be replaced by automation by 2030. The impact of this change could cause a spike in unemployment rates, considering that many workers have lost their livelihoods due to mass layoffs. As of February 2022, the open unemployment rate in Indonesia had reached 5.45% or around 7.99 million unemployed people. Meanwhile, data from the Central Statistics Agency (BPS) shows that in early 2023, the unemployment rate in Indonesia increased to 5.83%. The reduction in the workforce due to automation has not only occurred in the technology sector but has also spread to the public service sector. An investigation conducted by Reform, a think tank focused on public services, revealed that in Whitehall, England, as many as 90% of the 137,000 administrative staff are expected to be replaced by intelligent robot technology by 2030. This replacement is projected to be able to save operational costs of up to 2.6 billion pounds, or equivalent to around 43.6 trillion rupiah.

Based on data from the Indonesian Banking Workers Union Network from 2016 to the end of 2018, as many as 50,000 banking employees were laid off due to the impact of digitalization in the banking industry.[29] In the legal sector, Artificial Intelligence (AI) is increasingly being used, especially in the process of reviewing business contracts. AI has an accuracy rate of up to 94% and can complete contract analysis in just 26 seconds. This high speed and accuracy make AI superior to human labor in terms of efficiency and effectiveness.[30] Many entrepreneurs now prefer automation and the use of robots as

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[29] Sidi Alkahfi Setiawan, "Perlindungan Hukum Negara Terhadap Hak Warga Bekerja Di Era Digital," *JURNAL RECHTENS* 12, no. 1 (2023): 141–56, https://doi.org/10.56013/rechtens.v12i1.2030.

[30] Nabila Fitri Amelia et al., "Implementasi Artificial Intelligence (AI) Dalam Pembentukan Peraturan Perundang-Undangan Di Indonesia," *Eksekusi : Jurnal Ilmu Hukum Dan Administrasi Negara* 2, no. 1 (2023): 56–70, https://doi.org/10.55606/eksekusi.v2i1.789.

efficiency measures to reduce production costs.[31] As a result, human labor is increasingly vulnerable to layoffs, considering that robotic systems are not only able to carry out tasks previously performed by humans but are also able to produce more optimal output (Kanaya et al., 2021). If the workforce does not have additional relevant skills, the efficiency policies implemented by companies will only worsen the unemployment rate in Indonesia every year. Therefore, the role of the government is very necessary in designing strategies and policies that can improve and develop the quality of the workforce to be better prepared to face the era of automation in the midst of the Industrial Revolution 4.0. (Adnan & Azizah, 2024)

Based on data from the Indonesian Banking Workers Union Network from 2016 to the end of 2018, 50,000 banking employees were laid off due to the impact of digitalization in the banking industry (Angela, 2023). In the legal sector, Artificial Intelligence (AI) is increasingly being used, especially in the process of reviewing business contracts. AI has an accuracy rate of up to 94% and can complete contract analysis in just 26 seconds. This high speed and accuracy make AI superior to human workers in terms of efficiency and effectiveness. Many entrepreneurs now prefer automation and the use of robots as efficiency measures to reduce production costs. As a result, human workers are increasingly vulnerable to layoffs, considering that robotic systems are not only able to carry out tasks previously performed by humans but are also able to produce more optimal output (Kanaya et al., 2021). If the workforce does not have additional relevant skills, the efficiency policies implemented by companies will only worsen the unemployment rate in Indonesia every year. Therefore, the role of the government is very necessary in designing strategies and policies that can improve and develop the quality of the workforce to be better prepared to face the era of automation in the midst of the Industrial Revolution 4.0.

4. Strategy to Save the Future of Indonesian Workers

To deal with the impact of automation and Artificial Intelligence (AI) on employment in Indonesia, the government can no longer just talk without real action. Mass layoffs due to digitalization are not only a threat to the future, but if not immediately addressed with concrete policies, millions of workers will lose their livelihoods without a clear solution.[32] Rhetoric about reskilling and upskilling will mean nothing if the government and industry only make it a formality without ensuring real access for workers. Training must be available

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[31] Hendra Zulfikar et al., "Peningkatan Efisiensi Operasional Pergudangan Melalui Teknologi Canggih," *Jurnal Ilmiah Wahana Pendidikan* 9, no. 16 (2023): 393–402, https://doi.org/10.5281/zenodo.8242563.
[32] Robert W Lent, "Future of Work in the Digital World: Preparing for Instability and Opportunity," *The Career Development Quarterly* 66, no. 3 (2018): 205–19, https://doi.org/10.5281/zenodo.10936490.

massively, free of charge, and truly based on industry needs, not just a ceremonial program that only benefits the organizers. Companies that continue to pursue efficiency by replacing human workers with AI must be required to take responsibility, for example, by setting aside special funds for transition training for their employees. If they only rely on tax incentives without compelling policies, automation will remain a threat without a solution.

In addition, worker protection policies must be more aggressive. The government needs to learn from countries like Germany that implement the Kurzarbeit system, where workers affected by digitalization still receive salaries even though their working hours are reduced. In Indonesia, the existing social security system is far from ready to face the wave of automation. Unemployment insurance must be strengthened immediately, and Job Security Councils must be formed to ensure that workers who lose their jobs are not left unemployed without certainty. If the government does not act immediately, what will happen is not just an increase in unemployment but a greater social crisis due to the high number of people who will lose their source of income. Worse still, regulations in Indonesia are still too weak in anticipating the impact of AI. The Employment Law must be revised so that companies cannot arbitrarily replace workers without providing a transition solution. If companies want to replace humans with machines, they must be required to pay higher compensation or provide training programs for affected employees. Without strict regulations, companies will continue to prioritize cost efficiency at the expense of human workers. In addition, there needs to be limits on the application of AI in sectors related to public services and strategic industries. If everything is left alone, AI may take over jobs that should remain the domain of humans.

On the other hand, the narrative that AI is the future should not be used as an excuse to allow economic inequality to widen. If the government is serious about ensuring that the transition to the digital era is fair, then it must actively create new jobs in sectors that still depend on humans. The concept of human-machine collaboration must be truly implemented, not just an empty term without clear implementation. Otherwise, AI will only be a weapon for large companies to cut workers' costs while millions of workers are left to lose their livelihoods without a clear solution. Moreover, digital transformation in Indonesia must be controlled with strict regulations. The government cannot only be a facilitator for corporations that want to adopt AI without considering its effects on the welfare of the workforce. Incentives for SMEs to use technology must also be accompanied by regulations that ensure that human workers still have a place in the production system. If AI continues to take over without limits, the social inequality that arises will be increasingly difficult to

control. The government cannot only talk about technological developments without taking concrete action to protect the workforce. If there are no policies that favour workers, automation is not just a challenge but a real threat to the sustainability of the community's economy.

Conclusion

The transformation of employment due to AI-based automation not only demands regulatory revision but also challenges the legal system to shift from a reactive approach to a more preventive, transformative, and responsive approach to digital dynamics. The conventional post-loss model no longer provides legal protection for workers. To anticipate employment risks earlier, a new legal framework is needed, such as regulations based on technological risk prediction, a legal audit system for corporate automation policies, and an AI code of ethics that applies in the industry. In addition, it is necessary to build a participatory legal system where the voices of workers and workers' unions are part of the process of formulating national digital policies. Because, in the end, technological progress, regardless of its speed and sophistication, must be based on the principles of social and humanitarian justice. If the law can keep up with the times and respect the dignity of workers, automation is no longer a threat. Instead, it will be an opportunity for all of us to build a future of work that is inclusive, moral, and sustainable.

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