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Shaping the Labor Market of Vietnam in the Age of Artificial Intelligence: Comparative Insights from the European Union

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Abstract: The right to work has always been a fundamental right of human which was recorded in law documents. However, the recent development of Artificial Intelligence (AI) has created an issue that it may affect the domestic and international labor markets. In Vietnam, where over half of the population participates in the labor force, the rapid advancement of artificial intelligence (AI) is poised to significantly reshape both employment dynamics and the regulatory landscape. While AI presents opportunities to create new types of employment, it simultaneously threatens to displace existing jobs, particularly among low-skilled and vulnerable workers. Despite the growing relevance of this issue, scholarly engagement with the implications of AI for Vietnam's labor market remains sparse, especially in terms of legal and policy responses. Existing studies tend to focus on economic forecasting or technological development, with minimal attention paid to how labor laws and regulatory frameworks should evolve to address the disruptive potential of AI. This study aims to fill that gap by addressing two central questions: (1) What is the nature and extent of AI's impact on the Vietnamese labor market? and (2) Which categories of workers are most susceptible to disruption? Through a legal-analytical and comparative approach—drawing insights from the European Union's labor policy experience—this research offers a novel contribution to the emerging discourse on how Vietnam can construct a forward-looking and socially responsive labor regulatory framework in the age of AI. Empirical methods will be applied to examine the labor statistics of the country. At the same time, the paper will analyze the same phenomenon in the European Union and provide a solution for Vietnam. The analysis revealed that AI in the near future will have a positive effect on the workforce of Vietnam, but at the moment, workers without training are being most affected by its emergence. Thus, this study suggests that Vietnam improves its policy in labor law and social security in order to fully protect the right of all employees.

Keywords: Artificial Intelligence; Employment; Labor Market; Labor Law; Vietnam

1. Introduction

Artificial intelligence (AI) is increasingly transforming economic structures and employment patterns worldwide, becoming a critical driver of change in labor markets. In Vietnam, AI technologies are being rapidly adopted across various sectors, offering both opportunities for economic advancement and challenges to workforce stability. According to the International Monetary Fund (IMF), AI is expected to impact approximately 60% of jobs in developed economies, 40% in emerging markets, and 26%

in low-income countries[1]. While some jobs may benefit from enhanced productivity and new roles, up to 50% of existing jobs could face negative disruption. The International Labour Organization (ILO) has further emphasized that Vietnam is particularly vulnerable to the Fourth Industrial Revolution, primarily due to its relatively low-skilled labor force[2]. Consequently, workers with lower educational attainment are at heightened risk of being replaced by automation and AI technologies.

Despite increasing global attention, scholarly research on AI's impact in Vietnam remains limited, particularly from a legal and policy perspective. Existing literature predominantly addresses economic or technological dimensions, with insufficient focus on how Vietnam's labor laws and policy frameworks can adapt to this emerging challenge. This study seeks to fill this gap by examining two key questions: (1) To what extent does AI contribute to job displacement in Vietnam's labor market? and (2) Which segments of the workforce are most vulnerable to AI-driven transformation? Two hypotheses will be employed to explore these questions, supported by comparative insights from European Union labor policy. The study aims to propose legal and regulatory reforms that can safeguard the right to work while enabling sustainable technological integration.

H1: AI has a positive impact on the number of jobs in Vietnam.

H2: Workers without training will be more affected by AI.

The paper will first present the theoretical context of the relationship between AI and labor law. After that, empirical method will be applied to assess the number regarding the labor force in Vietnam to discuss whether the hypothesizes are accepted or denied. Finally, from the findings, the study will explore the phenomenon in the European Union (EU) and their implemented solutions, in order to provide a proposal for the policy of Vietnam.

2. Method

This study employs a mixed-method approach to investigate the impact of AI and automation on Vietnam's labor market and to explore the legal and policy responses necessary to manage this transformation. The research combines empirical analysis of workforce data with doctrinal and comparative legal analysis, focusing on lessons from the EU.

[1] Kristalina Georgieva, "AI will transform the Global Economy. Let's make sure it benefits humanity", Finance & Development Journal, January 14, 2024, https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity

[2] Jae-Hee Chang and Phu Huynh, "ASEAN in transformation – The Future of Jobs at Risk of Automation" Bureau for Employers' Activities, Working Paper No. 9, International Labour Organization (2016): 13. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_dialogue/@act_emp/documents/publication/wcms_579554.pdf

2.1. Empirical Method

The empirical component of this study aims to quantify the scale and characteristics of labor market shifts in Vietnam attributable to AI and automation. Specifically, it tests two key hypotheses:

1. That the integration of AI and automation technologies is already contributing to measurable disruptions in Vietnam's employment structure.
2. That lower-skilled workers are disproportionately exposed to displacement.

To address these questions, the study analyzes national and international datasets, including: Labor force statistics and sectoral employment breakdowns from the General Statistics Office (GSO) of Vietnam; Policy reports and employment trend analyses issued by the Ministry of Labor, Invalids and Social Affairs (MOLISA); Cross-national automation exposure data and task-based labor vulnerability indices from the OECD Employment Outlook and OECD AI and the Future of Skills project.

The methodology includes descriptive statistical analysis, trend comparison across sectors, and the use of OECD's risk classification model to estimate job exposure levels to automation in Vietnam. The study also considers education levels, age groups, and regional employment patterns to identify which worker cohorts are most vulnerable to technological displacement. This evidence base provides a quantitative foundation to support the legal and policy arguments developed in subsequent chapters.

2.2. Doctrinal and Comparative Legal Method

To understand how labor regulation can be adapted to protect workers in the age of AI, the study applies doctrinal legal analysis and comparative law methodology. The doctrinal approach involves a close reading of relevant Vietnamese legal instruments, such as: the Labor Code 2019; Social Security Law 2024; The National Strategy on the Fourth Industrial Revolution; The National Digital Transformation Program to 2025, with a vision to 2030; etc.

This analysis is then contrasted with the EU's comprehensive AI-related regulatory architecture. Special attention is given to: The EU Artificial Intelligence Act (especially Annex III, Articles 6, 26, 50, and 86), which classifies AI systems used in employment contexts as "high-risk" and imposes specific legal obligations on employers; The European Pillar of Social Rights, which enshrines principles of fair working conditions, active support to employment, and lifelong learning; etc.

This comparative method allows the study to assess whether and how Vietnam's current legal framework could be revised to align with international best practices. It also provides a normative benchmark for evaluating Vietnam's readiness to safeguard labor rights in the AI era.

2.3. Novelty and Contribution

The originality of this study lies in its integration of empirical labor market data with legal analysis in the Vietnamese context—a dimension that remains underdeveloped in current academic literature. While Vietnam's policy discourse often highlights AI as an

economic growth driver, this study centers the analysis on labor rights and regulatory adaptability. By linking domestic labor data with international legal standards, the research proposes concrete and evidence-based recommendations for Vietnam to future-proof its labor policy in the age of AI.

3. The impact of AI in the labor market

3.1. The theory of AI and automation in the labor market

Automation is considered to be the process of using machines and computers to execute the tasks originally done by human, without their direct involvement.[3] This action can lead to significant transformation in the workforce. Artificial Intelligence (AI) here is understood as machines and robots with the ability to operate without the help of human, which can affect the labor market by doing the task originally done by human, therefore, creating job-loss. AI will be used widely to automate routine tasks, creating foreseeable unemployment in some areas[4]. However, it can also be acknowledged as the field of AI and robots, which can induce many new jobs in the market as well.

The mission to reduce cost and increase efficiency has always been one of the most important tasks in labor. In the new technology generation, many machines were introduced to assist human in doing their work including artificial intelligence, robots, internet of things, etc. The inevitable outcome of this development is the foreseeable replacement of human in the workplace, for example, the job of an interpreter now can easily be done by a translation software; which will cause a lot of challenge for the employees.

In the Commission Recommendation of 29.11.2023 on means to address the impact of automation and digitalization on the transport workforce of the European Commission, automation is defined as 'the replacement of human input, in full or in part, by machine or software input' in Clause 8. Automation can affect the labor market, either positively or negatively.

It is believed that AI and automation will create two main effects on labor: displacement effect and productivity effect[5]. Displacement effect is generally understood as innovations in technology replacing the jobs of humans, and on the other hand, productivity effect is considered to be the phenomenon where technology can generate more jobs on the market than the number they replace. It was also proved that in the short run, displacement may affect the labor market more, however, in the long term, the productivity effect will possibly outweigh it.

When assessing the impact of AI and automation, there can be different affects due to the different nature of each job. For fields which require a lot of exposure to AI such as analysis engineer, software developer, etc., it is unlikely that AI and automation can

[3] "Cambridge Dictionary", https://dictionary.cambridge.org/dictionary/english/automation. Accessed May 5, 2024,

[4] William Halal and Jonathan Kolber, "Forecasts of AI and Future Jobs in 2030: Muddling Through Likely, with Two Alternative Scenarios," Journal of Futures Studies 21(2) (2016): 83-96, https://doi.org/10.6531/JFS.2016.21(2).R83.

[5] Francesco Chiacchio, Georgios Petropoulos and David Pichler, "The impact of industrial robots on EU employment and wages: A local labour market approach", Bruegel Working Paper, No. 2018/02, Bruegel, Brussels (2018): 1. https://hdl.handle.net/10419/207001

replace them because their jobs require high quality characteristics like logical and critical thinking, prediction and creativity[6]. On the other hand, jobs which are considered to be "low quality" such as security or cleaner rarely encounters AI and automation while working. OECD believes that these fields will face much difficulty in the next 20 years owing to its nature of simplicity and repetition[7]. However, Gries and Naude stated that the works requiring low skill can be more complex to automate since it is not easy to turn this into machine language[8]. According to PwC Hungary, the three most impacted sectors in their country will include manufacture, transportation and construction, which are all considered to be middle-level skill jobs[9].

Therefore, on the grounds of old jobs disappear and the invention of new jobs due to AI, it is quite ambiguous which jobs will be most affected by AI and automation in this era. According to the report of PwC UK, until 2030, automation may affect the labor market around the world in three waves[10]:

1. Wave 1: Algorithm wave: which mostly affects computer task and analysis of data, impacting data-driven fields such as finance, insurance, professional, scientific and technical services.
2. Wave 2: Augmentation wave: administrative assistant and decision-making tasks in semi-controlled environment such as the manipulation of objects within a warehouse.
3. Wave 3: Autonomy wave: AI and robotics will automate manual labor jobs, including construction, sewerage, and waste management.

At the moment, the world is moving from wave one to wave two of the automation process in the workplace, creating more and more complications in employment. The problem of the labor market and automation will become even more complicated when it enters wave 2 or 3, since the development of machines will threaten to replace more and more job groups. Therefore, it is most appropriate to examine this matter earlier to prevent future confusions.

3.2. Analysis of the Vietnamese labor market and the impact of the Fourth Industrial Revolution

The labor market of Vietnam is slowly recovering from the fluctuation of the global economy in recent years. The current labor force of Vietnam in 2023 consists of 51,3

[6] Dinh Nguyen Phan, "Tác động của trí tuệ nhân tạo tới pháp luật lao động – Kinh nghiệm quốc tế và bài học cho Việt Nam (The Impact of Artificial Intelligence to labour law – International Experience and Lessons for Vietnam)" People's Court Journal (2024): https://tapchitoaan.vn/tac-dong-cua-tri-tue-nhan-tao-toi-phap-luat-lao-dong-kinh-nghiem-quoc-te-va-bai-hoc-cho-viet-nam10444.html

[7] Melaine Arntz, Terry Gregory and Ulrich Zierahn, 'The Risk of Automation for Jobs in OECD Countries: A comparative Analysis' OECD Social, Employment and Migration Working Papers No. 189 (2016). https://dx.doi.org/10.1787/5jlz9h56dvq7-en

[8] Thomas Gries and Wim Naude, "Artificial intelligence, jobs, inequality and productivity: Does aggregate demand matter?" IZA Discussion Paper No.12005 (2018): 3. https://doi.org/10.2139/ssrn.3301777

[9] PwC Hungary, "How will AI impact the Hungarian labour market" (2019): https://www.pwc.com/hu/en/publications/assets/How-will-AI-impact-the-Hungarian-labour-market.pdf

[10] PwC UK, "Will robots really steal our jobs? An international analysis of the potential long-term impact of automation" (2018): https://www.pwc.com/it/it/ghosts/impact-of-automation.html

million workers, more than 50% of the population.[11] However, the level of education is quite low, standing at 68% for general education, 27,5% with certification in training, around 38 million workers. This percentage is relatively lower than other countries in Southeast Asia, demonstrating the training policy of the government to the development of the labor force[12]. According to a study by Ho Chi Minh center of Forecasting Manpower Needs and Labor Market Information, the quality of the human resources of Vietnam is rated 3.79 out of 10, standing at 11 out of 12 countries surveyed in Asia.[13] Moreover, on the same source, the country has low competitiveness in the labor force, scoring 4.3 out of 10, 56th among 133 countries surveyed. Vietnam is also recognized by 72 countries in the world as a Market Economy, most recently by the USA and the UK.[14]

Vietnam is one of the new big industries in East Asia, with 4 main sectors including: mechanic, electronic – telecommunication, food processing and pharmaceutical chemistry - plastic – rubber[15]. These fields are mainly craft industries which require many machines in the process of production.

The Fourth Industrial Revolution is a big step in production with the integration of technology. The main focus of the revolution is the breakthrough of artificial intelligence, robot, cloud technology, telecommunication, nano technology, automation, 3D printing, etc. The core of the Fourth Industrial Revolution is the connection between reality and the virtual world, based on internet[16]. As a result, it has changed the typical habit in production, management, even daily activities. One of the consequences is the mandatory adjustment of a group in the workforce who are not capable of adapting to the new requirements of the market. This is an urgent issue for countries which considers cheap-labor to be their advantage in competing with others, such as Vietnam. The Revolution is predicted to affect greatly and structure and the requirement in the skills of labor; therefore, creating a lot of challenges for the labor market as well as the social security system of the country.

ASEAN in general and Vietnam in particular, is currently one of the fasting growing regions in the world. Investment and fundings are flowing towards the countries due to cheap labor, big consumer market and growing infrastructure. In the 2023 Government AI Readiness Index by Oxford Insights, Vietnam score 54.48, 55 out of 130 countries and

[11] General Statistic Office of Vietnam, "Tình hình thị trường lao động Việt Nam năm 2023 (The situation of labor market of Vietnam 2023)" General Statistic Office of Vietnam, January 02, 2024, https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2024/01/tinh-hinh-thi-truong-lao-dong-viet-nam-nam-2023/

[12] Chang and Huynh, "Jobs at Risk of Automation".

[13] Vietnamnet Global, "Vietnam may lose 5 million jobs to automation: ILO" Vietnamnet Global, July 16, 2018, https://vietnamnet.vn/en/vietnam-may-lose-five-million-jobs-to-automation-ilo-E204164.html.

[14] Nguyen Minh Phong, "Khi Việt Nam được công nhận là nền kinh tế thị trường (When Vietnam is recognized as a Market Economy)" Banking Review (2024): https://tapchinganhang.gov.vn/khi-viet-nam-duoc-cong-nhan-la-nen-kinh-te-thi-truong.htm

[15] Thu Cuc, "Thị trường lao động tiếp tục đà phục hồi (The labour market is continuing to recover)" Government Digital Journal, October 17, 2023, https://baochinhphu.vn/thi-truong-lao-dong-tiep-tuc-da-phuc-hoi-102231017185536338.htm

[16] Nguyen Minh Tri, "Sự tác động của cuộc cách mạng công nghiệp lần thứ tư đến vấn đề an sinh xã hội của Việt Nam' (Impact of the Fourth Industrial Revolution to the social security system of Vietnam)" Government Organization Journal (2024) https://tcnn.vn/news/detail/63664/Su-tac-dong-cua-cuoc-Cach-mang-cong-nghiep-lan-thu-tu-den-van-de-an-sinh-xa-hoi-o-Viet-Nam.html

number 9 in East.[17] Moreover, in the Innovation Index 2023 by WIPO, Vietnam is ranked at number 46 out of 132 countries and number 2 in the Low-Middle Income group.[18] It is evident that Vietnam is developing at an extremely fast speed in technology and AI, and it is inevitable that there would also be many consequences. Furthermore, in report on the Human Development Index (HDI) of UNDP in Vietnam also stated that Vietnam has risen to number 115 out of 191 countries in 2021, reaching the high development group. This is solid proof that the nation is persistent in the journey to improve the quality of its citizen's life[19].

In conclusion, currently, the legal framework regarding AI is not completed in most regions in the world. Each nation is trying to create their own solution to this issue, hence the effort in creating global harmonization. As a consequence, it is crucial that Vietnam regulate this matter on a policy and law level, within the scope of international labor provisions and learning from the experience of other countries.

4. The impact of AI on the European Union's Labor Market and Their Solution

4.1. The impact of AI on the labor market of the EU

The appearance of AI and automation has affected the labor force of all regions around the world, and the EU is not an exception from this. Over the last 10 years, there has been many changes in the workforce of the EU to gradually adapt to the new technology development. A number of literatures has analyzed this adjustment from various aspects.

Firstly, it is believed that AI and automation will impact negatively on the labor market of the EU. Chiacchio et al.[20] mentioned that while generating new work opportunities, AI impacted the workforce in the EU negatively. Moreover, each robot produced can decrease the employment rate by 0,16 to 0,2%. Barbieri also added that there was no evidence about a positive relationship between automation and employment, strengthening the argument on the adverse effects of AI and automation.[21] Furthermore, the impact of AI on job-loss is significantly larger than other types of technology.[22] However, Gregory et al. objected to this opinion, stating that despite the strong displacement effect in Europe, AI's ability to create new job outweighed the former impact.[23]

[17] Oxford Insights, "Government AI Readiness Index 2023" (2024): https://oxfordinsights.com/ai-readiness/ai-readiness-index/ accessed May 5, 2024

[18] WIPO, "Global Innovation Index 2023" (2024) https://www.wipo.int/global_innovation_index/en/2023/ accessed May 5, 2024

[19] UNDP Vietnam, "Vietnam is in the High Human Development category: UNDP report", UNDP Vietnam, 2024, https://www.undp.org/vietnam/press-releases/viet-nam-high-human-development-category-undp-new-report

[20] Chiacchio, Petropoulos and Pichler, "Impact of industrial robots on EU employment".

[21] Laura Barbieri, Chiara Mussida, Mariacristina Piva and Marco Vivarellim, "Testing the Employment Impact of Automation, Robots and AI: A Survey and Some Methodological Issues" IZA Institute of Labor Economics Discussion Paper Series No. 12612 (2019): http://dx.doi.org/10.2139/ssrn.3457656

[22] Anke Hassel and Didem Özkiziltan, "Governing the Work-Related Risks of AI: Implications for the German Government and Trade Unions," Transfer: European Review of Labour and Research 29, 29, no. 1 (2023): 71, https://doi.org/10.1177/10242589221147228.

[23] Terry Gregory, Anna Salomons and Ulrich Zierahn, "Racing with or Against the Machine? Evidence from Europe" IZA Institute of Labor Economics Discussion Paper Series No. 12063 (2019): https://doi.org/10.2139/ssrn.3275421

Secondly, workers with the middle level of education are the most at risk of being replaced by AI and automation in the EU. Chiacchio[24], Pouliakas[25] and Hassel and Ozkiziltan[26] all agreed that up to 89% of employees who were equipped with average skills will be most affected by the new wave of technology as they lacked the skills in digitalization. This was further supported by Lane and Saint-Martin[27] in the OECD report, stating that non-routine cognitive tasks were easier in being automated. Low-skilled level workers are also likely to be impacted by AI and automation since these workers' jobs are mainly in the high-risk group, stated in the OECD report[28].

Moreover, Dauth et al.[29] proved that the existence of one robot could destroy two jobs in manufacturing, leading to the reduction of 25% of manufacturing jobs in Germany since 2014. On the other hand, Carbonero et al.[30] believed that jobs in developing countries in Europe such as Hungary, Poland, Romania, etc. will be more affected by AI and automation than in developed ones.

4.2. The solutions from the EU

From the study of European Centre for Development and Vocational Training[31], 51% of jobs in the EU are at risk of automation, but only 14% are at high risk of being automated. Despite the percentage of jobs at high risk in the EU is not high, but the Commission has already published legal framework to resolve this issue.

Starting in 2019, the European Parliament announced the "report on a comprehensive European industrial policy on artificial intelligence and robotics" which included one section exclusively on labor in this era. In this report, the inevitable effects of AI on jobs were addressed, along with the urgency in training workers of member states to meet the requirement of the novel phenomenon. It was foreseeable to the law makers of EU that vocational training and digital literacy programs would play the vital role to avoid the displacement effect and assist employees in obtaining new opportunities.

In the European Union, policies have been implemented to resolve this issue. Firstly, in 2023, the European Commission published the Recommendation on "means to address the impact of automation and digitalization on the transport workforce" to provide suggestions to governments and companies on this matter. Even though this recommendation is only applied to the transport workforce, it represents the model which should be widely used to deal with automation in the workplace. The document

[24] Chiacchio, Petropoulos and Pichler, "Impact of industrial robots on EU employment".

[25] Konstantinos Pouliakas, "Automation Risk in the EU Labour Market A Skill-Needs Approach," European Centre for the Development of Vocational Training (2018): https://doi.org/10.2139/ssrn.3253487

[26] Hassel and Özkiziltan, "Work-Related Risks of AI"

[27] Marguerita Lane and Anna Saint-Martin, "The impact of Artificial Intelligence on the labour market: What do we know so far?" OECD Social, Employment and Migration Working Paper No.256 (2021): https://doi.org/10.1787/1815199X

[28] Alexandre Georgieff and Anna Milanez, "What happened to jobs at high risk of automation?", OECD Social, Employment and Migration Working Papers, No. 255, OECD Publishing, Paris (2021) https://doi.org/10.1787/10bc97f4-en.

[29] Wolfgang Dauth, Sebastian Findeisen, Jens Südekum and Nicole Wößner, "German Robots – The Impact of Industrial Robots on Workers" IAB Discussion Paper 30 (2017): https://doku.iab.de/discussionpapers/2017/dp3017.pdf

[30] Francesco Carbonero, Ekkehard Ernst and Enzo Weber, "Robots worldwide: The impact of automation on employment and trade" ILO Research Department Working Paper No.36 (2018): DOI: 10.13140/RG.2.2.10507.13603

[31] Pouliakas, "Automation Risk in EU Market: A Skill need Approach"

has addressed not only the policies maker, but also employers, union and even the workers themselves are also responsible for adapting to this new technology by raising the awareness, training, improving working conditions, managing the changes and funding.

Moreover, in 2023, the European Union also published the Artificial Intelligence Act – the first bill directly regulating AI in the world. In this act, a number of activities regarding employment are also listed under high risk including AI systems used for recruitment or the use of AI affecting the working relationship. Even though these regulations do not mention the situation where the employees are replaced by AI in the workplace, it is evident that the current view of European policy makers is to protect the legitimate rights of workers in this new phenomenon.

One of the special points of the policies of EU on this is their mindset of ensuring no one is left behind[32], focusing on supporting the employees suffering from job displacement. The most prominent safety net proposed was the European Globalisation Adjustment Fund for Displaced Workers, which possesses a budget of 210 million euro in 2021-2027, and is willing to use 60-75% for redundant workers. This generous funding for helping workers shifting their objectives in their career would be a relief for employees who are at risk of job-loss. One prime example is Germany, where it was found that workers who are more exposed to AI experienced more dissatisfaction in life[33]; illustrating the demand for safety and wellbeing at the workplace as well. This clearly demonstrates the aim of the EU in prioritizing psychological needs of workers, as guaranteeing a strict balance between work and personal life is also one of their policies in the digital age, securing a working environment without the stress of potential job displacement[34]. This strategy is a novel and appropriate plan for this period, distinguishing the developed supra-nation from the rest of the world.

5. The impact of AI on Vietnam's Labor Market

5.1. AI and its impact on employment in Vietnam

The labor market of the world is suffering from the consequences of the COVID-19 pandemic in 2020 and 2021, along with many political events around the world. The market in Vietnam is not an exception, the number of employments declined sharply in 2020. However, the market is showing a lot of positive signs for recovery since 2023. It is predicted that 2024 would be the year that the labor field in Vietnam will have a lot of breakthroughs.[35]

[32] "Is Specific Labour Protection Needed in the Digital Age? | European Foundation for the Improvement of Living and Working Conditions," accessed July 22, 2025, https://www.eurofound.europa.eu/en/specific-labour-protection-needed-digital-age.

[33] "Artificial Intelligence and Workers' Wellbeing: Lessons from Germany's Early Experience," CEPR, July 21, 2025, https://cepr.org/voxeu/columns/artificial-intelligence-and-workers-wellbeing-lessons-germanys-early-experience.

[34] Dmytro Sirokha et al., "Labor Protection in the Perspective of Artificial Intelligence: New Challenges for the EU and the ILO," *Przegląd Prawniczy Uniwersytetu Im. Adam Mickiewicza* 16 (December 2024): 67–98, https://doi.org/10.14746/ppuam.2024.16.03.

[35] Thanh Huong, "Năm 2024, những tín hiệu tích cực của thị trường lao động' (Year 2024, the positive signs of the labour market)" VOV2, February 21, 2024, https://vov2.vov.vn/doi-song-xa-hoi/nam-2024-nhung-tin-hieu-tich-cuc-cua-thi-truong-lao-dong-47133.vov2

Vietnam is one of the countries with numerous new industries in Asia for AI, therefore, the industry has been development significantly. The estimated market for AI has peaked in 2021 after dropping in 2022. According to Table 1, even though the market for AI decreased, the number of workers increased from 2021 to 2023, showing no sign of being affected negatively. Therefore, despite some jobs being lost to machines and robots, the overall labor force continued to grow, at the same time with the expansion of the AI market. Moreover, according to a study by FPT Digital, Vietnam is at serious shortage of workers in the AI sector, consisting of 400,000 engineers and 50,000 students graduating every year, but can only accommodate 25% of the demand for IT jobs within the country.[36]

Table 1. AI market growth in Vietnam and the number of employments from 2020 to 2023

	AI Market in Vietnam (million USD)[37]	Number of workers (million)[38]
2020	385,4	53,609
2021	846,8	49,072
2022	509,5	50,604
2023	555,3	51,500

Source: General Statista and General Statistic Office of Vietnam

Table 2. Five job groups in Vietnam at the highest risk of AI and automation[39]

Jobs	Percentage of risk of automation (%)[40]
Mining	35
Construction	35
Logistics	32
Agriculture, fishery and wood working	30
Food processing and manufacturing	28

Source: OECD Report "What happened to jobs at high risk of automation" (2021)

[36] Mai Chi Tran, "AI in Vietnam: Opportunities and Challenges for Foreign Investors" Vietnam Briefing, August 2, 2023, https://www.vietnam-briefing.com/news/ai-in-vietnam-opportunities-and-challenges.html/

[37] "Artificial Intelligence – Vietnam | Market Forecast", General Statista, accessed April 21, 2024, https://www.statista.com/outlook/tmo/artificial-intelligence/vietnam#market-size

[38] "Number of employments", General Statistic Office of Vietnam, accessed April 21, 2024 https://www.gso.gov.vn/px-web-2/?pxid=V0238&theme=D%C3%A2n%20s%E1%BB%91%20v%C3%A0%20lao%20%C4%91%E1%BB%99ng

[39] The five job groups are selected from the jobs at highest risk of automation in OECD report, the top five groups which correspond with the available data on the website of the General Statistic Office of Vietnam. Even though Vietnam is not included in the OECD countries, the five groups were carefully selected due to the country's characteristics of being a developing country and a large number of workers in the country is still in the agriculture field. The selected jobs create a similar peer group to the current fields in Vietnam.

[40] Risk of being automated is defined as the risk of employees working in that field or sector can be replaced by machines. See more at: Alexandre Georgieff and Anna Milanez, "What happened to jobs at high risk of automation" Policy Brief on the Future of Work (2021).

Table 3. Number of workers and its percentage to the labor force in the five job groups at high risk of automation in 2023 in Vietnam

	Number of workers (thousand)[41]	Percentage to the labor force (%) [42]
Mining	170,5	0,33
Construction	4744,8	9,25
Logistics	2021,6	3,9
Agriculture, fishery and wood working	13815,4	26,9
Food processing and manufacturing	11956,7	23,3

Source: General Statistic Office of Vietnam

Table 2 presents the 05 job groups at highest risk of automation listed in the OECD report which exists in Vietnam and its percentage of being automated. Mining and construction are the ones at the highest risk, standing at 35%, after that are Logistics; Agriculture, Fishery and Wood Working; and Food processing. Table 3 analyses the percentage of these 5 jobs in the labor market of Vietnam, demonstrating that these works account for 63,68% of employees in Vietnam in 2023, thus illustrating the urgent issue of more than half of the country's job is at high risk of automation.

Therefore, even though AI can create job loss in some areas in the workforce in Vietnam, the number of jobs has been growing since 2021, after suffering from the aftermath of the COVID-19 pandemic, and are showing signs that it will rise sharply in 2025. Thus, AI is having a positive impact on the labor market of Vietnam, approving hypothesis 1.

In this age of the new economy created by technology, it is crucial that countries adapt to the new trend. Even though AI and automation will have a positive effect on the labor market of Vietnam by generating various new jobs, there are workers who are at risk of job loss, therefore it is important to ensure livelihoods to all people[43]. To protect the rights of all workers, countries need to take steps in publishing and amending legal documents in order to guarantee stable income for all. Moreover, redundant employees are not likely to be able to be recruited to the same position since this is not an economic fluctuation, they are required to shift to a new job[44]. Labor policies are one of the most crucial elements to support the process of learning and facilitate occupational mobility.

[41] "Number of employments according to job groups", General Statistic Office of Vietnam, accessed April 21, 2024 https://www.gso.gov.vn/px-web-2/?pxid=V0242&theme=D%C3%A2n%20s%E1%BB%91%20v%C3%A0%20lao%20%C4%91%E1%BB%99ng

[42] The number of workers is divided by the total number of workers in the labor market: 51,3 million according to the General Statistic Office of Vietnam.

[43] Sirokha et al., "Labor Protection in the Perspective of Artificial Intelligence."

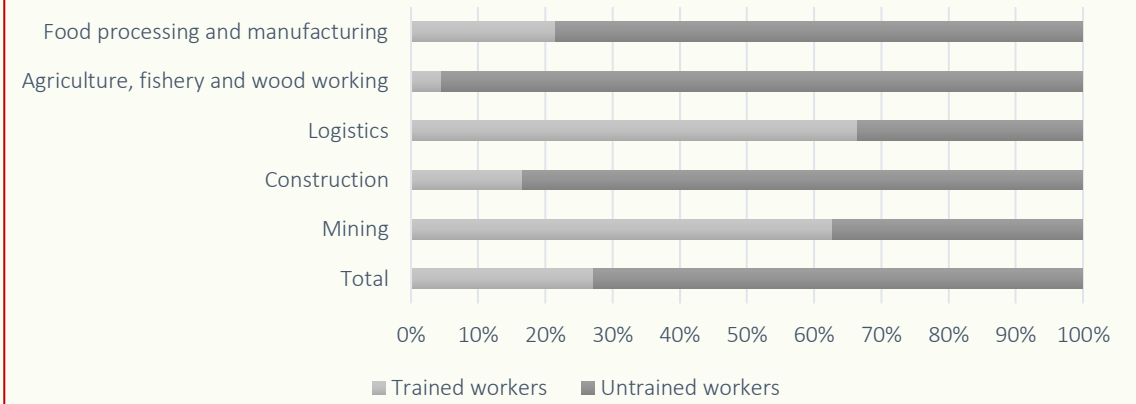
[44] "AI and Digital Tools in Workplace Management and Evaluation: An Assessment of the EU's Legal Framework | Think Tank | European Parliament," accessed July 13, 2025, https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU(2022)729516.

5.2. The impact of AI and its relationship with the level of education of workers in Vietnam

Vietnam is regarded as one of the countries with low level of workers in the ASEAN region with more than 40% of employees with low level skill, 45% with middle level and only 10% with high level, significantly lower than its neighboring countries, for example: Philippines with 25% of high-level workers, Thailand and Indonesia with an estimation of 80% of middle level workers.[45]

In Table 3, within the 5 job groups at high risk of automation, mining and logistics have higher amount of trained worker, however, they only account for a small number of the labor force. The other three have extremely low level of training, especially for agriculture, fishery and working – the group which accounts for more than one fourth of the labor force, standing only at an alarming percentage of 4,5%. Food processing and manufacturing, despite taking up 23% of the workforce, only has 21,5% of trained workers, lower than the total average of 27,1%. This percentage is also significant lower comparing to other job groups in the country, such as finance and banking at 86,4% or electricity production at 81,1%.

Chart 1. Percentage of workers with training in jobs which are at high risks of automation in 2023 in Vietnam[46]



Source: General Statistic Office of Vietnam

Three of five job groups have high percentage untrained workers, the other two has higher percentage, but only limited number of employees. Therefore, untrained workers' jobs are at bigger risk of being affected by AI, confirming hypothesis 2.

[45] Chang and Huynh, "Jobs at Risk of Automation".

[46] The level of education in this study is workers with higher level of education who have been certified as skilled workers in their specific field, or at least hold a college degree. The opposite of this referred to workers without certification and proper training in doing their jobs and working by receiving minimal training or by instinct. See more at: "Percentage of workers above 15 years old with training according to job groups", General Statistic Office of Vietnam, accessed April 22, 2024 https://www.gso.gov.vn/px-web-2/?pxid=V0256&theme=D%C3%A2n%20s%E1%BB%91%20v%C3%A0%20lao%20%C4%91%E1%BB%99ng

According to the results above, most of untrained workers in Vietnam are likely to be replaced by automation, subjected to indirect discrimination, thus violating ILO's labor standard on the elimination of discrimination at the workplace[47]. As a significant part of the labor force of Vietnam is low-skilled and not willing to retrain[48], job displacement is also a huge social risk, potentially deepening poverty and inequality. This is a popular issue among developing countries, hence some nations such as Indonesia in their National Artificial Intelligence Strategy 2020-2045, has addressed talent development by creating a skilled AI-workforce as one the main focus areas[49]; or India has also mentioned the need for workforce reskilling in their National Strategy for Artificial Intelligence in 2018[50]. Despite being within the fasting growing developing countries in Asia, has yet to fully tackle this issue, as the legal system has not been fully equipped to resolve the risk posed by AI and automation. In order to publish a comprehensive set of rules to protect workers' rights, it is important for Vietnam not only to learn from the neighboring nations, but also to research the methods from the leading supra-nation in the world – the EU.

6. Proposal for Vietnam

6.1. Current legal framework in Vietnam

In Vietnam, the Labor Code 2019 allowed employers to terminate employment contracts unilaterally in the case of change in technology structure or due to economic reasons. These are fundamental basis for recognizing the impact of AI on work. Clause 1, Article 42 of the Labor Code 2019 regulated that:

> *1. Changes in structure and technology include:*
> *a) Changes in the organizational structure, personnel rearrangement;*
> *b) Changes in processes, technology, equipment associated with the employer's business lines;*
> *c) Changes in products or product structure.*

Point b stated that "changes in processes, technology, equipment associated with the employer's business lines" are within the scope of this provision. Currently, to reduce labor costs and achieve higher productivity, businesses apply machine technology[51]. For that reason, the use of employees becomes redundant, so employers have the right to reduce personnel to reduce costs. Therefore, the case of AI and automation can fall under point b, Clause 1 of Article 42 as it affects significantly the technology and equipment in

[47] "Addressing AI Risks in the Workplace: Workers and Algorithms | Think Tank | European Parliament," accessed July 17, 2025, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2024)762323.

[48] "Việt Nam's Low-Skilled Workers Hesitate to Retrain," Vietnamnews.Vn, accessed July 23, 2025, https://vietnamnews.vn/society/1666472/viet-nam-s-low-skilled-workers-hesitate-to-retrain.html.

[49] *The Indonesian National Strategy on Artificial Intelligence | Digital Watch Observatory*, n.d., accessed July 23, 2025, https://dig.watch/resource/the-indonesian-national-strategy-on-artificial-intelligence.

[50] National Strategy for Artificial Intelligence of India https://www.niti.gov.in/sites/default/files/2023-03/National-Strategy-for-Artificial-Intelligence.pdf

[51] Doan Xuan Truong, "Chấm dứt HĐLĐ theo điều 42 Bộ luật Lao động' (Termination of Employment contract under Article 42 of the Labour Code)", Conference "Termination of Labour Contract and the Current Legal Implications" Proceeding, Hanoi Law University (2022).

the company. Employees who lose their jobs to automation will be considered a justified cause and receive their job-loss allowance according to article 47 of the Labor Code 2019.

Reducing labor when changing structure is a normal need of businesses in the current economy. However, this is also the reason why many employees sue businesses because they believe they were terminated wrongly. Previously, in Clause 3, Article 11 of Decree 39/2003/ND-CP explained that the change in organizational structure includes merger or dissolution of a number of divisions within a company. However, at the moment, there is no valid provision on this matter. Nevertheless, the Courts still consider the rules of the former document along with the aspect of human resources reorganization as demonstrated in verdict number 07/2022/LD-PT dated June 1st, 2022 on unilateral employment contract termination at the People's Court of Binh Duong Province.

AI and automation also result in the adjustment in procedure, technology and infrastructure of the work. Technology will be applied by employers to the production process to reduce cost and increase efficiency. Therefore, workers who are redundant or do not meet the requirement to operate the machines are likely to be terminated.

Therefore, it is foreseeable that AI and automation has a huge impact on the change in technology structure in an enterprise. To further increase the flexibility of the employer in managing the workforce under the effect of AI and automation, the law permitted the employer to terminate the employment relationship unilaterally in the circumstance mentioned above. On the other hand, to protect the income and benefit of the employee, the government also created policies on unemployment insurance to support the employee in the time of job-loss and assist them in finding new positions. This is the special 'life net' for employee under the new situation of AI and automation.

According to Article 43 of the Law on Employment 2013, employees who signed contracts longer than 03 months are eligible for unemployment insurance. Workers when being terminated will benefit from the unemployment insurance if all the legal requirements are satisfied, i.e., participating in the unemployment insurance for more than 12 months or having filed the documents for the insurance at the job service center, etc. Moreover, workers who joined the unemployment insurance for more than 12 months can be granted the job-loss allowance of 60% of the average net salary of the last 06 months before unemployment. The time of benefiting from the unemployment insurance is counted based on the time the employee joins the program, with the maximum of 12 months in line with Article 50 of the Law on Employment 2013.

Nevertheless, these provisions were not made with the intention of resolving unemployment caused technological changes, hence the inflexibility and vagueness in applying Article 36 and 42. to AI-related cases. Moreover, there are no law forcing the employers to retrain or reskill the untrained workers to adapt to changes, and no obligation for them to contribute to transition or career shifting programs.

Other than the current general law, Vietnam has no specific guidelines regarding AI, automation and its impact on the labor market, or to safeguard the affected workers in the digital era. This is a gap that the country should address as soon as possible to fully protect the rights of employees.

6.2. Key differences between the policy of the EU and Vietnam

First, on strategic policy frameworks on AI and labor, while the European Union pursued an ambitious and comprehensive methods of regulating through soft law documents, while Vietnam has not yet formulated a strategy for this. The country solution is still relying on old policies, which is not fully developed for the novel phenomenon; while there are some AI-specific documents such as the National Digital Transformation 2025-2030 or the Vocational Education and Training Strategy 2021-2030, these plans have not contained any regulation regarding AI-related job displacement.

Secondly, on legal and regulatory framework, the EU is choosing the road of rights-based model that can protect workers from unfair dismissal or discrimination by AI or automation, demonstrated in application of the "risk-based" system in the AI Act. This is a significant requirement for all countries of the EU to adhere to strict transparency[52] and human oversight[53] in using AI at the workplace. Even though this law does not address job loss by AI and automation directly, it has limited the excessive use of AI in the workplace, thus ensuring more security. On the other hand, similar to the policy above, Vietnam has yet to publish any compulsory rules on this issue, dependent on the labor-related laws which is quite outdated at this moment. However, this progress is understandable since Vietnam is a developing country with civil law system, which prefers to observe the results of developed nations before finalizing their options. The EU as one of the leading areas in the world in AI-related legislation, is a place Vietnam should follow to receive the most suitable lessons.

Lastly, while the EU focused on ensuring workers' wellbeing while mitigating the risks caused by AI and automation at the workplace, Vietnam's policies are strictly concerned about development and the methods to increase economic growth. Although Vietnam is in the process of implementing the newest labor standard on occupational safety and health at the workplace, the country is yet to achieve the level of developed nations on raising awareness on mental and psychological matters.

6.3. Proposal for Vietnam

The Fourth Industrial Revolution opened the opportunity for Vietnam to improve the production sequences, encourage digital transformation and modernization. However, there are a number of drawbacks regarding narrowing traditional working fields and eliminating workers who do not meet the standards. Automation is placing a big problem on labor law and the social security system of Vietnam. During the Fourth Revolution, despite the reduction in the percentage of unemployment, the situation of redundancy in the countryside is still a huge challenge due to low level of education, losing farming land to urbanization. Moreover, the workforce of Vietnam insists on keeping their habit in small production, lacking flexibility, creativity and discipline.

The country has also reached significant landmarks in social security, with the number of people increasing every year in social, medical and unemployment security. The awareness in applying for unemployment insurance would be a substantial protection for

[52] Article 86: Right to Explanation of Individual Decision-Making of the EU Artificial Intelligence Act.
[53] Article 14: Human Oversight of the EU Artificial Intelligence Act.

employees in the automation age. Until 2022, the number of people joining unemployment insurance reached 14 million, accounting for more than 31,18% of the labor work. Nevertheless, the participants of the unemployment insurance are not comprehensive, especially in the non-official workers area. Meanwhile, low skill level as one of the primary reasons for unemployment has yet to be focused on, maintaining the gap between regions and economic class in the society.

Similar to other developing countries, the law of Vietnam has not adopted the novel issue into its legal system, instead, it is considered better to learn from more developed countries around the world, such as the EU. Even though AI does not totally affect the labor market negatively, there are a number of workers still lost their jobs to automation. Therefore, in the future, similar to other countries, this will be a problem drawing a lot of attention from the Vietnamese government.

From the experience of the EU, it is proposed that Vietnam implement policies regarding two main issues.

Firstly, to protect the rights of workers who lost their jobs to automation, law amendment and supplement are necessary. In addition to the Labor Code 2019, it is urgent that a law document clarifying whether Article 42 can be applied to job loss due to AI and automation or not, and how to protect the workers in this situation. The country can consider the Recommendation method of the EU – a way which is effective but still provide sufficient flexibility for companies and employers. This is also the direction which other developing countries are heading to – a legal document which directly addresses the rights of the workers instead of trying to control the technology itself.

Another option is to complete the social security system of the country, most prominently the unemployment insurance. The first priority is to expand the participant of the unemployment insurance and encourage workers to join to protect their rights. If more workers lose their jobs to AI and automation, there will be less people participating in social insurance; leading to the shortage of funds in insurance[54]. Therefore, it is essential that the country applies appropriate propaganda of telecommunication and internet; at the same time, motivates the development of job recruitment and headhunt services, in order to facilitate new jobs in case of job loss.

In the report by PwC Vietnam on the Readiness of digital skill in Vietnam in 2021, 45% of people surveyed expressed their worries about automation can put their job at risk, while 89% are quite optimistic about the use of automation[55]. Therefore, on a smaller scale, companies and workers can equip themselves with information on this novel issue, especially the ones working in sectors at high risk of being automated. The awareness from the company, along with the support from the workers' union can contribute significantly to protecting the rights of workers in the case of layoff.

[54] "We Need a New Kind of Insurance for AI Job Loss," AI Frontiers, accessed July 26, 2025, https://ai-frontiers.org/articles/ai-displacement-insurance.

[55] PwC Vietnam, "Báo cáo mức độ sẵn sàng về kỹ năng số việt Nam' (Report on the Readiness the digitalization skill in Vietnam)" (2021): https://www.pwc.com/vn/vn/publications/vietnam-publications/digital-readiness.html

Secondly, as workers with lower level of education are more vulnerable to automation, it is strongly recommended that Vietnam implement a policy to raise the overall workers level of skills. Directive No. 21-CT/TW dated May 4th, 2023 of the Secretariat of the Communist Party on continuing to innovate, develop and improve the quality of vocational education to 2030, with vision to 2045 has been implemented in order to raise the overall output of job training within the country. The government of Vietnam along with the the Ministry of Labor, Invalids and Social Affairs also structured a plan titled Resolution number 01/NQ-CP dated January 5th, 2024 on the responsibility and primary solutions to execute the Economic and Society Development plan 2024, in order to provide sufficient training for human resources in new fields and areas. This directive and plan demonstrated the view of the country in changing the workforce from mostly middle skill workers to high and advanced level to accommodate the trend of the world. Furthermore, in the draft bill for Job Law in April 2024, the Ministry of Labor, Invalids and Social Affairs also suggested to support the workers in training to raise their skill level, including government funding for workers in participating in courses under 6 months in tuition and living expenses. This provision would be the first time the government supporting large-scale of education and training for workers, illustrating the determination of the government in improving the skill level. The implementation of this law would substantially increase the overall quality of workers nation-wide, helping many workers without proper training be less at risk of losing their job to technology.

In the report above, 84% of employees in the report want to learn more skills to improve their ability in employment in the future and 55% believe that this should be personal responsibility. While it is important for each individual to raise their own skill level, companies can also assist them by conducting classes internally or provide annual training courses to accommodate the needs of their employees.

Lastly, a framework that help improve worker consultation can also be a beneficial step for employees. In the age of technological change, enhancing the power of trade unions to engage in collective bargaining would affect job stability and wellbeing significantly[56]. Vietnam can consider the European Pillar of Social Rights in order to draft a system that can promote transparency, reduce conflicts and assist the workers in raising their voices amid the transformation period.

7. Conclusion

AI currently is one of the most significant elements affecting the labor market around the world. In Vietnam, although it is true that it creates job loss in some fields, in recent years, AI is having more positive impacts on the labor market, by generating more jobs. However, among the people affected, most of them have lower level of skill and education. Therefore, AI is attacking a more specific group of labor instead of the general market. However, this issue can be lessened with the appropriate actions and policies from the government.

[56] Zhuorui Yang, "AI, Job Displacement, and Support for Workers," *Highlights in Business, Economics and Management* 47 (February 2025): 364–70, https://doi.org/10.54097/2xhrnp65.

The Government of Vietnam must urgently develop a regulatory framework for AI in the labor sector that is both tailored to national socio-economic conditions and aligned with international legal standards, including ILO Conventions and the right to decent work. Policies should support AI-driven infrastructure and innovation while safeguarding worker rights under the Labor Code 2019 and the ILO's Decent Work Agenda.

Furthermore, legal reforms should encourage foreign investment through transparent, innovation-friendly legislation, in line with commitments under the CPTPP and EVFTA. A well-regulated AI ecosystem will not only foster economic growth but also ensure that the workforce benefits through stable employment, upskilling, and improved social protection.

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