LEGAL PROTECTION OF EMPLOYEES' HEALTH AND SAFETY USING ARTIFICIAL INTELLIGENCE: EUROPEAN PRACTICES

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Summary

This paper examines the legal safeguards for employee health and safety in the context of the increasing integration of AI in European workplaces. Concurrently, it addresses the emergent risks to physical and psychological well-being. These risks encompass potential accidents, elevated stress levels attributable to algorithmic management systems, and discriminatory practices emanating from AI-driven data collection.

The present study undertakes a critical analysis of the European Union's regulatory endeavors, with a particular focus on the proposed Artificial Intelligence Act. This legislative initiative aims to establish ethical guidelines and obligations for the design, development, and utilization of artificial intelligence within the context of the workplace. The analysis focuses on the balance between technological advancement and the fundamental rights of workers, including privacy, fair working conditions, and protection against health risks. The study further delves into the responsibilities of employers and AI providers in ensuring workplace safety, emphasizing the necessity of human oversight and the provision of clear information to users interacting with AI systems. The paper's conclusion calls for a comprehensive approach, integrating legal regulations with proactive safety measures. This would ensure that the benefits of AI are realized without compromising the health and safety of employees in European workplaces.

Key words: scope of labor law, expansion of labor law, digitalization, globalization, labor relations, occupational safety, employee health.

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1. Introduction

The rapid integration of Artificial Intelligence (AI) into the workplace is transforming traditional labor dynamics, presenting both unprecedented opportunities and novel challenges to employee health and safety. This transformation, marked by the increasing use of AI in domains such as employee performance planning, evaluation, and autonomous work processes, necessitates a re-evaluation of existing legal frameworks and occupational safety practices. The subject's novelty is rooted in its intersection of technological innovation and human well-being, where the conventional understanding of labor relations is challenged by the advent of intelligent machines capable of influencing and making decisions that directly impact workers.

The contemporary legal and ethical framework is encountering challenges in its ability to effectively address the advancements in technology, thereby creating a pressing need for the establishment of clear and comprehensive guidelines that are designed to safeguard the interests of employees and prevent potential harm. While AI offers significant potential in augmenting productivity and fostering health through innovations such as exoskeletons, it also introduces risks such as physical accidents, psychological stress, and discriminatory practices. This paper

addresses the pressing need to develop suitable legal solutions in the context of the increasing use of AI systems.

The primary objective of this research is to examine the extant and proposed legal mechanisms within the EU that are designed to safeguard the health and safety of employees in the age of AI. The following research tasks were delineated:

1) to analyze the potential risks to employee health and safety associated with the integration of artificial intelligence (AI) in the workplace;

2) to evaluate the EU's regulatory framework, particularly the Artificial Intelligence Act;

3) to examine the roles and responsibilities of employers and AI providers in ensuring workplace safety.

This research employs a mixed-methods approach, integrating legal analysis with a review of extant literature on the impact of AI on labor relations. A thorough examination of EU directives, regulations, and proposed legislation serves as the foundation for the legal analysis. Moreover, reports from international organizations such as the International Labour Organization (ILO) and academic articles are used to contextualize the discussion and provide empirical evidence of the challenges and opportunities presented by AI.

2. Potential risks to employee health and safety associated with AI integration

The contemporary moment is characterized by the increasing significance of artificial intelligence mechanisms in domains such as employee performance planning and evaluation, as well as in the management of algorithms within the context of labor relations *(Nowik, 2021)*. The field of artificial intelligence has the potential to exert a profound influence on the realm of work management. This influence can be manifested not only through the provision of assistance to the work process, but also through the autonomous management of that process. In other words, artificial intelligence can make autonomous decisions based on the collected data. In such circumstances, novel and previously unexplored relationships between employees and AI emerge *(Nowik, 2021)*.

The potential for artificial intelligence to directly enhance employee health is evident. For instance, the integration of exoskeletons into work environments has been demonstrated to augment productivity while fostering health and safety. An exoskeleton is a type of robot that is worn by a person as a suit. It is designed to improve the dynamics of the user's limbs and joints *(Sawicki et al., 2020)*. This allows employers to perform biometric analysis of employees and help them regain full physical fitness after injury *(Ajunwa, 2018)*. Additionally, exoskeletons have been shown to alleviate pressure on the spine. For instance, in South Korea, a device was developed to support the feet, legs, and lumbar region of the human body, thereby enabling workers to lift and carry heavy loads.

Therefore, while the development of AI undoubtedly brings with it many opportunities, it is imperative to acknowledge the potential risks that may arise in connection with it. The influence of artificial intelligence on the health and safety of workers is a growing concern. In recent developments, the European Union has been implementing specific measures to address this issue.

Despite the numerous opportunities for incorporating artificial intelligence into the work process to enhance employee performance, there are also some occupational safety concerns. While the integration of artificial intelligence has the potential to enhance risk management in healthcare settings, it is imperative to acknowledge the inherent risks associated with its implementation. The primary concern pertains to the potential for accidents at work that result

in employee injuries *(Gaskins, 2004)*. As foreign scientists have observed, even exoskeletons equipped with artificial intelligence to assist workers in movement or rehabilitation can pose a risk of injury if they malfunction. Consequently, the implementation of suitable occupational safety and health policies is strongly advised when utilizing these devices *(Ajunwa, 2018)*. Furthermore, the integration of artificial intelligence into robotic systems may potentially introduce novel risks to the work environment, which have not been previously identified *(Cerka et al., 2017)*. A salient concern pertains to the establishment of effective communication between these robots and their human counterparts, a potential hazard that merits due consideration within the context of occupational safety *(Jarota, 2021)*.

Consequently, contemporary production environments encompass a broad spectrum of potential accident sources, extending beyond conventional mechanized processes to incorporate digital networks that govern operational activities. The management of work processes by artificial intelligence has been shown to result in a rush and time pressure that can lead to physical injury for employees *(Wigert & Agrawal, 2018)*. Concurrently, the psychosocial risks associated with artificial intelligence, which have the potential to adversely affect an employee's mental well-being, should not be disregarded. These risks primarily manifest themselves in the form of employee stress related to job performance, mainly when the nature of the work changes *(Leka et al., 2015)*. Mental health is also influenced by physical risks, as there is often an intersection between physical and psychosocial risks *(Leka et al., 2015)*.

Psychosocial risks in the workplace can emerge from the implementation of algorithmic management systems that oversee the workflow. These systems empower employees by granting them control over their work environment *(Parent-Rocheleau & Parker, 2022)*. A notable concern is the potential for employees to become aware of their employers' access to their confidential data. To illustrate, consider a scenario in which genetic screening is utilized to assess an individual's propensity for developing a particular disease. This screening would be conducted prior to the commencement of employment, thereby precluding any exposure to potential disease-inducing factors in the work environment. Consequently, employers may exercise discretion in their hiring practices by considering factors that could potentially disqualify a candidate *(Field, 1983)*. Employers may employ artificial intelligence to collect information about an employee's health to reduce potential sick leave costs *(Bernstein, 2006)*. However, the collection of data concerning an employee can, for instance, catalyze discriminatory practices against the employee *(Ajunwa, 2018)*, which can result in a range of adverse outcomes, including depression *(Gordon, 2016)*. The question remains as to what the employer will do with this knowledge in a specific case, and whether it will ultimately result in the termination of the employment contract. The possibility of termination of employment can result in elevated levels of stress for the employee. The apprehension of losing one's employment can have deleterious effects on an employee's mental well-being and disposition, potentially resulting in interpersonal conflicts and professional burnout *(Quilnan, 2007)*. Conversely, information regarding employees can facilitate the anticipation of potential health complications and the formulation of proactive treatment strategies *(Flaherty, 2009)*. Nevertheless, employers should not utilize health information to discriminate against employees *(Draper, 1996)*.

3. EU Legal Frameworks and the AI Act: Assessing Efficacy in Addressing Workplace Risks

The European Union has identified novel risks in the workplace that employers should take into consideration, as outlined in the European Pact for Mental Health and Well-being

(Slovenian EU Presidency, 2008) and the EU Strategic Framework on Health and Safety at Work 2021–2027. As the world of work transforms, the question of safety and health assumes paramount importance (*European Commission, 2021b*). The subject of AI regulation has been a topic of discussion in EU bodies for several years. For instance, in October 2020, the European Parliament adopted specific resolutions about artificial intelligence, two of which address occupational safety when utilizing artificial intelligence. In its resolution of October 20, 2020, on the ethical framework for artificial intelligence, robotics, and related technologies *(European Parliament, First Resolution, 2020)*, the European Parliament made several requests to the European Commission. Among these requests was the proposal of a comprehensive regulatory framework. This framework would cover ethical principles and obligations related to the design, development, and use of AI, robotics, and related technologies in the EU, including software algorithms. The resolution underscores that the fundamental concept should be predicated, in particular, on the principles of human-centeredness in the domains of artificial intelligence, robotics, and associated technologies, that is, technologies created by humans and controlled by humans. Moreover, the European Parliament has indicated that prospective regulations should prioritize ensuring the safe utilization of technologies, providing users with clear information regarding their interaction with artificial intelligence systems, and ensuring the availability of essential information for their operation.

In another resolution dated October 20, 2020, containing the Commission's recommendations on the civil liability regime for AI, the European Parliament *(European Parliament, second resolution, 2020)* advocated that, given the significant potential for harm, all operators of high-risk AI systems listed in the annex to the proposed regulation should have civil liability insurance. Furthermore, the European Parliament has acknowledged that the deployment of an AI system that operates autonomously and possesses a substantial capacity to cause harm to an individual or a group of individuals constitutes a grave concern. According to the European Parliament, if an individual who utilizes an artificial intelligence system is implicated in a detrimental occurrence, they should be held liable under this Regulation solely if they can be designated as an operator. Nevertheless, the right to initiate liability claims throughout the artificial intelligence system's life cycle should be accorded to the injured party. According to the aforementioned decision, the aforementioned liability is applicable in cases of third-party liability where the artificial intelligence system operates in a public space and, therefore, many persons are at risk. In such a scenario, the European Parliament anticipates that injured parties will frequently lack awareness regarding the operation of the AI system and will not possess a legal or contractual relationship with the operator. In the event of damage, affected persons will be able to bring claims for liability based on fault against the operator of the artificial intelligence system. Thus, the operator's responsibility will be to prove fault (*European Parliament, 2020b*).

The European Union has recently initiated legislative measures to regulate artificial intelligence. This is evidenced by the Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts (*European Commission, Proposals, 2021c*). This legislation introduces novel definitions, such as defining an AI system as software developed with one or more of the approaches and techniques listed in Annex I (*European Commission, Annexes, 2021a*). This software is capable of generating outputs such as content, predictions, recommendations, or decisions that influence the environments with which it interacts, given a set of human-defined objectives. According to the EC and EP proposals, a provider is defined as a natural or legal person, public authority, agency, or other body that develops an AI system or has it developed with the intention of placing it on the market or putting it into

service under its own name or trademark, whether for payment or free of charge. In contrast, the term "user" is defined as a natural or legal person, public authority, agency, or other body that utilizes an AI system under its authority, with the exception of instances where the AI system is employed in the context of personal, non-professional activities. The proposed regulations are designed to encompass workers and those operating through online platforms, as indicated in the Commission's 2021 Work Program. According to the prevailing academic consensus, the aforementioned individuals should not be classified as users within the context of this Regulation (*European Commission, Proposals, 2021c*).

In general, the proposal is consistent with the aforementioned recommendations of the European Parliament. Primarily, the regulation aims to protect the rights enumerated in the Charter of Fundamental Rights *(Charter of Fundamental Rights of the European Union, 2012)*, including the right to human dignity, respect for private life, and protection of personal data. Additionally, it seeks to safeguard the rights of workers to fair and just working conditions and the right to a high level of human health and safety protection. The objective of the initiative is to furnish assistance in governance mechanisms predicated on the principle that artificial intelligence (AI) should be subject to human oversight. However, it should be noted that this pertains exclusively to high-risk AI systems. As articulated in Article 14 of the Proposal, high-risk AI systems are to be designed to incorporate appropriate human-machine interface tools, enabling individuals to effectively oversee them throughout the period of the high-risk AI system's use. This is intended to prevent or minimize risks to the health and safety of the workforce. Systems of this nature encompass those implemented in the domains of employment, worker management, and access to self-employment, particularly for the recruitment and selection of candidates, the determination of promotions and terminations, and the allocation of tasks, as well as the evaluation of individuals in work-related relationships (*European Commission, Proposals, 2021c*).

The European Parliament and the European Commission have acknowledged specific risks associated with the implementation of AI, particularly in the context of employee reassessment and evaluation. This acknowledgment is driven by concerns over the potential for discriminatory practices arising from the use of AI in such processes. The utilization of AI systems for the purpose of monitoring employee performance and behavior can have a substantial impact on employee data, the right to privacy, and the inviolability of private life. In light of these concerns, EU bodies have proposed the implementation of a principle that high-risk AI systems should be designed to achieve, considering their intended purpose, an appropriate level of accuracy, robustness, and cybersecurity. This proposal is grounded in Article 15 (1) of the Proposal. Furthermore, it is imperative that they consistently adhere to these parameters throughout their lifecycle.

Article 16 of the Proposal delineates the obligations of providers of high-risk AI systems. According to this article, providers must ensure that their high-risk AI systems comply with the pertinent requirements outlined in the Regulation. Furthermore, they are obligated to possess a quality management system that adheres to specific principles described in the Provision. Finally, providers of high-risk AI systems are required to compile technical documentation of the AI system.

It is important to acknowledge that the proposed EU legislation does not directly impose such obligations on the employer. However, it recognizes that the employer may bear identical obligations as a provider in certain scenarios. However, these circumstances would be considered exceptional cases, as outlined in Article 17 of the Proposal. Specifically, the employer is obligated to fulfill these tasks only under the following conditions: first, if they intend to market or place into service a high-risk AI system bearing a trade name or trademark; second, if they

modify the intended purpose of the system; or third, if they make substantial changes to the system. In such cases, the effective responsibilities of the provider are transferred to the employer, who concurrently assumes the roles of user and provider *(Cefaliello and Kullmann, 2022)*.

As stipulated in Article 29 (1) of the draft regulation, employers are bound by the stipulated instructions regarding the utilization of AI systems in the context of high-risk systems. In addition, employers are obligated to adhere to Article 29 (4) of the proposed regulation, which stipulates that they must monitor the operation of such systems in accordance with the provided usage instructions. In the event that the user suspects that the utilization of the system, even in accordance with the prescribed guidelines, may result in risks as delineated in Article 65 (1), they are obligated to inform the provider or distributor and cease the use of the system. A comparable informational obligation arises in the event of the discovery of a significant incident or malfunction of the system. According to the EU proposal, employers, in their capacity as users, are obligated to maintain a record of events that are automatically generated by the system.

In addition to the aforementioned obligations, employers are responsible for ensuring safe and healthy working conditions when AI systems are in use. In accordance with Article 29 (2) of the draft regulation, the general obligations arising, inter alia, from Council Directive 89/391/EEC of June 12, 1989, on the introduction of measures to encourage improvements in the safety and health of workers at work (*Council Directive 89/391/EEC, 1989*) remain in force. Consequently, the fundamental obligation stipulated in Article 6 (1) of the aforementioned Directive to implement measures to ensure the safety and health of workers, including the prevention of occupational risks, is equally applicable in the context of addressing risks arising from the integration of AI in the work process.

4. Employers and AI Providers: Navigating Roles and Responsibilities in the AI-Driven Workplace

The proposed legislation within the European Union does not impose restrictions on employers' utilization of occupational health and safety measures. Achieving the stated objective of safeguarding the well-being of workers within the occupational milieu can prove to be a formidable challenge for employers in the context of the emergent risks associated with artificial intelligence. Additionally, the implementation of artificial intelligence necessitates oversight by an individual acting on behalf of the employer. The proposed regulations stipulate that, in order to carry out human oversight of operational intelligence specified by the supplier, the employer may freely use the means to achieve the set goal.

In its report entitled "Work for a Brighter Future," the ILO clearly states that in the future, people should continue to occupy a central place in the work process. The report further states that one element of implementing the strategy should be the recognition of safety and health at work as a fundamental principle and right at work *(ILO, 2019)*.

The transfer of responsibility for occupational health and safety from the employer to the employee or to AI is incompatible with the general concept of employee health, according to which the employer is responsible for the health and safety of the working environment *(Liu, 2020)*. The prevailing principle asserts that the onus of ensuring occupational health and safety falls upon those entrusted with the management of potential hazards and the capacity to avert or mitigate their consequences. The entity in question is defined as the employer *(Bluff and Gunningham, 2003)*.

A rational approach should stipulate that the employer primarily bears recurring responsibility for harm caused to an employee by AI, as well as for occupational health and safety

during its use. According to Article 5(4) of Directive 89/391/EEC, employers may be exonerated from liability for certain incidents if two criteria are met. Firstly, the incident in question must have been caused by extraordinary and unforeseeable circumstances beyond the control of the employer. Secondly, the incident must have occurred due to exceptional reasons that could not have been avoided despite the exercise of due diligence. Nevertheless, the onus falls upon the employer to substantiate the aforementioned circumstances. In accordance with the aforementioned Directive, employers are obligated to respond to specific incidents, implement precautionary measures as appropriate, and implement preventative measures. Consequently, it is incumbent upon employers to mitigate the risks associated with the integration of AI into the work process by adapting the working conditions of employees to the circumstances. As a general rule, the implementation of employee protection measures must align with the level of risk present in the work environment, for which the employer is responsible *(Colosio et al., 2017)*.

It is important to note that the European Commission's proposal to regulate artificial intelligence does not directly address the relationship between employer and employee. This may result in a blurring of the issue of responsibility for safety and health in the workplace. The fundamental principle underpinning this framework is that the supplier is held liable, while the employer is only obligated to utilize artificial intelligence in accordance with the stipulated instructions for use. In the proposed EU regulation, it appears to be unreasonable to suggest that only the supplier is liable for artificial intelligence in principle, despite its undeniably important role in ensuring device safety. It is imperative to delineate the employer's role as the primary entity responsible for ensuring safety and health in the workplace, particularly in contexts involving artificial intelligence. The fundamental principle of establishing employer financial liability, encompassing accidents at work, should serve as the foundational framework for further deliberations concerning the role of AI within the work process. The obligation of employers to regulate the payment of compensation for accidents at work, in particular, encourages them to take all possible preventive measures, including seeking ways to address occupational health and safety issues *(Lambert, 2003)*.

The European Union (EU) has established comprehensive regulations that govern employers' responsibilities to mitigate potential hazards and establish the requisite organizational framework and measures to safeguard the well-being of their workforce. Directive 89/391/EEC (*Directive 89/391/EEC, 1989*) establishes the general instruments that employers must utilize in response to occupational health and safety risks. These instruments can also be applied in conjunction with the use of AI in the work process. However, it should be noted that these measures are of a general nature. Concurrently, working conditions have undergone substantial changes since the implementation of the aforementioned Directive, and the present challenges associated with the utilization of AI are becoming increasingly pronounced, a phenomenon that is concomitant with the advancement of AI *(Jarota, 2021)*. The general obligation to provide information on risks to the safety and health of workers is derived from Article 10 of Directive 89/391/EEC. As delineated in Article 10 of the Directive, employers are obligated to apprise their employees of the potential hazards associated with occupational health and safety. In this context, it is imperative to underscore that this regulation does not absolve employers of the responsibility to apprise their employees of emergent risks. Consequently, the Directive furnishes employees with the necessary tools to enhance their awareness regarding the occupational health and safety risks associated with artificial intelligence. Concurrently, the dissemination of information regarding occupational health and safety hazards to employees should extend beyond the mere indication of the hazard itself. It is imperative to furnish employees with knowledge on how to respond to such hazards effectively.

The potential risks associated with artificial intelligence (AI) in the workplace necessitate a re-evaluation by employers and legislators. First and foremost, particular attention must be directed toward the manner in which artificial intelligence functions on devices, as this phenomenon has the potential to result in employee injury. The challenge, therefore, lies in ensuring that employees are provided with optimal working conditions when collaborating with AI systems. This is necessary to mitigate the pressure employees may experience and to guarantee their right to rest and to engage in cooperative activities with the AI system.

New occupational health and safety risks associated with the use of AI are social, not just individual *(Draper, 1996)*, so the correct approach to the use of artificial intelligence is also crucial from the point of view of the healthcare and social security system. The implementation of adequate mechanisms to safeguard the interests of employees engaged in AI-related activities constitutes a specific responsibility incumbent upon public authorities within this domain.

5. Conclusions

This study has examined the complex relationship between the increasing adoption of AI in European workplaces and the corresponding legal safeguards for employee health and safety. The study has revealed that while AI offers transformative potential in enhancing productivity and creating innovative solutions, it simultaneously introduces a spectrum of risks that demand careful regulatory consideration. These risks encompass a range of potential hazards, including physical hazards associated with malfunctioning AI systems, insidious psychological pressures stemming from algorithmic management, and discriminatory practices enabled by data collection.

An examination of the EU regulatory initiatives, particularly the proposed Artificial Intelligence Act, suggests a proactive approach to addressing these challenges. Nevertheless, the study underscores the necessity of ongoing evaluation of the efficacy of these legal frameworks, particularly in the context of the rapid advancements in technology. The necessity of a balanced approach that fosters innovation while robustly protecting the fundamental rights and well-being of workers is underscored by this.

Additionally, this paper underscores the pivotal roles of employers and AI providers in ensuring workplace safety. It is imperative that clear guidelines and ethical obligations be established, necessitating human oversight, transparent communication, and the provision of adequate resources for employees to engage effectively with AI systems. A concerted effort among policymakers, employers, and AI developers is imperative to navigate the intricate landscape of AI and ensure a future where technology serves to augment, rather than compromise, the health and safety of the workforce. Continued research and engagement with these subjects will be crucial as AI technologies become further integrated into the fabric of our working lives.

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