THE EUROPEAN UNION AI ACT AND ITS IMPLICATIONS FOR HUMAN RESOURCE MANAGEMENT: LEGAL FRAMEWORKS, CHALLENGES, AND OPPORTUNITIES

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ABSTRACT

THE EUROPEAN UNION AI ACT AND ITS IMPLICATIONS FOR HUMAN RESOURCE MANAGEMENT: LEGAL FRAMEWORKS, CHALLENGES, AND OPPORTUNITIES

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This thesis examines the consequences of the EU AI Act on HR management by evaluating the potential and difficulties presented by AI applications in the workplace. As AI technologies swiftly develop and penetrate organizational functions, HR departments have emerged as pivotal arenas for the incorporation of AI systems, particularly in recruitment, performance assessment, and employee engagement. The study examines the EU AI Act, the first extensive legislative framework governing AI, and its response to these advancements via a risk-based methodology that categorizes AI systems and defines compliance requirements for high-risk applications, particularly in employment settings. The study integrates a legal examination of the EU AI Act with an assessment of practical applications, business methodologies, and technology-oriented trends in human resources. It utilizes official legislation, institutional reports, professional analyses, and AI tool outputs to highlight both the possible advantages—such as enhanced efficiency and strategic decision-making—and the hazards, including bias, opacity, and data misuse. The study suggests that although AI can substantially improve HR

operations by automating laborious jobs and facilitating data-driven decisions, its implementation must adhere to ethical standards and legal protections. The EU AI Act provides a framework for enterprises seeking to implement AI safely and transparently in human resources processes.

Keywords: Artificial Intelligence, European Union, AI Act, Human Resources, Digital Transformation

ÖZ

AVRUPA BİRLİĞİ YAPAY ZEKA YASASI VE İNSAN KAYNAKLARI YÖNETİMİ ÜZERİNE ETKİLERİ: YASAL ÇERÇEVELER, ZORLUKLAR VE FIRSATLAR

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Bu tez, Avrupa Birliği Yapay Zekâ Yasası'nın insan kaynakları yönetimi üzerindeki etkilerini incelemekte ve iş yerinde yapay zekâ uygulamalarının sunduğu fırsatları ve karşı karşıya olduğu zorlukları analiz etmektedir. Yapay zekâ teknolojilerinin hızla gelişmesi ve kurumsal süreçlere entegrasyonu ile İK departmanları özellikle işe alım, performans değerlendirme ve çalışan etkileşimi alanlarında yapay zekâ sistemlerinin yaygınlaştığı temel alanlardan biri haline gelmiştir. Bu çalışma, dünya çapında yapay zekâyı düzenleyen ilk kapsamlı yasal çerçeve olan AB Yapay Zeka Yasasının bu gelişmeleri nasıl ele aldığını ve özellikle istihdam bağlamında yüksek riskli uygulamalara yönelik getirdiği uyum yükümlülüklerini risk temelli bir yaklaşımla ortaya koymaktadır. Araştırma, AB Yapay Zekâ Yasasının hukuki analizini; kurumsal uygulamalar, sektörel eğilimler ve teknolojik örneklerle birleştirerek değerlendirmektedir. Resmî mevzuat, kurumsal raporlar, profesyonel analizler ve yapay zekâ çıktıları gibi kaynaklardan yararlanarak; verimlilik artışı ve stratejik karar alma gibi faydaların yanı sıra önyargı, şeffaflık eksikliği ve veri kötüye kullanımı gibi riskleri de ortaya koymaktadır. Sonuç olarak, yapay zekâ İK süreçlerini

operasyonel yükleri azaltarak ve veri temelli karar süreçlerini destekleyerek geliştirebilir; ancak bu uygulamalar etik ilkelerle ve yasal güvencelerle uyumlu olmalıdır.

Anahtar Kelimeler: Yapay Zeka, Avrupa Birliği, Yapay Zeka Yasası, İnsan Kaynakları, Dijital Dönüşüm

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LIST OF ABBREVIATIONS

AI	: Artificial Intelligence
EU	: European Union
HR	: Human Resources
DSA	: Digital Services Act
DMA	: Digital Markets Act
DGA	: Digital Governance Act
GDPR	: General Data Protection Regulation
UCPD	: The Unfair Commercial Practices Directive
IBM	: International Business Machines Corporation
OECD	: Organisation for Economic Co-operation and Development
AI HLEG	: High-Level Expert Group on Artificial Intelligence
EuroHPC JU	: The European High Performance Computing Joint Undertaking
CJEU	: Court of Justice of the European Union

CHAPTER 1

INTRODUCTION

In recent years, artificial intelligence (AI) has evolved from a theoretical concept to a transformative influence across practically all sectors of contemporary life. AI is progressively transforming the manner in which firms manage their personnel, enhance performance, and formulate strategic judgments. In the domain of Human Resource Management, AI has emerged as an essential tool—optimizing recruiting, automating monotonous administrative functions, improving employee engagement, and facilitating data-driven decision-making. The attraction of AI in human resources lies in its capacity to enhance efficiency, decrease expenses, and eliminate human error. HR operations frequently involve the management of substantial amounts of both structured and unstructured data—spanning resumes, performance indicators, employee feedback, and engagement scores—rendering them highly suitable for AI integration.

Nonetheless, the use of AI into HR operations entails certain risks. AI systems employed in recruitment, advancement, performance assessment, and oversight possess the ability to make judgments that significantly impact humans' careers and financial well-being. Concerns have been expressed regarding the transparency, equity, accountability, and impartiality of these systems. Initial ethical discussions on AI in the workplace highlighted the necessity for regulation, especially in critical areas such as employment, education, and criminal justice. Although these ethical discussions were essential for fostering awareness, they were devoid of enforcing procedures. As AI systems grew more intricate and commonplace, the shortcomings of voluntary ethical guidelines became increasingly evident, requiring legal action.

The European Union Artificial Intelligence Act (AI Act) emerged as a direct response to this regulatory gap. Proposed in 2021 and enacted in 2024, the AI Act

constitutes the inaugural comprehensive legal framework for artificial intelligence globally. It implements a risk-based framework, categorizing AI applications as unacceptable, high-risk, limited-risk, and minimal-risk. AI systems employed in employment and workforce management are distinctly classified as high-risk, necessitating stringent requirements concerning transparency, data governance, documentation, human oversight, and accountability. The Act seeks to defend fundamental rights, uphold democratic ideals, and foster trust and creativity within the European AI ecosystem.

However, the velocity of AI advancement significantly surpasses the rate of regulation adjustment. Generative AI models, algorithmic decision-making systems, and predictive analytics tools are rapidly evolving, resulting in a complex landscape that is challenging to regulate effectively. The AI Act confronts the intricate dilemma of being both stringent and adaptable—guaranteeing human-centric AI deployment while preventing regulatory inertia. In sectors like HR, where AI growth is both swift and multifaceted, this contradiction is especially evident.

Human Resource Management is particularly vulnerable to the implications of artificial intelligence regulation for various reasons. This domain is data-intensive and depends on pattern recognition, predictive modelling, and decision automation—capabilities that align well with AI systems. Secondly, HR decisions intrinsically impact persons' rights, dignity, and livelihood, hence elevating significant ethical and legal considerations. Organizations are increasingly compelled to exhibit justice, diversity, and compliance in hiring processes, rendering the deployment of regulated, transparent AI tools both essential and perilous. The utilization of AI in human resources closely aligns with the principles of the General Data Protection Regulation (GDPR), workplace surveillance legislation, anti-discrimination laws, and the provisions of the AI Act.

This thesis aims to examine the complex implications of utilizing AI in human resources within the regulatory framework of the EU AI Act. The study adopts a comprehensive approach, assessing the broader advantages, limitations, and hazards of AI integration in HR, rather than concentrating solely on specific HR operations

such as recruiting or evaluation, all viewed through the prism of European legislation. This thesis specifically seeks to address the research question: "What are the key benefits and challenges associated with integrating AI into HR operations under the scope of the EU AI Act?"

This thesis explores a wide range of areas. All three areas—Human Resources Applications of the EU AI Act and Artificial Intelligence Applications—are very broad and difficult to explain in a single thesis. Therefore, this thesis narrows its scope to specific areas. First, recognizing that the EU Artificial Intelligence Act (AI Act) is a multilayered and dynamic framework that will evolve with national practices, legal interpretations, and future amendments, it deliberately limits its scope to the regulatory/policy dimension within the HR context. Aspects that limit the use of AI in HR have not yet been adequately addressed in academia; because AI applications are rapidly evolving, AI law is still relatively new, and therefore, academic resources are limited. To partially address this gap, the study utilizes EU legislation, legal commentary, academic literature, corporate reports, and case analysis to explore this subject. Considering the novelty and swift advancement of AI systems and their legal frameworks, the study also integrates information from reports and documents of professional organizations and policy think tanks. This approach connects academic research with practical application and offers a relevant contribution to the comprehension of AI governance in human resources.

Another restrictive feature of the thesis is the intentional examination of HR practices in the private sector and their implications for the EU AI Act, while public sector use is excluded. There are three primary reasons for this: first, the pace of adaptation and innovation is significantly higher in the private sector; this allows for earlier and more diverse deployment of AI tools within HR processes within the context of the EU AI Act, creating a more conducive environment for evidence-based analysis. This will allow for a broader and more productive scope of research. Second, the slower-paced nature of public institutions and their limitations in external data/case study presentation narrows the scope of research. Consequently, accessing data on HR practices in public institutions is quite challenging. However, traceability and comparability of HR practices in the private sector compared to the

public sector were significantly greater. Finally, in terms of literature and resource access, while limited in overall volume, academic studies and corporate reports on the private sector are more accessible and diverse than those on the public sector, while academic production on the use of AI in public HR is relatively scarce. Therefore, this study focuses on the private sector to deepen its research question by addressing recruitment, performance management, employee experience/engagement, and decision support. This will both facilitate the implementation of risk-based regulatory requirements (transparency, data governance, human oversight, robustness, etc.) and enhance the generalizability of the findings by distinguishing them from the public sector.

This study mainly combines legal and policy papers, academic research, and current implementations to examine AI's function and impact in human resources under the EU regulatory framework. Moreover, current implementations and case studies from enterprises using AI in HR highlight the practical challenges and advantages of adhering to AI rules. This paper seeks to provide a comprehensive analysis of AI governance in HR by synthesizing many sources, thereby connecting theoretical frameworks with practical implementations.

On the other hand, as previously stated in the research question, the main concern of the thesis is to examine the tangible benefits and regulatory/ethical challenges of AI integration in HR within the framework of the EU AI Act and to identify the prevailing aspect. To answer this question, the study brings together EU legislation and legal commentary, industry reports, and current practice examples. It specifically analyzes efficiency, risk of bias, and transparency in recruitment, performance management, and decision support processes.

In addition, this study focuses on sub-headings of human resources practices, specifically examining the interaction between recruitment, performance management, employee experience, data governance, and human oversight obligations, as well as the legal and practical aspects of AI integration in decision-making processes. The thesis's premise is that the use of AI within HR practices is extremely broad. AI applications can be used in many sub-headings, providing

organizations with opportunities for efficiency and innovation; however, the risks associated with this potential are more significant. While the European Union Artificial Intelligence Law provides a comprehensive framework aimed at limiting and regulating these risks, full implementation of the regulations and institutional compliance will take time. Artificial intelligence applications are advancing at an extraordinary pace, and due to the restrictive and cautious nature of the law, it is clear that technology is currently ahead in this race. Therefore, this thesis aims to demonstrate how to manage the increasing risks and the speed gap between regulation and technology, especially in the field of human resources, provided by the vast opportunities offered by AI applications.

This thesis offers an essential question: what are the main benefits and obstacles of using AI in human resources under the EU AI Act? The study concentrates on private-sector human resources, where adoption occurs faster and data is more readily available, analyzing recruitment, performance management, employee experience/engagement, and decision support. The methodology combines EU legislation and directives with industry analyses and contemporary practices, seeking to translate principles into actionable measures. The objective is to demonstrate the areas where the advantages of AI are substantial and where hazards remain prevalent, as well as to outline the actions businesses may take to reduce them. The subsequent chapter examines the literature; Chapter 3 clarifies the EU AI Act; Chapter 4 scrutinizes the four HR domains and provides practical assistance; Chapter 5 concludes with essential implications and recommendations.

CHAPTER 2

LITERATURE REVIEW

The concept of artificial intelligence (AI) refers to the capacity to identify patterns in data such as sounds or images that are comparable to human perception, to learn from mistakes and adjust performance over time, to reason and solve complex problems through planning and decision-making, to comprehend and produce human language for smooth communication, and to perform repetitive or complex tasks on its own in fields like data processing and manufacturing. In McCharty's words (2004), artificial intelligence is the science and engineering of creating intelligent devices, especially intelligent computer programs. While AI does not necessarily limit itself to techniques observable in biology, it is committed to a similar goal of using computers to study human intelligence.

Artificial intelligence has achieved remarkable success and has advanced at an unprecedented pace. It has penetrated almost every industry and region in the entire world, transforming daily life, governments, and industries. AI applications span multiple fields, including science, engineering, business, medicine, and weather forecasting (Parteke et al., 2018). AI has grown crucial in industry, the public sector, and daily life, blending with various contemporary life aspects. For instance, AI drives virtual assistants like Siri and Alexa, improves e-commerce with tailored suggestions, and tailors social media and streaming content to user interests in everyday life and consumer goods. Artificial intelligence has emerged as the foundation of Industry 4.0 following automation, electrification, and informatization (Lu, 2016, 2017a, 2017b). In this sense, it is not difficult to say that in today's life, artificial intelligence is a guiding and shaping force in many parts of life. AI also helps the public sector and government manage smart cities, enhance public safety by analysing crime trends, and personalize education with adaptive learning

resources. In that direction Schooll argues that AI will improve government efficiency and service capabilities and reduce manpower shortages (2014).

On the other hand, the most popular and widely used implementations of AI are in media and entertainment, where it powers AI-driven content production, personalizes streaming recommendations, and improves video gaming experiences with realistic settings and adaptive characters that captivate millions of people every day. As of 2006, large companies such as Facebook, Netflix and Twitter started to use artificial intelligence (Acar, 2020). Artificial intelligence algorithms provide more personalized marketing efforts by analysing data on consumer behaviour and interests. For instance, corporations such as Amazon and Netflix employ artificial intelligence to suggest content depending on consumers' viewing and purchasing behaviour.. Spotify uses AI algorithms to analyse user data and create personalized playlists. In addition, AI technologies can process and potentially improve audio quality through automated mastering services. LANDR, an AI-powered music mastering platform, improves tracks by analysing frequencies, dynamics, and tonality, and provides valuable suggestions for overall enhancement (Accessland Live, 2024). In addition, AI can also be seen in the movie industry. Artificial intelligence may do tasks such as forecasting a film's future profitability by analyzing the script. Despite the occasional inaccuracy of algorithmic forecasts, they are increasingly being adopted by prominent film studios. Warner Bros. use the Cinelytic AI engine for box office forecasting. 20th Century Fox employs Merlin, an AI and machine learning system, to align films with target demographics and deliver extensive demographic data (Accessland Live, 2024).

Moreover, AI is equally pioneering in emerging markets and on a global scale; it improves access to healthcare through telemedicine, eliminates language barriers with real-time translation tools, and supports agriculture in developing nations by allowing farmers to maximize produces with smartphone-based AI guidance. These extensively used applications show how accessible and adaptable AI is, having an international influence and affecting experiences in a variety of regional and industrial contexts. It presents different ways to make works easier and more productive.

Hence, artificial intelligence serves as a transformational force that reconfigures the world around us across various dimensions—economic, social, and technological. Its capacity to replicate human cognition and automate complicated processes not only improves productivity across industries but also enhances daily experiences through tailored interactions in media, commerce, and communication. As AI increasingly penetrates diverse areas, including healthcare and agriculture, it stimulates innovation and enhances growing markets, promoting worldwide connectivity and accessibility. The incorporation of AI in governmental operations improves public services and fosters more intelligent urban administration, thereby leading to a more efficient and responsive society. As AI technologies progress, it is crucial to address the ethical and regulatory concerns they pose, guaranteeing that their deployment advantages all segments of society. The continuous investigation of AI's capabilities will inevitably yield novel applications and insights, solidifying its role as a fundamental element of contemporary advancement in the 21st century.

The foundations of artificial intelligence, which is very popular today and finds itself a field of study in almost all disciplines, are based on ancient mythology and philosophy. According to the Mayor (2019), our capacity for the creation of artificial intelligence dates back to ancient times, who is also a 2018-19 fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford. Before technological advancements enabled autonomous devices, concepts of artificial life and automatons were examined in ancient mythology (Ancient Myths Reveal Early Fantasies About Artificial Life, 2019) Mayor argues that the story of Talos, first told by Hesiod around 700 BC, offers one of the earliest conceptions of a robot. According to the legend, Talos is described as a giant bronze man built by Hephaistos, the Greek god of invention and blacksmithing. Talos' mission was to protect Crete from outside attacks. He did not allow ships to approach the island and circled the island 3 times a day, throwing giant rocks at potential invaders. Talos' body was made of bronze, and he had a single vein that gave him life, starting from his neck and ending at his ankles. But instead of blood, molten metal flowed through his veins. At his ankle, a bronze nail acted as a plug to hold in this life-giving fluid (TED-Ed, 2019). This story, first recorded around 700 BC, is an example of the first interaction between man and robot. In addition to illustrating one of the earliest

experiences between humans and an artificial being, this myth highlights the long-standing human fascination with the idea of creating life-like entities. It also increases difficult issues regarding existence, intelligence, and the dual nature of technology as a potential threat and a protector.

Conversely, Roy (2021) claims that the contemporary world is unaware of the fact that the roots of AI can be linked to theories, tales, and myths regarding artificial entities imbued with intellect or consciousness by ancient Indian Rishis 8,000 to 11,000 years ago. Classical philosophers attempted to define the process of human cognition as the systematic manipulation of symbols, so laying the groundwork for contemporary artificial intelligence. Numerous technological advancements we observe now were previously articulated in Hindu texts, such as the Ramayana, Mahabharata, Bhagavad Gita, Vedas, and Upanishads, believed to have been composed between 5000 and 8000 years ago (3000 BC–6000 BC). These mythologies exhibit an endless fascination with intelligent, self-sufficient beings and represent early human exploration of artificial intelligence, autonomy, and the limits of human creative thinking. Their influence endures in our modern understanding of AI, providing a cultural and philosophical foundation for the ongoing pursuit of machine intelligence.

While its origins trace back to ancient civilizations, the significance of artificial intelligence research in the contemporary context emerged during and after the Second World War. During the Second World War, Alan Mathison Turing changed the course of the conflict by constructing the first fully automatic code-breaking computer, known as the "Bombe," which was significant under the prevailing circumstances (Acar, 2020). Following the Second World War, numerous researchers, including Alan Turing, started independent work on artificial intelligence. In 1947, Alan Turing delivered a speech on artificial intelligence, asserting that intelligent machines may be developed through the integration of artificial intelligence and computer programming (McCarthy, 2007). In his 1950 article “Computing Machinery and Intelligence,” Alan Turing examines the question, “Can machines think?” Turing built the intellectual foundations of artificial intelligence by combining the concepts of "machine" and "thinking" (Turing, 1950).

While Alan Turing is regarded as the father of artificial intelligence, the phrase "artificial intelligence" was first used in 1956 during a workshop where notable figures on the subject attended convened by John McCarthy at Dartmouth College. Following this occurrence, the area of artificial intelligence studies experienced significant growth, leading to the development of many artificial intelligence programs. In 1965, ELIZA, an early natural language processing tool, was developed by Joseph Weizenbaum at MIT. The inaugural human-like intelligent robot, named WABOT-I, was constructed in Japan in 1972 (Acar, 2020). Between 1974 and 1980, numerous publications critically criticized artificial intelligence research, leading governments to be influenced by these critiques and subsequently withdraw funding from artificial intelligence initiatives. This era is referred to as the "Artificial Intelligence Winter." In the 1980s, artificial intelligence had a resurgence as the UK devoted resources to competing with Japan in AI research (Öztürk & Şahin, 2018). In 1997, the loss of world chess champion Garry Kasparov by IBM's program "Deep Blue" in a chess match garnered significant attention. In this encounter, Garry Kasparov faced a program capable of processing 200 million chess moves per second and was defeated. This event demonstrated that computers may outperform humans in certain domains (Schultz and Ellen-Schultz, 2020). Also, Deep Blue's victory is regarded as a significant milestone in the history of artificial intelligence and has inspired numerous books and films.

By 2006, large companies such as Facebook, Netflix, and Twitter started to use artificial intelligence (Acar, 2020). In 2017, Google invented 'Transformer,' a modern AI architecture that would form the basis for productive AI. As a result of these and similar innovations, there was an artificial intelligence boom in 2020 due to the successful application of machine learning in academia and industry. The notable emergence of OpenAI's ChatGPT in 2022 shows the integration of AI into daily life, establishing it as a common instrument for communication and information retrieval, thereby prompting significant discourse regarding the societal, ethical, and future implications of such technologies. This development highlights both technological advancements and the necessity for ongoing discourse regarding the implications of AI's growing presence in our daily lives and the workforce. Mainly, artificial intelligence (AI) includes four fundamental forms that are

transforming many industries. AI is the fundamental technology enabling computers to execute tasks that require human-like cognition, including decision-making and problem-solving, thus improving efficiency through rapid data processing. Secondly, within the discipline of AI, machine learning (ML) is an essential component whereby computers integrate knowledge from historical data, enhancing their performance over time through greater access to diverse examples, consequently facilitating the prediction of trends and automated decision-making.

The simulation of machine learning models is closely associated with computational statistics, which primarily aims to facilitate predictions through computational methods. It is also correlated with mathematical optimization, which connects models, applications, and frameworks to the domain of statistics. Real-world problems exhibit significant complexity, rendering them ideal candidates for the application of machine learning. Machine learning can be utilized across diverse computing domains to develop and implement explicit algorithms that yield high-performance results, such as email spam filtering, fraud detection on social networks, online stock trading, facial and shape recognition, medical diagnosis, traffic forecasting, character recognition, and product recommendation, among others. Self-driving Google cars, Netflix's personalized movie and show recommendations, online recommendation systems such as friend suggestions on Facebook, "more items to consider" and "get yourself a little something" on Amazon, and credit card fraud detection demonstrate the practical applications of machine learning (Alzubi et al., 2018).

Thirdly, another domain is Generative AI, which emphasizes creativity; it produces creative content such as art, music, or literature by integrating existing elements, thus automating creative processes. While Machine learning can sort and analyse data, generative AI can advance further by producing new content with the information it already has. Finally, Natural Language Processing (NLP) facilitates computers' comprehension and interaction with human language, which is essential for applications such as virtual assistants and chatbots, enhancing communication and user engagement. It aims to enhance the efficiency of human–computer interaction. NLP enables computer systems to process human input and provide meaningful

output. These types of AI jointly expand the capabilities of machines, fostering innovation across diverse domains (Wang et al., 2021). Therefore, generative AI focuses on creativity, and Natural Language Processing (NLP) emphasizes enhancing human–computer interaction; together, they highlight the diverse applications and innovative potential of artificial intelligence. While these domains push the boundaries of what machines can achieve creatively and communicatively, the underlying strength of AI lies in its foundational ability to collect and examine data for improved decision-making. In other words, artificial intelligence emphasizes the collection and examination of data to improve decision-making rather than generating unique knowledge. It operates on three fundamental pillars: data, hardware, and software. Data serves as the basis, consisting of structured information—such as numerical values, text, and images—employed to automate operations and extract insights. Hardware provides the computational power necessary for effective data processing, enabling rapid and accurate computations that make advanced software applications possible. Ultimately, the software comprises instructions and algorithms that empower AI systems to analyse data, discern patterns, and provide new insights. These pillars collectively enable AI to exploit data effectively and enhance decision-making across several sectors (Artificial Intelligence: Origins, Applications, and Future Trends, n.d.).

Artificial Intelligence (AI) started gaining popularity in the European Union in the early 2000s, but substantial sparks developed in the 2010s as technological advancements spread across multiple sectors. The EU acknowledged the capacity of AI to foster innovation, promote economic growth, and enhance services in healthcare, transportation, and energy. The EU aimed to establish itself as a leader in ethical and human-centred AI through investments in research, development, and collaboration. The AI Act constitutes the inaugural legal framework for artificial intelligence, tackling associated dangers and positioning Europe to play a significant global role (AI Act, 2025). The EU has created a legislative framework to ensure the safe deployment and ethical use of AI technology, recognizing the potential dangers of unregulated AI. This commitment to responsible AI governance is manifested in the AI Act, which delineates clear, risk-based policies that promote trust, safeguard fundamental rights, and stimulate innovation across Europe. The AI Act (Regulation

(EU) 2024/1689) establishes the inaugural comprehensive legal framework for artificial intelligence globally. The aim of the legislation is to foster dependable AI in Europe. A primary motivation for this endeavour is the EU's careful regulatory framework, which prioritizes ethical AI development and application. This differs from nations such as the United States, where the emphasis has predominantly been on innovation and competition, occasionally compromising ethical principles. Furthermore, the EU emphasizes human-centric principles, including privacy, data protection, and basic rights, which form the foundation of its AI governance strategy. An illustration of this devotion is the General Data Protection Regulation (GDPR), which protects individual rights and affects the implementation of AI in contrast to nations with less rigorous privacy legislation. Furthermore, the AI Act constitutes a component of an extensive legislative framework aimed at encouraging the advancement of reliable AI, which also encompasses the AI Innovation Package, the establishment of AI Factories, and the Coordinated Plan on AI. These regulations collectively guarantee safety, fundamental rights, and human-centred AI, while promoting adoption, investment, and innovation in AI across the EU. The Commission has initiated the AI Pact, a voluntary initiative designed to simplify the transition to the new regulatory framework by encouraging future implementation, involving stakeholders, and encouraging AI providers and deployers from Europe and beyond to adhere to the essential obligations of the AI Act in advance (AI Act, 2025).

The EU has designated significant funds for AI research and applications via initiatives such as Horizon Europe, encouraging collaboration among member states to enhance innovation. Through these initiatives, the EU seeks to promote AI technology while ensuring its alignment with European values and societal requirements. A key component of this strategy is the EU's strong dedication to AI legislation, acknowledging the essential need to regulate AI to protect the core principles of the Union. The principles encompass respect for human dignity, freedom, equality, democracy, and the rule of law, with essential rights including non-discrimination, data protection, privacy, and children's rights. The EU emphasizes that the deployment of AI systems that endanger these values must be unequivocally forbidden. Moreover, the deployment of AI applications that influence

human behaviour in manners that result in, or are likely to result in, physical or psychological harm is considered intolerable and should be prohibited (Burgstaller, 2023).

Artificial Intelligence (AI) is changing the socio-economic structure of the European Union (EU), fostering innovation, efficiency, and competitiveness across multiple industries. As AI technologies advance, the EU acknowledges the necessity for comprehensive laws to leverage these developments while safeguarding ethical norms and preserving citizens' rights. The EU's strategy for AI focuses on a framework that fosters trust, transparency, and accountability, therefore enabling the responsible advancement and use of AI systems. Moreover, as the global competition for AI dominance escalates, the EU is collaborating with non-EU nations to establish international partnerships and frameworks that conform to its regulatory norms. These exchanges seek to enhance cross-border data sharing and foster an atmosphere friendly to innovation, ultimately formulating a unified digital policy that establishes the EU as a leader in AI governance. In that direction, The Council of the EU, in its conclusions dated 21 October 2020, has advocated for the resolution of opacity, complexity, bias, unpredictability, and semi-autonomous behaviour in specific AI systems to ensure their alignment with fundamental rights and to enhance the enforcement of legal regulations (Council of the European Union, 2020). The European Parliament has lately issued multiple resolutions concerning artificial intelligence and suggested legislative actions to the EU Commission to harness the advantages of AI while safeguarding ethical values (European Parliament, 2020). These resolutions recommend essential legislative measures to the EU Commission and emphasize the necessity of creating a comprehensive framework for the ethical and responsible advancement of AI technologies, thereby facilitating innovation while prioritizing ethical values in these developments.

With the explosion of AI models and usage, gaps in the legal field emerged, and the need for order in this field arose. In 2023, the EU Artificial Intelligence Act was signed into European law. In 2023-2024, the AI race is heating up with the release of iteratively improved versions of generative AI models. Industry 4.0 and Comprehensive Integration: Artificial intelligence serves as the cornerstone of

Industry 4.0, enabling automation, intelligent manufacturing, and customized services. AI applications are growing across various industries, enhancing decision-making, automation, and predictive analytics, from health diagnostics to smart cities. This rapid expansion of AI leads to ethical and practical dilemmas. Ethics and Societal Impact As artificial intelligence advances, ethical concerns, including privacy, bias, accountability, and labour displacement, have arisen. These concerns have prompted legislative initiatives, especially in places like the European Union, which seeks to balance innovation with safety and ethical standards.

The interaction between other EU policies: This situation brings with it discussions and analyses within academic and corporate frameworks. Different methodologies exist for interpreting and studying the EU AI Act, with academics and legal professionals presenting distinct frameworks for comprehending its principal sections. Edwards, Professor of Law, Innovation, and Society at Newcastle University, referring nine essential components of the Act. Edwards asserts that the EU AI Act creates standardized regulations for the development, market introduction, and utilization of AI within the EU. It significantly relies on the certification approach established in the New Legislative Framework (NLF) and corresponds with wider EU regulatory efforts, such as the Machinery Regulation and upcoming product liability reforms. The AI Act must be contextualized among other EU legislative frameworks, like the Digital Services Act (DSA), the Digital Markets Act (DMA), and the Digital Governance Act (DGA), which mainly regulate big commercial platforms such as Google, Amazon, Facebook, and Apple (GAFA). Edwards emphasizes that the AI Act does not specifically address these technology behemoths but instead concentrates on AI implementation inside the public sector and law enforcement. Moreover, although the Act intersects with the General Data Protection Regulation (GDPR), it exceeds personal data protection to encompass wider AI-related hazards. The provisions against fraud and manipulation are consistent with the Unfair Commercial Practices Directive (UCPD), and existing consumer legislation and national regulations, including tort law, continue to be pertinent. Similar to the GDPR, the AI Act possesses extensive territorial jurisdiction, governing not only AI users within the EU but also external providers introducing AI systems to the EU market. Like in other EU policies such as

competition law and GDPR, enforcement is augmented by significant penalties, with fines potentially reaching 6% of a company's global annual revenue for non-compliance (Edwards, 2022).

In addition to the academic view reflected above, the legal firm Clifford Chance offers an alternative viewpoint, highlighting the primary objective of the EU AI Act: to guarantee that AI systems functioning within or impacting the EU are reliable, human-centred, and consistent with fundamental rights and values. This view argues that the Act employs a risk-based framework, classifying AI systems and models according to their potential societal and human effects, accompanied by relevant regulatory obligations. The AI Act prominently addresses the role of AI in the workplace and its ramifications for employment and workforce administration. Some regulations specifically pertain to employment-related AI, while others, although more general, also impact employers and HR professionals. Violations of the Act incur substantial financial penalties, with maximum fines amounting to the greater of EUR 35 million or 7% of a corporation's global annual revenue for the most serious violations. Enforcement is primarily delegated to individual EU Member States, which are tasked with determining specific sanctions and executing oversight procedures. National regulators have substantial authority to demand paperwork, assess AI systems, and implement necessary enforcement measures in instances of non-compliance (Clifford Chance, 2024).

These two viewpoints offer significant insights for the interpretation of the EU AI Act. Edwards emphasizes the regulatory foundations, extraterritorial scope, and intersections with current legal frameworks, whereas Clifford Chance concentrates on the risk-based approach, sector-specific ramifications, and enforcement methods. Collectively, they demonstrate the complex nature of the AI Act and its extensive ramifications for diverse parties. Although other researchers and legal professionals contribute useful insights, the perspective presented by Clifford Chance is considered especially relevant to this research, since it emphasizes the implications of AI legislation in the workplace and its effects on human resources. This study initially examines the AI Act's risk-based approach to establish a robust framework for analysis, as it encompasses numerous HR practices. Comprehending this

classification is crucial for evaluating how AI-driven HR processes may adhere to regulatory requirements while maintaining fairness, transparency, and accountability.

This literature study revealed that academic research specifically focused on the implementation of the EU Artificial Intelligence Act, especially concerning its effects on human resources, remains scarce. This is mostly attributable to the extraordinary speed of artificial intelligence technology advancement and the comparatively recent implementation of regulatory measures like the EU AI Act. This thesis primarily relies on official legislative documents, particularly the EU Artificial Intelligence Act (Regulation (EU) 2024/1689), along with other relevant EU digital policies. These fundamental legal texts are the primary sources of analysis and form the legal foundation of the study. Moreover, credible non-academic sources, including policy studies, corporate surveys, and legal assessments from entities such as McKinsey & Company, Gallup, and Clifford Chance, were utilized to enhance the literature. Professional platforms like LinkedIn functioned as essential resources for obtaining current insights from industry leaders and AI practitioners. Moreover, as the thesis carefully analyzes both the advantages and disadvantages of AI, the utilization of AI tools was both methodologically important and practically inevitable. These tools facilitated the exploratory phases of research, the refinement of ideas, and the verification of emergent trends, illustrating the broader truth that contemporary AI studies frequently necessitate engagement with the technologies being examined.

Artificial intelligence (AI) has evolved from an uncertain notion to a transformative force that is reshaping enterprises across multiple sectors. McKinsey & Company's The State of Organizations 2023 research reveals that AI is revolutionizing operations and enabling the creation of more resilient and flexible organizational frameworks. Organizations are leveraging AI to create sustainable talent pipelines, enhance workflows, and implement rapid, data-driven organizational reforms. The effective deployment of AI requires not only technology integration but also the assimilation of AI into corporate culture, the cultivation of AI-literate executives, and the assessment of its ethical ramifications and related hazards. As organizations increasingly adopt AI, developing strategies for its efficient deployment will be

crucial for maximizing its potential and ensuring ongoing success. The incorporation of contemporary technology, particularly artificial intelligence (AI), into organizational processes has underscored the critical role of Human Resources (HR) in ensuring a seamless transformation within firms. Gallup (2024) asserts that organizations are more adopted at managing change effectively when human resources are supported by advanced technology. This preparedness ensures that appropriate mindsets align with the proper toolsets, while organizational culture remains vital to the strategy. Preparedness allows organizations to adapt to technological advancements while maintaining a cohesive and productive workplace.

AI in HR profoundly impacts every organization, necessitating a customized approach for its adoption and execution. A comprehensive toolset is available to assist companies in effectively navigating this process. This resource provides essential insights into analysing use cases for Generative AI (GenAI) in HR, selecting the most appropriate implementation technique in accordance with organizational needs, and assessing the potential impacts of AI on the workforce. Furthermore, it offers guidance on adjusting talent strategies to align with AI-driven changes and employing AI in human resources to improve employee productivity. Building on these insights, the integration of advanced AI technologies takes HR applications to the next level. The AI platform integrates machine learning, natural language processing, and data analytics to deliver novel solutions that enhance HR functions, such as recruitment, employee engagement, workforce planning, and performance management.

In terms of the recruitment process with the help of AI, Rueden and his associates (2021) emphasize the substantial influence of AI on recruiting processes, especially in enhancing equity and efficiency in decision-making. Their research provides a thorough depiction of AI's incorporation into recruitment procedures, emphasizing its role in automating and enhancing various stages. The process commences with job seekers creating accounts, supplying detailed information, choosing positions, and submitting their curriculum vitae. The organization thereafter assesses the submissions, ensuring that all necessary materials are provided. Should the application be full, the candidate progresses to the screening round; if incomplete, it

is rejected. Artificial intelligence assists in decision-making throughout all stages, from screening to interviews. Successful candidates progress to the interview stage, and those who qualify are issued an offer letter, while the other candidates are rejected. Furthermore, data from unsuccessful candidates persists in cloud systems for potential future use. Upon acceptance of an offer, the onboarding process commences, followed by benefits administration, orientation, training, and task assignment based on the applicant's initial skill set. The paper outlines a decision-making method that clarifies the sequential process by which AI evaluates candidates, ensuring consistency and efficiency. This example demonstrates how AI improves decision-making in recruitment by automating tedious tasks, enhancing accuracy, and enabling organizations to manage people more effectively.

The implementation of AI-driven learning systems has emerged as a significant area of emphasis, further demonstrating the transformative potential of AI in HR. These systems aim to enhance ongoing employee development and organizational performance by utilizing powerful algorithms to customize learning experiences. AI-driven learning platforms evaluate individual employee competencies, pinpoint deficiencies, and propose customized training programs that correspond with both personal and organizational objectives. Through the automation of these processes, firms may guarantee that personnel maintain agility in responding to new challenges and technologies, thereby fostering long-term success. Artificial intelligence in learning and Development uses machine learning and predictive analytics to analyse extensive data sets and determine the training requirements of employees. AI can create learner profiles by synthesizing many data sources, a process that would take days if done manually (Suk, 2025). The deficiencies in standard business training methodologies, which frequently utilize a uniform approach, underscore the necessity for customized training solutions. Through AI-driven instruction, organizations can more efficiently assess individual training needs and provide tailored support that enhances the cultivation of essential soft skills, guaranteeing employees have the requisite help to thrive in their roles. Moreover, AI-powered training directs learners to suitable information and provides immediate assistance, promoting the acquisition of essential soft skills required for professional success (Learn Artificial Intelligence Skills | LinkedIn Learning, n.d.).

Building on AI's transformative role in learning and development, the integration of Big Data improves HR systems' ability to make educated, data-driven decisions. By integrating AI's ability to personalize employee growth with Big Data's analytical capabilities, HR managers can obtain development into workforce trends and optimize talent management and organizational success methods. The implementation of Big Data into human resource management has transformed decision-making processes, allowing HR managers to evaluate massive volumes of data and obtain significant insights. Big Data, when combined with modern technologies like AI and machine learning, enables HR professionals to make data-driven decisions that improve organizational efficiency and performance. According to Mohammed and Quddus (2019), Big Data enables HR managers to objectively examine their current workforce and discover emerging patterns inside the firm. This capacity to assess patterns and forecast future demands means that HR policies are proactive rather than reactive, allowing firms to manage difficulties such as talent shortages, employee attrition, and workforce planning more precisely. HR managers may use Big Data to improve decision-making while also unlocking hidden potential inside their workforce, resulting in a nimbler and more competitive firm.

AI's revolutionary promise in HR covers multiple domains, including recruitment, learning & development, and workforce analytics. AI-powered solutions have transformed recruitment processes by automating repetitive operations, boosting decision-making, and increasing equality. Similarly, integrating Big Data analytics has enabled HR managers to make data-driven decisions, identify workforce trends, and optimize personnel management strategies. These developments, when combined with AI-powered learning systems, have allowed firms to promote ongoing employee growth and link training programs with company goals.

As firms see the value of AI in human resources, the deployment of advanced technology accelerates. Gartner's research demonstrates the increased momentum for AI integration, notably with the emergence of Generative AI (GenAI) applications in HR services. This rise in attention highlights AI's strategic importance in altering HR procedures, such as administrative work, employee engagement, and skill analysis. The increased use of AI technologies indicates a broader commitment to using

technology to improve efficiency and creativity in human resource management. Gartner's research indicates that interest in AI will reach its peak in 2024. Between June 2023 and January 2024, the quantity of HR leaders executing and strategizing pilots increased twofold. This enhancement signifies an escalating acknowledgment of GenAI's capacity to transform HR procedures. One-third of HR leaders intend to incorporate GenAI-related positions in 2024, with the principal applications of AI being employee chatbots, administrative functions, and job description/skills data analysis. The study indicates that the share of AI deployed in HR rose from 5% in 2023 to 11% in 2024, demonstrating a heightened commitment to AI integration. The percentage assessing various GenAI solutions rose from 10% to 14%, indicating a more strategic methodology in selecting appropriate AI tools. (Gartner, n.d.).

In short, the integration of artificial intelligence (AI) into human resources has shown to be a transformational force, transforming recruiting, learning and development, workforce analytics, and overall HR decision-making processes. AI continues to enhance efficiency, equity, and innovation in HR practices by automating recruitment tasks, personalizing employee training, and utilizing Big Data for strategic workforce planning. As more firms implement advanced technologies like Generative AI (GenAI), the potential for AI to transform HR tasks grows tremendously. However, the successful application of AI necessitates not only technology integration, but also a strategic strategy that takes into account organizational culture, ethical implications, and the creation of AI-literate executives. By embracing AI's transformative potential, HR departments can position themselves at the forefront of innovation, assuring long-term growth and adaptation in a constantly changing workplace landscape.

The AI Act is a comprehensive and dynamic legal framework that intersects with multiple legislative and policy initiatives at both the EU and member state levels. The legal framework governing AI is ever evolving, with future adjustments, legal interpretations, and national implementations likely to affect the Act's implementation today and in the future. It is worth to start with the limitations. This research possesses specific limitations. First, the scope is strictly limited to the regulatory and policy areas specified in the AI Act and various other EU policies

influenced by artificial intelligence, such as competition, trade laws, free movement of goods and services, and intellectual property rights will not be covered, despite significant impact therein. Each of these subjects poses distinct legal and economic background and require issues for specialized research beyond the scope of this study. This research primarily elaborates AI regulation in the realm of human resources to ensure a clear and targeted approach. This study does not offer a comprehensive examination of all legislative initiatives due to the complexity and multi-faceted character of EU law; rather, it emphasizes the critical factors relevant to the use of AI in the relevant aspects in HR. The legal framework governing AI is ever evolving, with future adjustments, legal interpretations, and national implementations likely to affect the Act's application.

CHAPTER 3

THE EU AI ACT: IMPLEMENTATION AND EFFECTS

This chapter establishes the legal foundation for the theory. It explains why the EU transformed from ethical principles to binding laws on AI. It also demonstrates when and how the AI Act goes into effect, what it covers (material, personal, and geographical scope), and how its risk-based methodology works. Then it points out the areas of the high-risk regime that are important for HR and ends with a short map of enforcement and penalties. The rapid growth of artificial intelligence has required the establishment of extensive legal frameworks to manage its possible advantages and underlying risks. The EU, acknowledging the transformative impact of AI on society, has implemented the AI Act as the first comprehensive law governing AI systems. To develop a solid basis for this study, it is essential to first analyse the regulatory framework managing artificial intelligence, as it constitutes the cornerstone of this concept. The EU AI Act is notably important as it constitutes the first complete legal framework not only in the EU but also globally aimed at addressing the benefits and challenges linked to AI. The swift development of AI applications in many industries has increased the necessity for regulation to guarantee fairness, transparency, and ethical compliance. This chapter covers review of the EU AI Act, establishing the necessary legal framework before exploring the function of AI in human resources, along with its advantages, problems, and wider ramifications. Comprehending these restrictions is essential, since AI-driven HR practices have to adhere to legal and ethical norms to promote responsible AI utilization.

3.1. Historical Background of EU AI Act

The swift progression of artificial intelligence has introduced both extraordinary prospects and considerable concerns, requiring a legislative framework to guarantee

its appropriate growth and utilization. As AI systems progressively impact vital sectors such as employment, healthcare, security, and public administration, apprehensions over prejudice, discrimination, privacy, and accountability have escalated. AI ethics precedes AI law as ethical considerations build the core concepts that guide the development of legal frameworks. Within the framework of the EU AI Act, ethical issues including justice, transparency, accountability, and human rights were extensively discussed prior to the formulation of formal legislation. These ethical discussions influenced public opinion, academic research, and governmental proposals, underscoring the possible hazards and societal implications of AI, consequently requiring regulation. Ethical rules made it possible for people to talk to each other about justice, openness, accountability, and human rights, but they were unable to make sure that everyone followed them. The EU AI Act turns those ideas into rules that must be followed. It does this by making providers and deployers responsible for certain things and using a risk-based model that puts safety and basic rights first without stopping innovation. We use the Act as the legal basis for HR in this thesis. It tells us what unacceptable uses are (red lines), when tight controls are needed (high-risk), and what transparency is expected (limited risk).

International efforts: Ethical discourses regarding the utilization of AI in human resources facilitate the swift recognition of possible risks and social consequences. These discussions enhance awareness and inform policy prior to the establishment of legally obligatory regulations. Within the EU framework, ethical discussions established the foundation for legislative actions by delineating the principal concerns that required attention, thereby guiding the formulation of the AI Act. Since 2016, there has been a significant increase of standards, concepts, and principles pertaining to ethics of artificial intelligence. Numerous prominent technological firms have officially released their respective AI philosophies. Microsoft's Principles for Responsible AI, IBM's Principles for Trust and Transparency, and Google's Principles for Artificial Intelligence were formulated by respective corporations and have all been publicly disseminated. Despite several initiatives from around different parts of the world such as Singapore’s Model AI Governance Framework (2019), Australia’s AI Ethics Principles (2019), China’s AI Governance Principles (2019), and New Zealand’s Algorithm Charter (2020), governments have been slow in

enacting legislation regulating AI. At the intergovernmental level, the G7 endorsed the Charlevoix Common Vision for the Future of Artificial Intelligence (2018), the OECD released its Recommendation of the Council on Artificial Intelligence (2019), and the European Union introduced Ethics Guidelines for Trustworthy AI (2019), which preceded the draft AI Act disseminated in 2021. Multiple components of the UN system have endorsed texts, notably UNESCO's Recommendation on the Ethics of Artificial Intelligence (2021). The Pope supported a framework of principles in the Rome Call for AI Ethics (2020) (Chesterman,2023).

This worldwide initiative for ethical AI governance underscores a shared acknowledgment of the necessity for responsible and human-centred AI development. Although ethical principles are crucial in influencing conversation, they are inadequate on their own to guarantee compliance and accountability. Consequently, a binding legislative framework such as the EU AI Act have become essential for converting ethical ideals into enforceable rules by also positioning Europe to assume an important worldwide role (AI Act, 2025). The shift from soft law to hard law signifies a crucial change, guaranteeing that AI development conforms to fundamental rights, democratic principles, and public welfare. The challenge forward involves reconciling international AI regulations, balancing innovation with regulation, and mitigating emerging hazards in a swiftly changing technical environment.

The absence of explicit legal frameworks has resulted in ethical quandaries and legal ambiguities, necessitating the establishment of thorough regulations. According to the European Commission (2024), The EU AI Act is the earliest comprehensive legislation on artificial intelligence, aimed at mitigating dangers associated with health, safety, and fundamental rights, while also safeguarding democracy, the rule of law, and the environment. Artificial intelligence possesses the capacity to foster societal advantages, stimulate growth in the economy, and enhance global competitiveness for the European Union. Nonetheless, specific AI systems may jeopardize user safety and fundamental rights, with especially strong models possibly creating systemic problems. This uncertainty can slow AI adoption due to a lack of trust and inconsistent national regulations, potentially fragmenting the internal

market. To address these challenges, the EU introduced the AI Act to create a unified legal framework that balances innovation with risk management. Although AI possesses significant promise for economic development and societal progress, the lack of explicit rules presents considerable dangers. Unregulated and unchecked AI systems may result in substantial violations of human rights, including discriminatory employment practices, extensive surveillance, and illegal data exploitation. The emergence of AI-driven cybercrimes, such as deepfake technology, automated hacking, and identity theft, highlights the imperative for a legal framework that guarantees accountability and security. In the absence of regulation, strong AI models can worsen misinformation, undermine democratic processes, and generate systemic hazards that affect not only individual users but also entire economies and governance frameworks.

The formulation of the EU AI Act has been an extensive and complex endeavour, marked by numerous significant milestones. The studies on draft began in April 2021 when the European Commission released its preliminary proposal for AI regulation. By July 2021, a public consultation concluded, providing submissions that represented a variety of viewpoints on AI policy. In 2022, notable advancements occurred, including the release of amendments by the European Parliament's Committee on Legal Affairs and the Committee on Industry, Research, and Energy, alongside deliberations on the regulation of general-purpose AI systems. In December 2023, the Parliament and Council achieved a tentative agreement on the AI Act, which was subsequently approved by the Internal Market and Civil Liberties Committees in February 2024. The European Council officially approved the AI Act on May 21, 2024, and it was published in the EU Journal on July 12, 2024. These milestones collectively indicate the EU's dedication to establishing a unified legislative framework for AI, promoting innovation while ensuring safety, responsibility, and the safeguarding of basic rights (Historic Timeline | EU Artificial Intelligence Act, n.d.)

The EU AI Act took effect on August 1, 2024, and have been implementing progressively across EU Member States. On February 2, 2025, specific regulations, including prohibitions on employing AI for emotion detection in

the workplace, will be implemented, alongside new AI literacy mandates. On August 2, 2025, regulations for general-purpose AI model suppliers will commence, with by sanctions for Member States that fail to comply. As of August 2, 2026, regulations governing high-risk AI systems, particularly those utilized in recruitment or personnel management, will be implemented, encompassing transparency mandates. By August 2, 2027, AI systems in certain sectors, such as medical equipment, must comply with regulations, while general-purpose AI models released before to August 2025 must also adhere to the Act's stipulations (Clifford Chance, 2024). The timeline of the EU AI Act demonstrates a systematic and gradual strategy for AI regulation, integrating the requirement for regulatory supervision with the encouragement of technological development. The world's first comprehensive AI law is being implemented gradually, allowing stakeholders—governments, corporations, and AI developers—ample time to adjust to the new legal framework. The Act's gradual implementation, transitioning from broad prohibitions to targeted rules, underscores the EU's dedication to addressing both urgent ethical issues, like AI-induced bias and privacy threats, as well as persistent obstacles related to the governance of general-purpose AI models. This timeline highlights the EU's strategic objective to establish worldwide AI standards, hence impacting regulatory advancements outside its jurisdiction. As AI progresses, this systematic framework offers an example for accountable AI governance that other regions may seek to follow.

3.2. Risk Classification and HR Relevant Scope Under the EU AI Act

The EU has proactively established a solid regulatory structure to address these urgent concerns by establishing a framework to guarantee the safe implementation and ethical utilization of AI technology, acknowledging the potential risks of unregulated AI. This commitment to responsible AI governance is seen in the AI Act, which delineates clear, risk-based policies that promote trust, safeguard fundamental rights, and stimulate innovation across Europe.

The AI Act creates a comprehensive set of risk-based regulations for AI developers and implementers for AI applications. It is a component of an extensive legislative framework aimed at fostering the advancement of reliable AI in the EU, which also

include the AI Innovation Package, the establishment of AI Factories, and the Coordinated Plan on AI.

The EU AI Act employs a risk-based regulatory framework due to the substantial variation in the impact of AI applications on individuals and society. This approach permits tailored oversight, ensuring that the most possibly harmful AI systems are subject to harsher rules, while enabling lower-risk developments to progress with greater freedom. Through this strategy, the EU aims to protect essential values and rights while not excessively hindering the advantages that AI can offer to society. Recital (26) of the AI Act indicates that a clearly defined risk-based strategy should be adopted to establish an appropriate and effective framework of binding regulations for AI systems. This strategy should customize the form and content of the rules according to the severity and extent of the threats posed by AI systems. Consequently, it is essential to ban specific unsuitable AI actions, establish standards for high-risk AI systems and liabilities for relevant operators, and impose transparency obligations for certain AI systems. The primary aim of the AI Act's risk-based approach is to achieve an optimal and proportional balance between innovation and the advantages of AI systems, while safeguarding fundamental values like as safety, health, and fundamental rights. Consequently, it can be asserted that the EU's dedication to a risk-based regulatory framework reflects its overall digital leadership approach, harmonizing economic growth, consumer protection, and basic rights in an increasingly AI-driven environment.

The EU AI Act utilizes a risk-based paradigm to link obligations to effects. Systems with unacceptable risks are not allowed; systems with high risks can only be used with strong safety measures; systems with limited risks must be open about their risks; and systems with minimum risks are mostly not controlled. The most important class in HR is high risk since tools can affect how people get jobs and what their working circumstances are like. This part explains what each class means and then turns the high-risk procedures into everyday rules for hiring, evaluating, promoting/disciplining, monitoring, and using biometrics in the workplace.

Unacceptable Risk: In this thesis, Article 5 is not regarded merely as a list of prohibitions but as a normative border for human rights: where the safeguarding of

dignity, privacy, and non-discrimination conflicts with claims of efficiency, the boundary takes precedence. Consequently, AI applications that control behaviour, exploit vulnerabilities, infer emotions or sensitive features in the workplace, indiscriminately scrape biometrics, or constitute social scoring are intentionally excluded. This position changes the "unacceptable risk" designation from a descriptive one to a norm for HR governance. AI systems categorized as Unacceptable Risk are considered excessively risky to permit. These encompass AI systems that manipulate or mislead persons, exploit weaknesses, or assess individuals based on social scoring. The legislation prohibits AI that predicts criminal conduct, gathers facial recognition data from the internet without consent, or analyses emotions in professional and educational settings. Furthermore, AI systems that categorize individuals based on sensitive personal characteristics or utilize real-time facial recognition in public areas for law enforcement purposes are forbidden due to significant privacy issues (*AI Act*, 2025b)

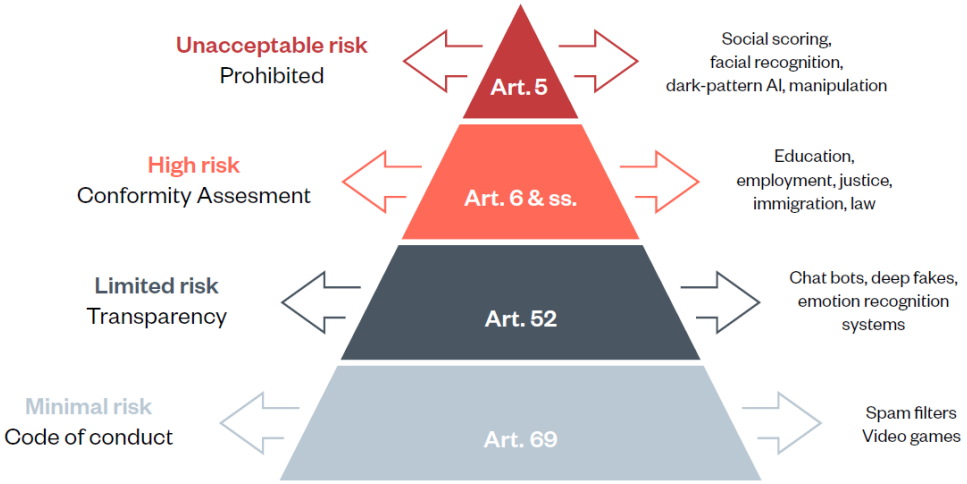

Figure 1.[1]. Overview of Key Elements in the Proposed EU AI Act.

Article 5 of the EU AI Act forbids AI systems that jeopardize the fundamental values of the Union, encompassing human dignity, freedom, equality, democracy, and the rule of law, along with fundamental rights such as non-discrimination, data protection, privacy, and children's rights. AI applications that influence human behaviour in manners that could be harmful to physical or psychological well-being,

[1] *Note.* From Edwards, L. (2022, April 8). *Expert explainer: The EU AI Act proposal*. https://www.adalovelaceinstitute.org/resource/eu-ai-act-explainer/

especially for children and vulnerable populations, are clearly prohibited (Regulation EU - 2024/1689*).*

The Act further forbids public authorities from employing AI for social scoring and real-time biometric identification in public areas for law enforcement, with three specific exceptions: finding crime victims (e.g., missing children), preventing serious threats (such as terrorism), or identifying suspects of serious crimes (punishable by a minimum of three years' imprisonment). In such instances, prior authorization from an independent entity, such as a court, is necessary unless an imminent threat exists. The Act clearly prohibits predictive policing and the indiscriminate gathering of facial pictures from the internet, acknowledging these practices as intolerable threats to individual rights and liberties (Burgstaller, 2023).

Certain AI applications in Human Resources may be subject to the restrictions of Article 5 of the EU AI Act because they could violate against fundamental rights, privacy, and human dignity. HR displays clear red lines. In professional settings, emotion inference and biometric categorization threaten dignity and are very intrusive. Staff "reputation" or off-platform behaviour scores separate evaluation from job-related criteria and encourage discrimination. Predictive labeling of "risk employees" undermines due process. Each pattern makes it harder to explain and contest, which are two things that HR decision-making needs to keep. So, these use cases should be taken out of the requirements stage and not put on the shortlists for procurement.

If an HR use case does any of the following, it falls into the unacceptable category: (i) alters how individuals act, (ii) employs emotion detection or biometric categorization at work, (iii) scrapes facial photographs or guesses sensitive attributes (including health, race, or religion), or (iv) gives any form of "social score" to an employee. The best thing to do in these cases is to stop the endeavour. Either abandon the use case or redesign it so that it fits into the high-risk regime with the right safety measures.

A practical redesign implies eliminating of risky components and replacing them with legal, work-related ones. For example, do not employ emotion recognition for

interviews. Instead, utilize organized, job-relevant behavioural indications (clear rubrics, scoring guides) that qualified human assessors have looked over. Avoid social scoring when judging; instead, use clear, job-specific criteria, write down why you made each decision, and provide them a meaningful way to appeal. Don't scrape biometrics for data gathering; only collect data that is essential, based on consent, and confined to a specific purpose. Do a Data Protection Impact Assessment, retain audit logs, and make sure that there is meaningful human review at every stage when a decision goes against someone.

To keep these risks under control and manage them, it should be pay careful consideration to the following. Article 5-type features (such hiring based on emotion detection, social scoring, and collecting biometrics without reason) should be banned in HR policy by adding a "do-not-build / do-not-buy" list. Require suppliers to give you a feature map, let you check their work, and offer a button to press so you can turn off any function that isn't allowed straight away. For every AI-influenced HR decision, require a meaningful human review with a short-written explanation, issue clear notices to candidates and workers, and maintain an incident reporting channel open. These measures, when taken together, make the "unacceptable risk" line part of everyday life and provide the proof that regulators will want to see.

High-Risk: The EU AI Act states that systems are "high-risk" when their intended use and actual impact on people can have significant impacts on their rights or chances. In HR, this usually includes tools that affect how people get jobs or what it's like to work there, such as CV screening, candidate testing, support for promotion and discipline decisions, and monitoring that affects assessments. "High-risk" does not mean "don't use.

Table 1. Unacceptable Risks — Red Flags in HR.

Unacceptable Risks Types
Manipulation aimed at productivity/discipline (subliminal techniques, psychological profiling to steer behaviour).
Social scoring of employees (on or off-platform reputation, personal behaviour).

Table 1. (continued)

Emotion recognition or biometric categorisation in the workplace (especially during hiring/performance).
Indiscriminate scraping/collection of facial images; sensitive trait inference without lawful basis.
Predictive risk labelling of staff that bypasses due process (e.g., “potential insider threat” flags without human review).

It means "use only with strict safeguards," such as risk management, data governance and bias testing, technical documentation and logs, transparency to persons, meaningful human review at adverse points, and accuracy, robustness, and cybersecurity. Mainly, it includes AI applications are ones that may significantly affect individuals' lives, health, or rights. This includes AI utilized in key infrastructure, like transportation, AI in education influencing school admissions or grading, and AI-driven medical instruments like robot-assisted surgery. AI utilized for recruitment and personnel management, such as resume-screening software, is deemed high-risk due to the possibility of prejudice. Additional high-risk AI include credit scoring systems, biometric identification technologies, and AI applications in law enforcement, migration control, and the judicial system, where errors may result in significant repercussions for basic rights (AI Act, 2025b) Burgstaller (2023) states that, Article 6 indicates that an AI system is categorized as high-risk based on its intended purpose, function, and impact on fundamental rights, in accordance with existing product safety rules.

Within the Human Resources sector, numerous AI applications are categorized as high-risk because of their capacity to profoundly affect individuals' job prospects, privacy, and fundamental rights. AI-driven recruiting and recruitment technologies, including resume-screening algorithms and automated candidate assessments, are deemed high-risk due to their potential to introduce bias and discrimination, disproportionately impacting specific demographic groups (AI Act, 2025b). Similarly, AI-driven employee monitoring systems that assess workers' performance, emotions, or behaviours pose issues around privacy infringements and workplace surveillance. Moreover, AI-driven decision-making instruments for promotions, disciplinary measures, or terminations may exhibit a deficiency in transparency and

equity, resulting in inequitable consequences for employees. The AI Act mandates that high-risk HR systems undertake comprehensive risk assessments, pre-market compliance evaluations, and ongoing monitoring to guarantee accountability, equity, and non-discrimination in employment practices (Recital 28: AI Regulation Proposal). These safety measures seek to alleviate the dangers presented the primary difference between unacceptable risk AI and high-risk AI in HR applications is the degree of harm they present and the legal actions they invoke under the EU AI Act, while promoting responsible and ethical AI implementation. An

Burgstaller (2023) defines the legal requirements for high-risk AI systems to guarantee safety, transparency, and responsibility. A risk management system must be established throughout the AI system's lifecycle, consistently recognizing and evaluating potential threats. AI models depend on training data, which must adhere to strict quality requirements to ensure relevance, representation, accuracy, and completeness. In advance of implementation, AI systems require technical documentation, which must be maintained to ensure compliance with high-risk legislation. Furthermore, automated monitoring systems must record usage specifics, including initiation and conclusion times, referenced databases, input data that prompted AI decisions, and the names of human evaluators.

High-risk AI must incorporate strong supervision mechanisms and human-machine interfaces to provide real-time human intervention In terms of human oversight, Article 27 indicates that, “According to the guidelines of the AI HLEG (High-level expert group on artificial intelligence), human agency and oversight means that AI systems are developed and used as a tool that serves people, respects human dignity and personal autonomy, and that is functioning in a way that can be appropriately controlled and overseen by humans.” This principle guarantees that AI serves as a tool for human empowerment instead of functioning independently without accountability. Human supervision is crucial for eliminating biases, avoiding mistakes, and guaranteeing that AI-generated judgments conform to ethical and legal norms. Integrating real-time intervention skills allows for the monitoring and correction of high-risk AI, hence diminishing the potential for harm. Moreover, these systems must be resilient and secure against cyber threats, integrating redundancies

and protective measures to avert cyberattacks and data tampering. These requirements are essential for effectively mitigating hazards to health, safety, and fundamental rights (Regulation (EU) 2024/1689, Art. 66). The proposed AI rule sets forth fundamental legal standards pertaining to data governance, documentation, transparency, human oversight, robustness, accuracy, and cybersecurity. These rules conform to worldwide AI standards and may adapt with technology progress to ensure regulatory flexibility.

The following paragraphs show how the EU AI Act's high-risk regime applies to the most common HR use cases. For each use case, it briefly explains what it is and why it is high-risk. It then lists the minimal protections that providers and deployers must have, the records that organizations must preserve, and the common mistakes to avoid. The goal is to go beyond just describing the Act and list specific, verifiable processes that put it into action in hiring and evaluating candidates, making decisions about promotions, discipline, and terminations, monitoring employees, and using biometric and emotional tools in the workplace.

Recruitment & Candidate Assessment:

What it is and why it's high-risk: Automated CV screening, ranking, and algorithmic/psychometric testing can directly affect who gets hired and can hide bias.

Provider/Deployer must do: Providers: checking for compliance, verifying data provenance and bias, setting explicit limitations, and making sure there is an interface that allows for human monitoring. Deployers: a human-in-the-loop review for any bad outcome; notices to candidates; decision/override logs; regular checks for bias and performance; and training for reviewers.

Compliance Documentation: Model card/technical file, bias reports, candidate notices, audit logs, and calibration reports.

Mistakes: Accept or reject automatically; no reason; old models

Promotion / Discipline / Termination Decision Support:

What it is and why it's high-risk: These instruments have an impact on jobs and careers, hence procedural fairness and contestability are quite important.

Provider/Deployer must do: Providers: strong logging, explicit limits, and human oversight. Deployers: Fundamental rights evaluation, a documented explanation for every bad decision, incident reporting, and regular recalibration.

Compliance Documentation: Notes on the reasons; a matrix of roles and permissions; and reports on monitoring.

Mistakes: AI that is rubber-stamped; no way to appeal.

Monitoring Employees and Analysing Productivity:

What it is and why it's high-risk: Monitoring that leads to evaluation or punishment might put privacy at risk and make people less likely to take action.

Provider/Deployer must do: Providers: help with data reduction, security, and transparency Deployers: test for necessity/proportionality; clear notices; limited retention; and regular reviews of how it affects rights.

Compliance Documentation: Data Protection Impact Assessment, notices/policies, and retention schedules.

Mistakes: Too much or unclear tracking; function creep.

Biometrics / Emotion at Work (a red flag barrier)

What it is and why it's high-risk: Emotion inference and biometric categorization in the workplace are very intrusive and often go beyond what is allowed, depending on the situation.

Provider/Deployer must do: Before every pilot, make sure it's legal; if it's not definitely legal, don't build or buy. Use strict necessity, clear notices, and strong

validation only when absolutely necessary. Use job-related, observable indications with trained human reviewers whenever possible.

Compliance Documentation: Review of the legal basis, the risks and ethics, and the audit records.

Mistakes: Using covert deployment as default filters.

Table 2. Mandatory Safeguards for All HR High-Risk Systems.

HR Security Measures
Risk management across the lifecycle (document risks, owners, mitigations).
Data governance & bias testing
Technical documentation & logging (intended use, limitations, performance; decision/override logs).
Transparency & notices to candidates/employees; clear routes to a human.
Meaningful human review before any adverse effect; written rationale and appeal channel.
Accuracy, robustness, cybersecurity
Training & Standard Operating Procedures for reviewers and operators; incident reporting.

In conclusion, "high-risk" in HR does not mean that we can't utilize AI; it just means we need to be very careful when we do. Legal regulations need to be part of everyday life since these tools decide who gets recruited and how individuals are treated at work. In practice, that means: no fully automated adverse decisions (e.g., rejections, demotions, discipline)—a human must review them; a short written rationale and a real appeal path for anyone affected; a model registry that tracks versions and changes; regular bias and performance checks with documented recalibration; clear notices to candidates and employees when AI is used; and a standing incident process. Add these to your policies and standard operating procedures (SOPs), which are short, step-by-step instructions that say who does what, when, and how. This way, the same task is done the same way every time. Also, add vendor contracts (like feature maps, audit rights, etc.) so that the EU AI Act's high-risk rules become part of everyday life, especially when it comes to hiring, assessments, promotions, discipline, monitoring, and any biometric tools.

Limited Risks: AI systems are clearly defined in Article 50. Limited Risk or transparency refers to the concerns associated with the necessity for transparency about the utilization of AI. The AI Act establishes explicit disclosure requirements to guarantee that individuals are informed when essential for maintaining trust. For example, while utilizing AI systems like chatbots, individuals should be informed that they are engaging with a machine to facilitate informed decision-making. Furthermore, generative AI suppliers must guarantee the discernibility of AI-generated material. Furthermore, specific AI-generated content, particularly deep fakes and language intended to inform the public on subjects of public importance, should be distinctly and prominently labelled.

This Article of AI Act has a direct overlap with the GDPR. The GDPR already requires controllers processing personal data to be clear about their use of profiling and automated decision-making. The primary systems that would be vulnerable to the regulation are chatbots, emotion detection and biometric classification systems, and systems that generate 'Deepfake' or synthetic material. Examples in the field of human resources include HR Chatbots and the use of employee data (big data) in decision-making processes, among other things. However, Edwards (2022) points out that in terms of transparency, only providers, not consumers, are required to provide information about chatbots. Providers should create a system that informs users that they are engaging with a machine rather than a person. If company A creates a chatbot application, only company A is required to provide transparency, not website B, which buys the chatbot software. In contrast, when it comes to sentiment identity and deepfakes, users are exclusively responsible for ensuring transparency.

Minimal or No Risk: AI Act does not provide regulations for AI of minimal or negligible risk. This category includes the majority of AI systems currently in use in the EU. This encompasses applications such as AI-driven video games and spam filters (AI Act, 2025b). The EU AI Act creates a thorough legal framework aimed at protecting basic rights while fostering innovation in artificial intelligence. The Act classifies AI systems according to their risk levels—unacceptable, high, and limited—thereby prohibiting the riskiest AI applications, including those that

manipulate humans or violate on privacy. Simultaneously, high-risk systems, particularly in sectors such as human resources, healthcare, and law enforcement, must adhere to strict compliance standards to minimize possible harm to persons and society. Essential elements such risk management, transparency, human oversight, and data governance are fundamental to the deployment of these technologies, guaranteeing accountability and equity throughout their existence. On the other hand, low-risk AI systems face fewer regulations, fostering adaptability and facilitating wider AI use. The Act balances the protection of human dignity and rights with the proper implementation of AI technologies throughout the EU. The Act's adaptability will be essential in confronting new issues as AI evolves, ensuring its positive contribution to social advancement.

The EU AI Act is a risk-based framework that aims to protect health, safety, and fundamental rights while allowing innovation. It does this by setting core requirements for high-risk systems, such as risk management, data governance, technical documentation and record-keeping, transparency, human oversight, and robustness/accuracy/cybersecurity.

Table 3. AI Use-Cases in HR: Risk Classification, Impacts, and Common Pitfalls.

HR Use-Case	Likely Risk Class	Why It Matters (Rights Impact)
Emotion recognition / biometric categorization in workplace	Potentially prohibited / red-flag	• High intrusion on dignity & privacy • High error/bias risk
Real-time biometric identification for access	Very restricted / potentially prohibited depending on context	• Sensitive biometric data • Risk of mass surveillance
Automated CV screening & ranking	High risk	• Affects access to employment • Bias & discrimination risk
Algorithmic/psychometric assessments (games, coding tests)	High risk	• Impacts selection & ranking • Explainability concerns
Promotion / discipline / termination decision support	High risk	• Direct effect on career & livelihood • Procedural fairness

Table 3. (continued)

Employee monitoring / productivity analytics	High risk (often)	• Privacy & chilling effect • Potential discrimination
HR chatbots / virtual assistants	Limited risk (transparency)	• Information asymmetry • Misleading if undisclosed
Generative AI for job ads & internal comms	Limited risk (transparency)	• Risk of misleading or biased text
HR Use-Case	Common Pitfalls	
Emotion recognition / biometric categorization in workplace	• Using by default • Covert or blanket deployment	
Real-time biometric identification for access	• Broad, continuous ID without strict limits	
Automated CV screening & ranking	• Fully automated accept/reject • No transparency • No recalibration	
Algorithmic/psychometric assessments (games, coding tests)	• Treating scores as infallible • No rationale for decisions	
Promotion / discipline / termination decision support	• Rubber-stamping AI • No record of human rationale	
Employee monitoring / productivity analytics	• Excessive/opaque tracking	
HR chatbots / virtual assistants	• No disclosure • Letting bots handle complaints alone	
Generative AI for job ads & internal comms	• No review • Unlabeled synthetic media	

The Act applies to people and companies that put AI systems on the EU market or utilize their outputs in the EU. This includes certain companies that are not based in the EU but fit these criteria. It excludes AI that is only used for military or national security, certain public authority uses under international treaties, systems made mostly for scientific research, or personal use that is not professional; it also works with GDPR and consumer and product safety rules, and open source is usually not

included unless the system is banned or very dangerous. In HR, this means that AI used for hiring and managing employees is usually high-risk and must follow the rules set out in the Act. According to EU AI Act Chapter 1, Article 2, The EU AI Act applies to several entities engaged in the development, deployment, and distribution of AI systems inside the European Union, regardless of their geographical location (Clifford Chance, 2024). It includes AI providers, deployers, importers, distributors, product producers, and authorized representatives. Furthermore, it pertains to AI systems whose outputs are utilized within the EU, regardless of their origin.

The legislation, however, excludes specific domains, including AI utilized only for military, defence, or national security objectives, AI employed by public authorities in third nations under international treaties, and AI models developed primarily for scientific study and development. It likewise does not govern personal, non-professional AI utilization. Furthermore, the Act guarantees compliance to current EU data privacy legislation and does not supersede other EU consumer protection and product safety standards. AI systems distributed under free and open-source licenses are typically exempt; nevertheless, they remain subject to regulation if designated as high-risk or categorized as prohibited AI. Moreover, Member States may implement more stringent safeguards for employees concerning the utilization of AI in the workplace (*Regulation - EU - 2024/1689).*

The EU AI Act primarily pertains to entities within the EU; however, it also encompasses non-EU countries under certain criteria specified in Chapter 1, Article 2(1). An AI provider located outside the EU is subject to regulation if it introduces an AI system to the EU market, implements AI inside the EU, or if the output of the AI system is utilized within the EU. Furthermore, importers, distributors, and producers of products utilizing AI for sale in the EU, along with non-EU entities with authorized representation within the EU, are required to conform to the Act. An AI-driven recruitment tool created in the United States and utilized by European firms, or an AI credit scoring system from China that produces results for banks in the EU, would both fall under the legislation. Nonetheless, companies that operate exclusively outside the EU and do not interact with the EU market or its users are not subject to the Act. This extraterritorial scope corresponds with the EU's

comprehensive digital legislation, mandating that AI systems engaging with the EU comply with its safety, transparency, and accountability criteria.

Turkey serves as a crucial example for the EU AI Act, being a candidate state possessing a Customs Union with the EU that facilitates trade in industrial goods. Nevertheless, Türkiye's status as a candidate state or its participation in a customs union do not inherently subject it to the scope of the EU AI Act. A Turkish company must adhere to the EU AI Act, as specified in Article 2(1)(a) and 2(1)(c), if it introduces an AI system to the EU market or if an AI system developed in Türkiye produces outputs utilized in the EU, regardless of the system's physical presence in the EU. Although Türkiye's candidate country status and its free trade agreement with the EU do not inherently extend EU regulations such as the AI Act to Türkiye, compliance may be attained if Turkey aligns its legislation with the EU AI Act during its EU accession process, or if the EU and Türkiye establish a specific agreement concerning AI governance, akin to GDPR adequacy decisions. Türkiye has partially conformed to EU data protection requirements via its KVKK (Personal Data Protection Law), which parallels the GDPR, and a comparable framework may be implemented for AI regulations in the future. Currently, adherence to the EU AI Act is contingent upon the presence of Turkish AI systems or outputs in the EU market, rather than Türkiye's candidate status.

Within the scope of EU AI Act, another question is whether multinational employers are within the scope of AI Act or not. To answer this question from Clifford Chance, Stevenson and others (2024) states that, the EU AI Act can impact multinational employers outside the EU as well. The EU AI Act may apply if a non-EU corporation use AI for workforce decisions concerning EU employees, including performance assessment or bonus distribution. Furthermore, if multinational corporations implement global recruitment systems that encompass EU candidates, such systems have to conform to the EU AI Act. The Act also applies to third-country suppliers of AI systems or general-purpose AI models marketed within the EU, possibly impacting corporations regarded as providers. Employers must ensure that their supplier management agreements incorporate clauses for transparency, information provision, and cooperation to adhere to the EU AI Act and other

pertinent legislation. The EU AI Act is applicable to both EU and non-EU organizations if their AI systems are distributed in the EU or their outputs are utilized within the EU (Clifford Chance, 2024) This encompasses firms in nations such as Turkey or China and multinational organizations employing AI for judgments concerning EU personnel. The Act predominantly focuses on EU organizations; however, its extraterritorial reach guarantees worldwide compliance, fostering AI safety and transparency. Exceptions include AI systems utilized for national security or scientific inquiry. The Act seeks to balance innovation with the safeguarding of fundamental rights and societal values.

Table 4. Roles and Responsibilities under the AI Act.

Role	Core Responsibilities	Evidence / Records to Keep
Provider (AI developer/vendor)	• Conformity assessment for high-risk systems • Ongoing risk management process • Data quality & governance (representativeness, bias checks) • Technical documentation & logging • Clear user instructions/limitations • Enable human oversight • Accuracy, robustness, cybersecurity	• Technical file / model card • Data provenance & bias test reports • User manual (intended use, limits) • EU declaration of conformity / CE docs • Post-market monitoring & incident logs
Deployer (Employer/HR user)	• Use as instructed; keep meaningful human-in-the-loop • Log decisions, overrides, appeals • Ensure input data quality • Provide notices/transparency (chatbots, AI content) • Train staff; report serious incidents • Fundamental-rights assessments where needed	• Standard Operating Procedures for human review; roles/permissions matrix • Candidate/employee notices • Decision & audit logs; bias/performance monitoring reports • Training records

Table 4. (continued)

Importer	• Verify conformity/CE before EU market placement • Coordinate corrective actions with provider	• Conformity checklists • Access confirmation to technical docs
Employee (user/reviewer in HR process)	• Follow Standard Operating Procedures; perform meaningful human review • Flag anomalies/bias; report incidents • Protect personal data; avoid improper inputs/prompts • Add explainability notes to decisions	• Review notes & rationale • Override/appeal records • Incident reports • Privacy & AI-literacy training completion

Role	Common Pitfalls
Provider (AI developer/vendor)	• "Black box" with no explainability guide • Poor dataset documentation • No HR-specific usage guidance
Deployer (Employer/HR user)	• Fully automated accept/reject (no human review) • Missing transparency notices • No periodic testing/recalibration
Importer	• Treating compliance as paperwork only • Not verifying documentation
Employee (user/reviewer in HR process)	• Blind trust in AI outputs • No rationale documented • Uploading/sharing sensitive data insecurely

3.3. Implementation of and Compliance with EU AI Act

According to European Commission's implementation scheme that implicates belove, the implementation of the EU AI Act for high-risk AI systems follows to a systematic procedure to guarantee compliance and flexibility throughout the AI system's lifecycle. An advanced AI system is developed, with applications that pose considerable dangers such those in healthcare, recruitment, or biometric identification. The system then passes a conformity assessment to ensure adherence to AI Act requirements, encompassing transparency, accuracy, and risk management, with certain instances necessitating evaluation by an independent notified party. Upon confirmation of compliance, independent AI systems must be registered in an EU database to improve accountability and supervision. Following that, a declaration

of conformity must be executed, and the AI system must display the CE marking to be permitted in the EU market. Nonetheless, if major modifications occur in the system's lifecycle—such as adjustments to its algorithm, data inputs, or intended function—it is required to pass a new conformity assessment prior to resuming operations. This guarantees continuous compliance, safety, and conformity with EU regulatory norms, enhancing the adaptability and responsibility of AI systems in the European market. European Commission (2024) highlights that, following the introduction of an AI system to the market, regulatory authorities oversee market surveillance, deployers ensure human oversight and monitoring, and providers implement a post-market monitoring mechanism. Providers and deployers will furthermore report critical occurrences and malfunctions.

The Act mandates that suppliers of high-risk AI systems conduct an initial compliance assessment before market introduction (Articles 16 and 43). Providers, in compliance with the NLF model, must ensure that their systems meet the 'basic requirements' outlined in Title III, Chapter 2 of the Act. Subsequently, they may affix a CE mark on compliant systems, which can be imported and supplied freely throughout the EU. These standards relate to data governance, technical documentation, record management, transparency and information transmission to users, human oversight, and the robustness, accuracy, and security of data. AI providers must provide a risk management framework that monitors and addresses hazards across the entire life cycle of the AI system. This encompasses both its intended use and any anticipated misuse. The objective is to mitigate elevated risks to a safe limit. When certain risks cannot be entirely eradicated, appropriate safety protocols must be implemented to mitigate them. All remaining dangers must be explicitly conveyed to users (Edwards, 2022).

The foundational standards for high-risk AI systems, create a legislative framework that guarantees the safe and responsible deployment of AI technologies within the EU. The AI Act not only establishes compliance duties but also justifies these requirements within the framework of broader societal and economic considerations. In this context, Article 66 underscores the importance of these provisions, highlighting their function in protecting fundamental rights while ensuring a

balanced regulatory framework. In that direction, Article 66 states that "Requirements should apply to high-risk AI systems as regards risk management, the quality and relevance of data sets used, technical documentation and record-keeping, transparency and the provision of information to deployers, human oversight, and robustness, accuracy and cybersecurity. Those requirements are necessary to effectively mitigate the risks for health, safety and fundamental rights. As no other less trade restrictive measures are reasonably available those requirements are not unjustified restrictions to trade."

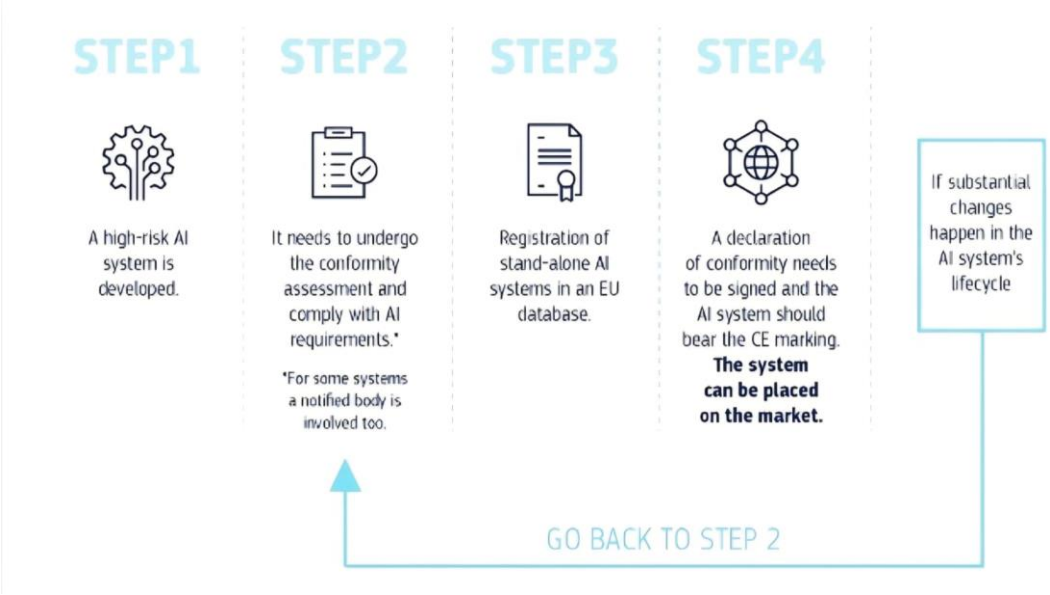

Figure 2.[2]: AI Systems's Cycle According to Artifical Intellience Act.

Therefore, it could interpret that Article 66 emphasizes the critical requirements for high-risk AI systems, as detailed in Articles 9-15 of the AI Act, highlighting their importance in alleviating threats to health, safety, and basic rights. The requirements encompass risk management (Article 9), data quality (Article 10), technical documentation and record-keeping (Articles 11-12), transparency and user information (Article 13), human oversight (Article 14), and robustness, accuracy, and cybersecurity (Article 15). Also, Article 66 underscores that these duties are not arbitrary trade restrictions but rather appropriate and acceptable steps to mitigate AI-

[2] *Note. From European Commission. (2024). Artificial Intelligence – Q&As. European Commission. Retrieved March 30, 2025, from* https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_1683

related dangers. The risk management framework (Article 9) guarantees ongoing surveillance and alleviation of prospective harms, whereas data governance stipulations (Article 10) assist in averting bias and discrimination. Transparency (Article 13) and human oversight (Article 14) reinforce the essential principle of explainability and human governance over AI determinations. Furthermore, the requirements for robustness, accuracy, and cybersecurity (Article 15) guarantee the reliable and secure operation of AI systems.

The EU AI Act gives a clear path to compliance, but people remain concerned about whether companies, have the resources to achieve these standards. Many HR departments and AI providers may not have the technical, legal, and ethical knowledge needed to meet the requirements for compliance evaluation and documentation. This lack of capability could make compliance more of a formality than a real process, where CE marking is done without really reducing risk. In the long term, the EU needs to think about ways to help compliance lead to real accountability, such initiatives to increase capacity, standard audit templates, or public lists of best practices.

It's advantageous that the AI Act stresses human monitoring (Article 14), but it's not clear how it will work in practice. Organizations are likely to use a shallow "human-in-the-loop" procedure if they don't have clear guidelines on what makes a "meaningful review." In this process, monitoring is more symbolic than substantial. In HR decision-making, this may show up as reviewers agreeing with automated results without looking into them closely enough. To stop "rubber-stamping" and make sure real human accountability, we need clearer operational definitions and guidance that is particular to each sector.

Hence, the implementation of the AI Act for high-risk AI systems establishes a systematic and adaptable regulatory framework, harmonizing compliance with flexibility. The Act establishes explicit rules for risk management, transparency, and accountability, thereby protecting fundamental rights and enhancing trust in AI technology within the EU. The Act's continual monitoring, reconsideration, and oversight measures strengthen its dedication to responsible AI implementation. As

AI progresses, this regulatory framework will be essential in upholding ethical and legal AI activities while fostering innovation and commercial expansion.The implementation framework of the EU AI Act is an important milestone toward making ethical AI a reality. But for it to work, it will need more than just legal compliance. It will also need a culture of accountability, uniformity across borders, and a willingness to grow all the time. Future research should concentrate on the internal interpretation of these requirements by corporations, namely with staff training, bias monitoring, and evidence accumulation for regulatory bodies. Only then can compliance go from being just a bunch of papers to being real, which is what the AI Act promised: AI that is reliable and cantered on people.

3.4. Legal Considerations and Institutions Intertwined with the AI Act

The effective execution and supervision of the EU Artificial Intelligence (AI) Act requires a unified consortium of entities, regulatory authorities, and complementary legal structures thaat collaborate to guarantee the ethical, transparent, and secure application of AI. Each of these entities contributes to various aspects of the AI ecosystem, with some emphasizing direct regulatory control, while others offer technology infrastructure or supplementary legal protections. These institutions establish an interlinked system wherein their initiatives reinforce and enhance one another, guaranteeing that AI technologies developed and implemented within the EU adhere to rigorous safety, privacy, and equity criteria. The AI Act can effectively tackle the intricacies of AI regulation through collaboration among entities such as the European AI Office, AI HLEG, and the GDPR, alongside support from the Digital Services Act, the Digital Governance Act, EuroHPC, and AI Factories, thereby promoting a responsible AI environment that provide benefits to the society as a whole.

The European AI Office functions as the center for artificial intelligence innovation across the European Union. Executing the AI Act is essential, especially for general-purpose AI, as it fosters the development and use of dependable AI and promotes international cooperation. The European AI Office advocates for the development and application of trustworthy AI, while mitigating associated dangers. The AI

Office was established within the European Commission as the center of AI expertise and serves as the foundation for a cohesive European AI governance framework. The European Union aims to ensure that artificial intelligence is safe and dependable throughout the 27 Member States. Consequently, The AI Office is clearly equipped to support the EU's AI policy. It is essential to implement the AI Act by aiding the governing authorities in Member States with their duties. It specifies the regulations for general-purpose AI models. The Commission's jurisdiction, as delineated by the AI Act, includes the assessment of general-purpose AI models, requesting of information and actions from model providers, and the enforcement of fines. The AI Office promotes an innovative environment of dependable AI to leverage societal and economic benefits. It formulates a coherent, unified, and efficient European position on AI in the international arena, positioning itself as a global benchmark. The AI Office collaborates with Member States and the wider expert community via specialized forums and expert groups to promote informed decision-making. These integrate contributions from the scientific community, industry, think tanks, civil society, and the open-source ecosystem, ensuring that their opinions and expertise are acknowledged. The AI Office, drawing on substantial expertise in the AI ecosystem, including improvements in capabilities, deployment, and other trends, fosters an in-depth awareness of potential benefits and risks (*European AI Office*, 2025b).

The AI Office comprises five divisions: Excellence in AI and Robotics, Regulation and Compliance, AI Safety, AI Innovation and Policy Coordination, and AI for Societal Good. Alongside these units, there are two advisory roles: Lead Scientific Advisor and Advisor for International Affairs. The AI Office, including approximately 140 personnel, including technology specialists, policy experts, and attorneys, is well-equipped to fulfil its extensive mandate efficiently (*European AI Office*, 2025).

While the AI Office is essential for the implementation and oversight of AI rules and plans at the EU level, while the High-Level Expert Group on Artificial Intelligence, formed by the European Commission, offers expert counsel on AI strategies, ethical norms, and governance frameworks (*European AI Office*, 2025b). The AI HLEG

advisory group offers critical recommendations and ethical principles that influence the formulation of the AI Act by tackling legal and ethical aspects of AI technology. In its first year, the high-level expert group on artificial intelligence (AI HLEG) focused on two key outputs (*High-level Expert Group on Artificial Intelligence*, n.d.).

On 8 April 2019, the High-Level Expert Group on Artificial Intelligence presented Ethical Guidelines for Trustworthy Artificial Intelligence. The document proposes a human-centric approach to AI and describes seven essential criteria that AI systems must fulfil to be deemed trustworthy. According to the Guidelines, trustworthy AI must be lawful—adhering to all relevant rules and regulations—ethical—upholding ethical principles and values—and robust—both technically sound and considerate of its social environment. Moreover, the seven essential criteria for reliable AI emphasize the necessity for AI systems to enhance human decision-making while assuring enough oversight, demonstrating technical robustness and security with emergency measures, and preserving privacy and data governance. They must exhibit transparency, providing explicit elucidations of their capabilities and limitations, while renouncing unjust bias by fostering diversity, non-discrimination, and accessibility. Artificial intelligence intended to enhance societal and environmental well-being, demonstrating sustainability and social responsibility. Ultimately, accountability systems must be established to guarantee responsibility for AI outcomes, incorporating auditability and accessible recourse for users (*Ethics Guidelines for Trustworthy AI*, n.d.) Deliverable 2, Ethics Guidelines for Trustworthy AI, outlines 33 policy and investment suggestions designed to promote the sustainability, growth, competitiveness, and inclusion of AI, while safeguarding the rights of European citizens. Deliverable 3, the final Assessment List for Trustworthy AI (ALTAI), serves as a pragmatic self-assessment instrument enabling AI developers and deployers to adhere to the essential ethical mandates specified in the guidelines. Deliverable 4, Sectoral Considerations on the Policy and Investment suggestions, examines the sectoral ramifications of these suggestions, concentrating on the public sector, healthcare, and manufacturing.

The AI HLEG has significantly influenced EU policy by collaborating with the European AI Alliance and engaging over 4,000 stakeholders from diverse sectors.

The AI HLEG is essential since it offers expert counsel to ensure that AI development in Europe complies with ethical, legal, and societal requirements. Its efforts not only impact policymaking at the EU level but also enhance public confidence in AI technology, ensuring that AI stimulates innovation and economic development while protecting citizens' rights (*High-level Expert Group on Artificial Intelligence*, n.d.). The AI High-Level Expert Group (AI HLEG) was essential in formulating the EU's strategy for trustworthy AI by offering ethical principles, policy recommendations, and evaluative tools. As the legislative landscape transformed with the implementation of the AI Act, the necessity for a formal governance framework became apparent. This is the role of the European AI Board. The AI Board, building on the foundation established by AI HLEG, guarantees the uniform and efficient enforcement of the AI Act throughout Member States. It functions as a principal regulatory entity, coordinating national authorities, supervising compliance, and bolstering the EU's dedication to reliable AI. The European Artificial Intelligence Board (AI Board) was created by the AI Act, which became effective on August 1, 2024, serving as a principal advising and coordinating entity. It comprises delegates from all EU Member States, supported by the AI Office, and is presided over by one of the Member States. The European Data Protection Supervisor and EEA-EFTA nations engage as observers.

The AI Board ensures the consistent implementation of the AI Act across the EU by coordinating national authorities, fostering collaboration, and disseminating technical and regulatory expertise. It also oversees sub-groups dedicated to specific AI policy issues and national enforcement cooperation. The Board offers direction on guidelines, delegated acts, and implementing steps to guarantee the clarity and enforceability of the AI Act's stipulations. The AI Board not only provides regulatory oversight but also plays a strategic role in developing EU AI policy, offering guidance on AI innovation, international partnerships, and broader policy matters. This ensures that AI technology adheres to EU principles while fostering competitiveness, safety, and ethical standards. The AI Board strengthens Europe's standing in trustworthy AI via its governance initiatives (AI Board, n.d.).

Another regulation that intertwined is General Data Protection Regulation (GDPR). The EU AI Act and the General Data Protection Regulation (GDPR) are also

interconnected, since both seek to guarantee the proper application of technology while safeguarding fundamental rights. The AI Act oversees the development, deployment, and utilization of AI systems, especially high-risk applications, whereas the GDPR regulates the processing of personal data, including AI-driven decision-making that impacts individuals. AI systems handling personal data must adhere to GDPR standards, including legality, fairness, openness, and data reduction. Moreover, both legislations underscore the entitlement to an explanation and human supervision, guaranteeing that AI-generated choices, especially in critical domains like as employment or credit assessment, do not result in discriminatory or unclear consequences. The AI Act does not supersede GDPR; instead, it enhances it by imposing more stringent requirements on AI providers and deployers for personal data usage.

The EU General Data Protection Regulation (GDPR) is the most restrictive privacy and security legislation globally. It updates and enhances the principles of the 1995 Data Protection Directive. It was enacted in 2016 and became effective on May 25, 2018. The GDPR defines the essential rights of persons in the digital era, the responsibilities of data processors, mechanisms for ensuring compliance, and penalties for transgressors of the regulations. The GDPR describes the rights of the data subject, including the rights of individuals whose personal data is processed. These enhanced rights provide individuals greater authority over their personal data. These rights encompass the necessity for an individual's explicit consent for the processing of their personal data, the right to rectification, erasure, and to be 'forgotten', the right to object, particularly regarding the use of personal data for 'profiling' purposes, the right to data portability between service providers, and the obligation to provide individuals with transparent and readily accessible information concerning the processing of their data Council of the European Union. (n.d.).

The AI Act, in conjunction with the General Data Protection Regulation (GDPR), Digital Services Act (DSA), Digital Markets Act (DMA), and Digital Governance Act (DGA), constitutes a thorough legal framework for the European Union's digital ecosystem. The AI Act particularly regulates artificial intelligence by assuring transparency, safety, and adherence to fundamental rights, while the GDPR governs

data privacy, which is essential for AI models that depend on extensive datasets. The DSA (The EU's Digital Services Act, 2022) and DMA (Digital Markets Act, 2025) focus on the accountability of online platforms and gatekeepers, promoting equitable digital marketplaces and reducing the risks associated with AI-driven recommendation systems. The DGA, conversely, promotes data exchange and governance, fostering AI innovation while upholding rigorous ethical standards. Collectively, these policies establish a cohesive framework for AI development and implementation within the EU, reconciling innovation with ethical and legal protections.

Furthermore, alongside the specific conditions of the EU AI Act, other legal obligations are also claimed to be taken into account, particularly relevant data protection regulations and employment law considerations, including workforce consultation duties, anti-discrimination laws, and liability concerns pertaining to AI (Clifford Chance (2024). Employee consultation is a critical obligation in some EU jurisdictions, requiring that businesses interact with trade unions, works councils, or employee representatives prior to the implementation of AI tools, especially those utilized for monitoring purposes. In certain instances, it is essential to inform individual employees, particularly when AI applications affect job security or working conditions.

Moreover, anti-discrimination legislation must be carefully evaluated to guarantee that AI-driven decision-making does not produce biased results. Artificial intelligence systems employed in recruiting, promotions or performance evaluation may disproportionately penalize protected groups, resulting in serious legal ramifications. Employers must evaluate if AI applications inadvertently produce biased outcomes and ensure that any negative consequences are justifiable by a genuine business rationale. The implementation of AI in workplace monitoring and surveillance poses health and safety issues. Ongoing AI-driven surveillance could cause tension, adversely impacting employees' mental well-being and work-life equilibrium. Employers must guarantee that AI systems comply with their legal duty to maintain a safe work environment. A significant concern is scope creep, wherein AI technologies originally designated for a specific purpose—such as training—are

subsequently repurposed for alternative aims, such as disciplinary measures, without sufficient openness or engagement. This misuse may result in illegal data processing and violations of labour and data protection regulations. Ultimately, liability remains to be a substantial concern. Employers must assess accountability for AI-generated judgments in accordance with current regulations and future legislation. These regulations seek to clarify accountability in instances where AI systems inflict harm or produce unforeseen outcomes. It is imperative to address these legal aspects to guarantee AI compliance with overarching regulatory and ethical duties inside the EU.

The efficient implementation and supervision of the EU AI Act depend on an elaborate and organized network of regulatory bodies, legal frameworks, and governance systems. The collaboration among entities such as the European AI Office, AI HLEG, the AI Board, and regulatory frameworks including the GDPR, Digital Services Act, and Digital Governance Act guarantees that AI development and implementation within the EU adhere to fundamental rights, ethical principles, and legal standards. Moreover, factors relating to labour legislation, anti-discrimination regulations, data privacy, and liability highlight the imperative for an extensive and equitable regulatory framework. Through collaborative efforts, these entities enhance a legal framework that promotes AI innovation while ensuring openness, equity, and accountability. The combined effort of these legal entities is crucial for the protection of fundamental rights while enabling AI to function in a responsible and ethical manner within society. Going forward, ongoing collaboration, flexibility, and implementation will be essential for sustaining a dynamic and robust AI regulatory framework within the European Union.

3.5. Legal Consequences of Non-Compliance and Precedent Cases

Compliance to the EU's AI Act is essential for realizing its primary objectives of promoting reliable, secure, and morally aligned AI systems throughout the Union. The regulation delineates explicit responsibilities for providers, consumers, and other stakeholders in the AI value chain, especially concerning the development or deployment of high-risk AI systems. These requirements encompass a wide range of

areas, including risk management, data governance, transparency, human oversight, and post-market surveillance. The AI Act establishes legally obligations, supported by organized enforcement procedures for compliance. Simultaneously, combating non-compliance is crucial for defending public interest, upholding fundamental rights, and ensuring equitable competition within the internal market.

The governance framework introduced by the EU AI Act has a dual-level methodology. At the national level, individual Member States have primary responsibility for supervising the implementation and enforcement of AI legislation, especially with high-risk systems. Simultaneously, the regulation of general-purpose AI models is subject to oversight at the EU level. The Act establishes the European Artificial Intelligence Board, including national representatives and aided by experts' subgroups of competent authorities and regulators, to promote consistency and coordination throughout the Union. The AI Office of the European Commission is crucial in directing the Board's strategic trajectory. Moreover, expert contributions are guaranteed by the formation of two advisory entities—the Scientific Panel and the Advisory Forum—integrating interdisciplinary insights and stakeholder viewpoints to foster a balanced and informed AI policy framework (*Artificial Intelligence – Questions and Answers*, 2024).

The Act requires advisory contributions from expert panels to enhance the decision-making process under this governance structure. Article 99 of the AI Act is crucial as it defines the legal consequences of non-compliance, categorizes the fines, and clarifies the enforcement duties of Member States. This article establishes the foundation for an efficient, balanced, and preventive sanctions framework throughout the Union. In accordance with the AI Act, Article 99 stipulates that each EU Member State is tasked with formulating and implementing national regulations regarding penalties for violations of the Regulation. The sanctions, which may encompass warnings and non-monetary measures, must be effective, proportionate, and deterrent, while also considering the requirements and sustainability of small and medium-sized firms (SMEs), especially start-ups. Member States shall notify the European Commission of their penalty regimes by the Regulation's effective date and provide updates on any later modifications.

Basically, the EU AI Act defines "non-compliance" in three ways: (1) prohibited practices in Article 5; (2) high-risk systems used without the required controls in Articles 6 and 9–15 (risk management, data governance, documentation/ logging, transparency, human oversight, accuracy/robustness/cybersecurity); and (3) failures of transparency duties in Article 50 (e.g., chatbots, synthetic content labels). Different groups are in charge of enforcement: national competent authorities are in charge of monitoring, and the AI Office and the European AI Board are in charge of making sure that the rules are the same across the EU. Under Articles 99–100, the highest penalties are for banned uses, the middle penalties are for unfulfilled responsibilities, and the lowest penalties are for giving false or incomplete information. The penalties are based on how serious, how long, how big, and how cooperative the offense is. Significant financial penalties are anticipated for non-compliance. Violations of the banned AI practices specified in Article 5 may incur administrative penalties of up to €35 million or 7% of a corporation's global annual revenue, whichever amount is greater. Additional violations—pertaining to providers, importers, distributors, deployers, and notified bodies—may result in penalties of up to €15 million or 3% of global revenue. Furthermore, providing incorrect, misleading, or incomplete information to authorities may result in penalties of up to €7.5 million or 1% of revenue. Significantly, for SMEs and start-ups, penalties are limited to the lesser of the specified percentage or the specified monetary sum.

To get in detail, Güçlütürk and Hilliard (2025) states that the AI Act classifies penalties for non-compliance into three distinct levels, each representing the seriousness of the violation. Tier 1 enforces the most substantial penalties for violations concerning the utilization or accessibility of forbidden AI systems. Companies that violate regulations may incur fines of up to €35 million or 7% of their global annual revenue, whichever amount is greater. These penalties are among the most significant within EU legislation, exceeding those specified by the GDPR. Tier 2 handles non-compliance with certain obligations established for various parties, including providers, representatives, importers, distributors, deployers, and notified bodies. Transgressions in this category may result in penalties of up to €15 million or 3% of yearly revenue. Tier 3 pertains to situations in which mistaken

insufficient, or misleading data is submitted to authorities on violations of Article 21 of the AI Act, particularly when AI system suppliers neglect to collaborate or provide precise documentation. This infraction may incur penalties of up to €7.5 million or 1% of total global revenue, whichever amount is greater. Moreover, suppliers of general-purpose AI (GPAI) models may face penalties of up to €15 million or 3% of their global revenue, especially if non-compliance results from deliberate or reckless behaviour.

Moreover, in deciding whether to impose an administrative punishment under the AI Act and in calculating the amount, authorities must evaluate every relevant aspect of each instance. The factors encompass the severity, duration, and consequences of the violation, the number of individuals affected, any prior violations, the operator's size and market share, as well as any additional or different circumstances, including financial benefits, cooperation with authorities, and whether the breach was intentional or negligent. Member States shall develop regulations delineating the application of fines to public entities. Fines may be imposed by courts or other authoritative entities, dependent upon national legal systems, although the result must be uniform throughout the EU. The execution of these authorities must adhere to due process and legal protections, including the opportunity to appeal. Finally, Member States must provide annual reports to the European Commission regarding the fines imposed and any associated legal actions (*Article 99: Penalties | EU Artificial Intelligence Act*, n.d.).

Also, Article 100 states that the European Data Protection Supervisor is authorized to impose administrative fines on Union agencies, authorities, and institutions. Penalties may reach €1,500,000 for violations of the Act's prohibitions and €750,000 for non-compliance with responsibilities not specified in Article 5 (*Penalties of the EU AI Act: The High Cost of Non-Compliance*, n.d.). Violations of the EU AI Act may result in cases being presented to the ECJ of EU (CJEU) in instances of substantial breaches or disagreements concerning the interpretation and application of the legislation. Such disputes may occur in many situations, for instance, when a corporation employs an AI system that potentially violates forbidden procedures, leading to a dispute on its classification under the Act. Challenges may emerge if a

corporation neglects its transparency or risk assessment responsibilities for high-risk AI systems, or if there is dispute regarding the degree of the company's duty to collaborate with national authorities by providing requisite documents. Conflicts over penalties imposed on general-purpose AI model providers, especially when national regulatory rulings contradict other EU legislation, may also be submitted to the CJEU. Furthermore, legal problems may arise if AI systems are determined to discriminate against specific groups, and a corporation challenges penalties for failing to adhere to non-discrimination requirements. In such instances, national courts may submit the case to the CJEU for elucidation on the meaning of the AI Act, therefore ensuring uniform enforcement and delivering authoritative judgments on intricate legal matters pertaining to AI compliance.

At present, there are no publicly documented instances of violations of the EU AI Act, as the legislation is quite recent, having been enacted in 2024. Nonetheless, several relevant areas and examples from other pertinent EU rules (such as GDPR) may provide insights into the judicial handling of breaches of the AI Act:

The following case offers significant insights into the judicial handling of regulatory violations concerning AI, including the EU AI Act. Similar to Google's challenge against the GDPR punishment, forthcoming cases under the AI Act may see firms disputing sanctions for non-compliance, particularly when the violations pertain to transparency, consent, or data processing. Google was fined 50 million euros. On January 21, 2019, the CNIL (French Data Protection Authority) levied a €50 million fine against Google LLC for violations of the General Data Protection Regulation (GDPR), particularly for insufficient transparency, inadequate information provision, and the lack of valid consent for targeted advertising. This case ensued from grievances lodged with CNIL by the NGOs None of Your Business (NOYB) and La Quadrature du Net (LQDN) concerning Google's lack of a legitimate legal foundation for the use of personal data for targeted advertising. The action commenced after CNIL initiated investigations following these complaints and found that Google's data processing information was not readily accessible to users and failed to satisfy the transparency mandates of GDPR. The CNIL determined that the consent acquired for tailored advertising was neither adequately informed nor

specified, since users were not explicitly made aware of the enormous data processing activities associated with numerous Google services. The penalty was substantial as it was one of the initial major sanctions imposed under the newly conferred enforcement authorities of GDPR, underscoring critical deficiencies in data transparency and user consent protocols inside a prevalent system in Europe (*The CNIL's Restricted Committee Imposes a Financial Penaltı of 50 Million Euros Against GOOGLE LLC | European Data Protection Board*, n.d.).

Similar to the Google case, in a significant ruling by Luxembourg's data protection body, the National Data Protection Commission (CNPD), Amazon was penalized €746 million for violations of personal data processing and privacy regulation (Chee, 2025). This case establishes a significant precedent for possible violations of the EU AI Act, especially concerning the utilization of personal data in AI-driven activities like tailored advertising. Analogous to Amazon's circumstances, entities governed by the AI Act may encounter sanctions over data transparency, permission, and privacy, which could result in legal disputes. This ruling illustrates how privacy legislation like the GDPR can result in substantial fines and legal disputes and offers insight into the potential application of the AI Act in forthcoming cases.

A German court has determined that individuals impacted by Facebook's 2019 data breach may pursue compensation without the necessity of demonstrating particular harm, a decision that may influence AI-related policies. The breach compromised the personal information of 533 million users globally via a method known as "scraping," wherein attackers exploited a security hole in Facebook's contact importer feature to collect data using automated tools. The breached data encompassed full names, telephone numbers, birth dates, email addresses, and geographical locations—information that could readily facilitate identity theft and social engineering assaults. Meta (Facebook's parent company) contended that the incident was not a "hack" but a misuse of legitimate system features; however, the ruling represented a significant transformation in the legal framework by asserting that users need only to prove they were victims of the breach to seek compensation, without the necessity of demonstrating direct financial damage (Daniel, 2024). This instance generated substantial regulatory measures. Facebook, Inc. was penalized $5

billion by the Federal Trade Commission (FTC) in the United States for contravening a 2012 directive by deceiving users on their control over personal data. As part of the settlement, Facebook consented to implement new limits and a restructured corporate framework to guarantee accountability in privacy-related decisions (*FTC Imposes $5 Billion Penalty and Sweeping New Privacy Restrictions on Facebook*, 2024).

Hence, the European Union's Artificial Intelligence Act establishes a comprehensive and multi-faceted enforcement framework aimed at guaranteeing the lawful, ethical, and transparent implementation of AI throughout Member States. The AI Act establishes a robust standard for legal accountability in the AI ecosystem through well delineated responsibilities and a graduated punishment mechanism. The extent of financial penalties and the procedural protections specified in Articles 99 and 100 highlight the EU's dedication to preserving basic rights and mitigating possible risks associated with AI systems. Although concrete case law pertaining to the AI Act has not yet developed due to its recent implementation, similar judgments under established EU rules, such as the GDPR, offer persuasive precedents. The significant penalties imposed on Google, Amazon, and Facebook not only demonstrate the EU's commitment to strict regulation but also indicate the possible legislative direction for AI-related infractions. These instances illustrate how inadequate openness, flawed permission processes, and misuse of personal data can result in significant penalties and institutional changes. As AI systems progressively impact decision-making in various industries, the enforcement aspects of the AI Act will be pivotal in fostering responsible innovation and maintaining public trust in developing technology.

In the future, the EU AI Act will only be effective if its sanctions are sufficiently harsh and its enforcement is consistent, fair, and clear. A potential obstacle is attaining consistent interpretation among Member States, particularly concerning the definition of “non-compliance” in high-risk areas like recruitment or biometric surveillance. Without explicit rules for how to accomplish things and the same methods for auditing, enforcement may not be fair, which could lead to people shopping around for a forum or different judgments in different places. The Act also has the same deterrent effect as the GDPR, but it doesn't include clear rules for independent ways for people who have been harmed by algorithms to get justice.

This is a big problem for making sure that people are really held accountable. So, the EU might want to think about setting up a central AI Ombudsperson or giving the AI Office more power to handle citizen complaints and cross-border arbitration. These steps would change the AI Act from a solely punitive law into a living framework for restorative and preventive governance. This would build public confidence while keeping Europe's ability to innovate.

Case 1: Google (CNIL, 2019)

Tags: Lawful Basis, Consent, and Records

Claims / Allegations: Insufficient transparency; consent for targeted marketing which is not clear or explicit enough.

Company’s Arguments: Consent built into multi-service processes; users are aware of it across all interfaces.

Reason: The information was hard to find and understand, and the consent wasn't explicit or detailed enough for the processing.

Result / Fine: €50 million in administrative fines.

Transfer to AI Act obligations: Article 50 (clear disclosure when interacting with AI/content); notices to individuals from the deployer; strong documentation/logs; and explainability cues.

HR relevance: If it is used AI to help with hiring or evaluation, make sure to give explicit warnings about the use of AI, keep decision logs, write down the reasons for hiring or evaluation, and make sure there is an opt-out or appeal option when necessary.

Case 2: Amazon (CNPD Luxembourg, 2021)

Tags: Consent/Lawful Basis, Profiling/ADM, and Openness

Claims / Allegations: Illegal targeted advertising/profiling and deficiencies in transparency.

Company’s Arguments: Processing in the context of service and disclosures.

Reason: The scope of profiling made lawful basis/consent and openness not enough.

Result / Fine: €746 million in administrative fines.

Transfer of obligations to the AI Act: There is a strong connection between Article 50's requirement for openness and Articles 9–15's requirement for records and documentation to illustrate how models are used and explained.

HR relevance: Do not evaluate candidates or employees in a black box; make the criteria public, keep records of why you made the decisions you did, and provide open channels for appeals.

Case 3: Facebook/Meta: "Data Scraping" Breach and Non-Material Damages (Germany, 2024)

Tags: Breach of Security, Damages and Compensation, and Basic Rights

Claims / Allegations: The contact-importer collected an extensive amount of data, including names, phone numbers, email addresses, birth dates, and localities. Victims asked for money without having to prove they had lost money.

Company’s Arguments: Not a "hack," but an abuse of a permitted feature; harm is debated.

Reason: Loss of control over personal data may cause non-material damages even in the absence of financial loss.

Result / Fine: Acknowledgment of the right to seek compensation; cases continue based on damages.

Transfer of obligations to the AI Act : Articles 15 (robustness/security), 11–12 (docs/logs), 9–10 (risk management/data governance), and 99–100 (penalties and liability exposure).

HR relevance: Keep Standard Operating Procedures, access/decision logs, and DPIAs; keep data to a minimum; and make sure vendors have security guarantees, audit privileges, and a kill switch.

Table 5. Precedent-Setting AI Cases in HR.

Case	Allegations / Claims	Company's Key Arguments	Regulator/Court Reasoning
Google (CNIL, 2019)	Insufficient transparency; invalid/unspecific consent for targeted ads	Users informed across multi-service flows; disclosures exist	Info not clear/accessible/specific enough → consent invalid
Amazon (CNPD, 2021)	Unlawful profiling; transparency gaps	Processing within service context; disclosures provided	Scale of profiling made lawful basis/consent and transparency insufficient
Facebook/Meta (Germany, 2024)	Large-scale data scraping: victims seek compensation without proving financial loss	Not a hack—misuse of a legitimate feature; harm disputed	Loss of control over personal data can justify non-material damages
Case	Outcome / Fine	AI Act Mapping (Articles)	HR "So what?"
Google (CNIL, 2019)	€50M fine	Art. 50 (transparency); Arts. 11–12 (docs/logs)	Give clear notices about AI use; explain criteria; keep decision logs; provide appeal
Amazon (CNPD, 2021)	€746M fine	Art. 50 (openness); Arts. 9–15 (risk mgmt, data governance, docs/logs, oversight)	No black-box scoring; publish job-related criteria; record rationales; ensure appeal channels

Table 5. (continued)

Facebook/Meta (Germany, 2024)	Right to seek compensation recognized	Art. 15 (robustness/security); Arts. 11–12 (docs/logs); Arts. 9–10 (risk mgmt/data governance); Arts. 99–100 (penalties/liability)	Keep incident SOPs, access/decision logs, DPIAs; minimize data; require vendor security guarantees, audit rights, kill-switch

3.6. Innovation And Investment in Europe for the AI

The EU is proactively regulating artificial intelligence through the EU AI Act while simultaneously fostering innovation and technological leadership in the sector as AI transforms economies and societies. The EU has formulated extensive initiatives to facilitate the appropriate advancement and implementation of AI technologies, acknowledging its transformative potential for public services, industry, and scientific research. Key to this initiative are regulatory tools like the AI Innovation Package, introduced in 2024, and the creation of AI Factories—collaborative, resource-abundant settings intended to expedite AI research and implementation. These initiatives constitute a comprehensive vision that integrates regulatory foresight with strategic investment, guaranteeing that AI systems developed in Europe are innovative, competitive, trustworthy, and aligned with European values. The EU's dedication to AI innovation demonstrates its objective to attain digital sovereignty, bolster its industrial foundation, and guarantee that AI benefits the public while adhering to fundamental rights and democratic principles.

To encourage the development of reliable and value-driven Artificial Intelligence in Europe, the European Commission initiated an extensive AI Innovation Package subsequent to the adoption of the EU AI Act on January 24, 2024. This initiative seeks to assist startups and SMEs in developing AI systems that adhere to EU regulations by providing them with exclusive access to Europe's advanced supercomputers. This strategy primarily involves amending the EuroHPC Regulation to establish AI Factories—specialized centres within the European High Performance Computing Joint Undertaking (EuroHPC JU), aimed at developing the

most advanced supercomputing infrastructure throughout Europe. These AI Factories will accommodate enhanced supercomputers for the training of large-scale AI models and offer tools, support, and testing environments to a diverse array of users. The package also includes the establishment of an AI Office within the Commission, responsible for coordinating AI policy across the EU and ensuring the efficient implementation and enforcement of the AI Act.

The EU AI Start-Up and Innovation Communication, part of the comprehensive AI Innovation Package, defines many essential initiatives to enhance generative AI development in Europe. This includes financial support through Horizon Europe and the Digital Europe Programme, anticipated to generate approximately €4 billion in public and private investment by 2027. The EU aims to augment its AI talent resource through educational, training, and reskilling initiatives. The EU promotes a robust innovation ecosystem by advocating for investment in AI startups through entrepreneurship and equity initiatives, such as the EIC Accelerator, that supports high-risk, high-impact innovation by startups and SMEs, and InvestEU, a funding program that mobilizes private and public investment for EU priorities. Moreover, the development of Common European Data Spaces—secure environments that enable data exchange across sectors and countries—ensures access to high-quality, interoperable datasets crucial for training AI models. The GenAI4EU effort facilitates the practical implementation of generative AI across 14 strategic corporate ecosystems and the public sector, concentrating on sectors including healthcare, mobility, robotics, biotechnology, climate, and virtual environments (European Commission, 2024)

The EU acknowledges the necessity for sophisticated infrastructure to transform regulatory objectives into technological capabilities, facilitating the advancement and implementation of state-of-the-art AI. Although finance and strategic direction are crucial foundations, the effective implementation of high-impact AI models necessitates physical locations and technical environments conducive to experimentation, model training, and validation. The concept of AI Factories emerges as a fundamental element of Europe's AI innovation ecosystem. AI Factories serve as important hubs within the EU's supercomputing architecture,

providing a comprehensive environment for startups, researchers, and innovators to access robust computational resources, tools, and experience essential for training and refining large-scale AI systems. AI Factories are dynamic ecosystems that foster innovation, collaboration, and progress in artificial intelligence (AI). They combine computer power, data, and knowledge to formulate sophisticated AI models and applications. They facilitate collaboration across Europe by linking supercomputing facilities, universities, small and medium-sized enterprises (SMEs), industries, and financial institutions. AI Factories serve as hubs advancing AI applications across several areas such as healthcare, manufacturing, climate, finance, and aerospace.

The Commission has identified the establishment of AI Factories as a strategic objective, as articulated in the 2024 AI Innovation Package. The AI Continent Action Plan enhances EU investment in AI manufacturing infrastructure. By 2025-2026, at least 15 AI Factories and several Antennas connected to AI-optimized supercomputers in existing AI Factories are expected to be operational, enhancing the pan-European AI ecosystem and promoting growth by prioritizing access for AI startups and SMEs. A minimum of nine new AI-optimized supercomputers will be procured and deployed around the EU. This will more than triple the current EuroHPC AI computing capacity.

Additionally, to position Europe as a leader in AI development, the InvestAI Facility will create a new European fund of €20 billion to build up to 5 AI Gigafactories. The InvestAI Facility will foster public-private collaborations to guarantee a secure investment landscape and enhance a competitive and innovative AI ecosystem in Europe. AI Gigafactories are large-scale facilities dedicated to the development and training of sophisticated AI models consisting of trillions of parameters. AI Gigafactories will combine computational energy—surpassing 100,000 advanced AI processors—with a strong emphasis on power capacity, reliable supply chains, intricate networking, energy efficiency, and AI-driven automation (AI Factories, n.d.).

The EU published the AI Continent Action Plan to reinforce its status as a global leader in reliable and innovative artificial intelligence, outlining five critical pillars to

foster a robust AI ecosystem. The strategy prioritizes computing infrastructure, intending to create a minimum of 13 AI Factories and up to 5 bigger AI Gigafactories by 2026, with a total investment of €30 billion to facilitate advanced AI model training. The Data Union Strategy aims to enhance access to high-quality datasets for enterprises and public authorities by establishing Data Labs within AI Factories that aggregate data from various sources. The AI talent plan seeks to enhance Europe's AI workforce through international recruitment, specialist fellowships, reskilling initiatives via European Digital Innovation Hubs, and the AI Skills Academy. The plan facilitates the development and implementation of AI algorithms, especially in critical sectors like healthcare, automotive, and manufacturing, by offering customized assistance to enterprises and public institutions. Ultimately, it seeks to streamline regulations by facilitating the execution of the AI Act, enhancing legal certainty and public confidence, and establishing an AI Act Service Desk in 2025 to provide tailored counsel and resources for businesses. These coordinated measures demonstrate the EU's aim to secure digital sovereignty, enhance economic competitiveness, and fortify democratic resilience in the age of AI (*AI Continent Action Plan | Shaping Europe's Digital Future*, n.d.).

The EU's financial dedication to creating a sustainable AI ecosystem is both ambitious and unique. The EU intends to mobilize some €4 billion in public and commercial financing for generative AI development by 2027 through key initiatives including the Horizon Europe and Digital Europe Programmes. Moreover, the AI Factories and AI Gigafactories are supported by a collective investment of no less than €30 billion, indicating the size of infrastructure necessary for global competition in AI. These financial measures encompass not just infrastructure but also human capital development, safe data frameworks, and regulatory execution, creating a comprehensive plan that merges economic policy with technical autonomy. The creation of public-private investment instruments such as the InvestEU and InvestAI Facilities guarantees long-term sustainability, risk reduction, and alignment with industrial objectives while fostering entrepreneurship and innovation throughout Europe. In summary, the European Union's AI Innovation Package and AI Continent Action Plan exemplify a harmonious integration of policy, infrastructure, and

investment, aimed at establishing Europe as a leader in reliable and advanced artificial intelligence. The EU establishes a foundation for an inclusive and competitive AI ecosystem by aligning financial incentives with regulatory frameworks and prioritizing collaborative infrastructures such as AI Factories and Gigafactories. This cohesive strategy not only expedites technical progress but also protects essential rights, transparency, and public confidence, thereby strengthening the EU's dedication to democratic principles and digital autonomy in the age of AI.

The EU's multi-faceted approach to regulating and encouraging AI innovation is both a conceptual framework and a practical tension. AI Factories, Gigafactories, and the InvestAI Facility are all important steps toward digital sovereignty and competitiveness. However, there is a chance that these big projects will only help big companies, leaving startups, small and medium-sized businesses, and academic innovators on the outside. To avoid an innovation gap in Europe, the EU should add flexible, bottom-up funding methods to its top-down funding structure. These may include micro-grants for ethical AI initiatives, open-access data collaboratives, and regional AI incubators that work with universities. Also, Europe's long-term success in AI will depend less on how much money it has and more on how ready its culture and structure are: the ability to keep AI talent, stimulate research across disciplines, and turn legislative foresight into flexible governance. So, a European AI ecosystem that will last will need not only money and infrastructure, but also a constant conversation between politicians, researchers, and citizens to make sure that innovation stays focused on people, open to everyone, and in line with the Union's moral values.

CHAPTER 4

BENEFITS AND CONCERNS OF USING AI IN HR

The following section focuses on the impact of AI on Human Resources applications. The incorporation of AI technology into HR tasks signifies a crucial convergence of innovation and legislation, as it directly impacts fundamental rights, ethical norms, and organizational dynamics. The EU AI Act defines specific obligations for high-risk AI systems, particularly in HR-related applications like recruitment, performance monitoring, and workforce management. Therefore, it is essential to assess the opportunities and challenges this technology poses within the employment sector. The subsequent chapters will explore the advantages and issues related to AI applications in HR using various methodologies. Artificial intelligence (AI) is progressively being used in human resources to optimize and improve various HR activities. A significant application of AI in human resources is in the recruitment process. AI-driven technologies can automate applicant sourcing and screening by assessing resumes about job descriptions to swiftly and effectively discover the most qualified candidates. In addition, AI in HR technology integrates environmental observations to facilitate informed decisions on human resource management.Thus, companies adopting AI technology and Human Resources processes keep the company always up to date and in tune with innovation.

Adding AI to HR activities actually speeds up innovation, but it also creates a greater conflict between efficiency and ethics in businesses. A lot of businesses use AI technologies before they set up robust ethical design guidelines. This leads to biases and mistakes in data governance being built into systems that are still in the early stages. In this sense, the EU AI Act's future implementation will likely push companies to use organized methods like HR AI Impact Assessments or Ethical Deployment Checklists before they use automation tools. These assessments before

adoption will soon be required by law and will also be the best way to manage HR technology responsibly.

AI is also used for employee onboarding, where chatbots and virtual assistants can guide new hires through the onboarding process, answering questions and providing resources. Furthermore, AI-driven analytics tools help in assessing employee performance and engagement through data analysis, enabling HR professionals to gain insights into workforce trends and employee sentiment. Moreover, AI facilitates customized learning and development experiences by suggesting specific training programs aligned with particular employee requirements and career goals. Another important application is forecasting layoffs. Through the analysis of employee data, AI can recognize patterns and causes that may contribute to dissatisfaction or turnover, enabling HR to implement proactive strategies to enhance retention. Focusing on the details of Efficiency and Productivity Enhancements, one of the most important advantages of using AI in Human Resources in the areas mentioned above.

AI-powered onboarding and performance analytics make operations operate much more smoothly, but they also risk making encounters at work less personal. Relying too much on algorithms might make relationships shallow, where employees' experiences are more about transactions than interactions. To correct this, HR teams should make it clear how much of the decision-making process should involve people. For example, they should make sure that at least 40% of final choices or feedback cycles are still confirmed by people. Adding a "human validation required" step to each automated recommendation would help keep HR systems sensitive to people's feelings and situations.

Minimizing repetitive tasks with the help of AI is one of the main effects of efficiency and productivity enhancements. Minimizing repetitive tasks in the workplace is crucial for several reasons, primarily related to efficiency, employee satisfaction, and overall organizational effectiveness. AI technologies enable the automation of repetitive tasks through various means. According to Gallup's latest research on AI adoption, 93% of Fortune 500 CHROs say their organization has

started using AI tools and technologies to improve business practices. In the 93% segment that utilizes artificial intelligence, most employees have indicated that they use it for idea generation and task automation. Among employees who report using AI, the most common applications are generating ideas at 42%, automating basic tasks at 39%, and consolidating information or data at 39%. This trend is particularly relevant for company leaders as well: 46% of leaders use AI to consolidate information or data in their roles, and 45% report using AI to automate basic tasks (Houter, 2024b).

AI technologies make it easier to automate tasks that need to be done over and over again by using advanced data processing and algorithms that learn from past data to do tasks on their own. Automating responses and regulating timing enhance communication efficiency and enable employees to concentrate on more complicated concerns. AI systems may substantially reduce the workload of human personnel by utilizing software to execute rule-based operations, including data entry and payroll processing. Moreover, AI-driven analytics enhances productivity by autonomously producing insights and visualizations from extensive data sets, simplifying reporting processes, and facilitating accelerated, data-informed decision-making. These characteristics collectively assist companies in minimizing repetitive work and enhancing overall productivity. Therefore, by automating repetitive tasks and providing data-driven insights, AI improves HR efficiency, proactivity, and employee concentration, consequently creating a more engaged and productive staff (Sycuc, 2023).

Dell'Acqua et al. (2004) conducted a study at Harvard Business School to support this argument. The study aimed to determine how the incorporation of AI into the tasks of highly skilled knowledge workers could augment, disrupt, or impact traditional workflows. The study involved 758 strategy consultants, each of whom completed an initial survey and experimental tasks. The study found that for 18 different tasks selected as realistic examples of the types of work done at a prominent consulting firm, consultants who used ChatGPT-4 performed significantly better than those who did not. On average, consultants using AI completed 12.2% more tasks, completed tasks 25.1% faster and produced 40% higher quality results compared to

those not using AI. This proves that the use of AI has a significant and radical impact on productivity and speed of work (Dell'Acqua et al., 2023). In line with this experiment, it can be easily argued that the use of AI in workplaces can directly affect productivity, speed of completion of work items and work quality. Although AI technologies markedly improve HR efficiency via task automation, intelligent data processing, and decision-making assistance, their deployment must be meticulously aligned with the legislative stipulations established in the EU AI Act. The Act categorizes AI systems utilized in employment, worker management, and access to self-employment as high-risk applications under Annex III, Title 4. This includes applications such as resume screening, personnel assessment, and performance forecasting. Consequently, firms utilizing AI to automate repetitive HR tasks—such as payroll processing, data input, or performance monitoring—must provide transparency (Article 13), data quality and governance (Article 10), and human oversight (Article 14). Studies such as Dell'Acqua et al. (2023) affirm the substantial productivity enhancements AI can offer to complicate workflows; yet, the EU AI Act cautions that these systems may also present hazards associated with bias, data protection infringements, or insufficient accountability if not adequately regulated. Consequently, although AI provides significant productivity benefits in HR, its implementation necessitates strict adherence to the EU's legislative framework to minimize dangers and maintain employee rights and organizational confidence.

While the research conducted by Dell'Acqua et al. (2023) offers robust quantitative evidence for productivity enhancements, its applicability across sectors is still constrained. The sample of highly skilled consultants may not accurately represent the dynamics of HR teams that are less digitally advanced. This means that businesses should run their own controlled pilot tests to compare AI-assisted workflows against human-only workflows on things like accuracy, time to finish a task, satisfaction, and appeal rate. These internal standards would provide more accurate information and help with incremental, evidence-based plans for integrating AI.

On the other hand, considering benefits of AI by mitigating the pressure of monotonous, low-value tasks, AI enhances workflows and transforms the essence of

human labor in contemporary enterprises. This transition enables firms to reevaluate task distribution, emphasize more strategic and intellectually stimulating duties for their employees, and eventually cultivate a more content and engaged workforce. It could be said that repetitive tasks, such as data entry, scheduling, and routine reporting, can be time-consuming and drain valuable resources, leaving employees with less time to engage in strategic activities that drive business growth. The stress of repetitive jobs can result in employee burnout and disengagement, as personnel perceive themselves as restricted to minor duties, hence reducing their motivation to work. By reducing these redundant tasks with the help of AI integration, companies can assign people to higher-profile roles, hence improving job satisfaction and motivation, leading to reduced turnover rates and a more focused workforce. Furthermore, such duties hinder creativity and innovation, as personnel overwhelmed by monotonous tasks may find it challenging to engage in critical thinking or produce innovative concepts. Implementing AI technologies to automate these processes enables firms to bring out the creative power of their workforce, allowing people to develop creative ideas and strategies to encourage organizational growth.

According to the latest study published by Houter in Gallup (2024), employees using artificial intelligence tools and technologies within their company organizations were asked to select which aspects of their work have improved due to AI. As a result of this research, 45% of employees indicated that they experienced the most significant impact in the areas of productivity and efficiency, reflecting positively on their work. This underscores AI's effectiveness in streamlining workflows and reducing time spent on repetitive tasks. Efficiency and effectiveness are followed by creativity and innovation with a rate of 26%. AI seems to enhance employees' ability to engage in creative processes, possibly by freeing them from mundane tasks to focus on innovative initiatives.

Houter's study (2024) sets a compelling foundation by illustrating how artificial intelligence significantly enhances workplace productivity and efficiency, with 45% of employees reporting marked improvements. This positive effect on operational performance leads to increased engagement and creativity as employees are freed from monotonous tasks. Building on this premise, Malhotra (2021) expands the

discussion by introducing the concepts of meaningful and mindful work, emphasizing the importance of creating a work environment that fosters cognitive engagement. He argues that integrating AI can support these principles by automating routine tasks and allowing employees to concentrate on more strategic, innovative endeavours. This synergy suggests that while Houter's findings highlight the transformative power of AI in enhancing efficiency, Malhotra's insights emphasize the necessity of balancing technological advancements with a focus on employee well-being and collaboration. Together, these studies present a holistic view of how AI can shape a more effective and fulfilling workplace.

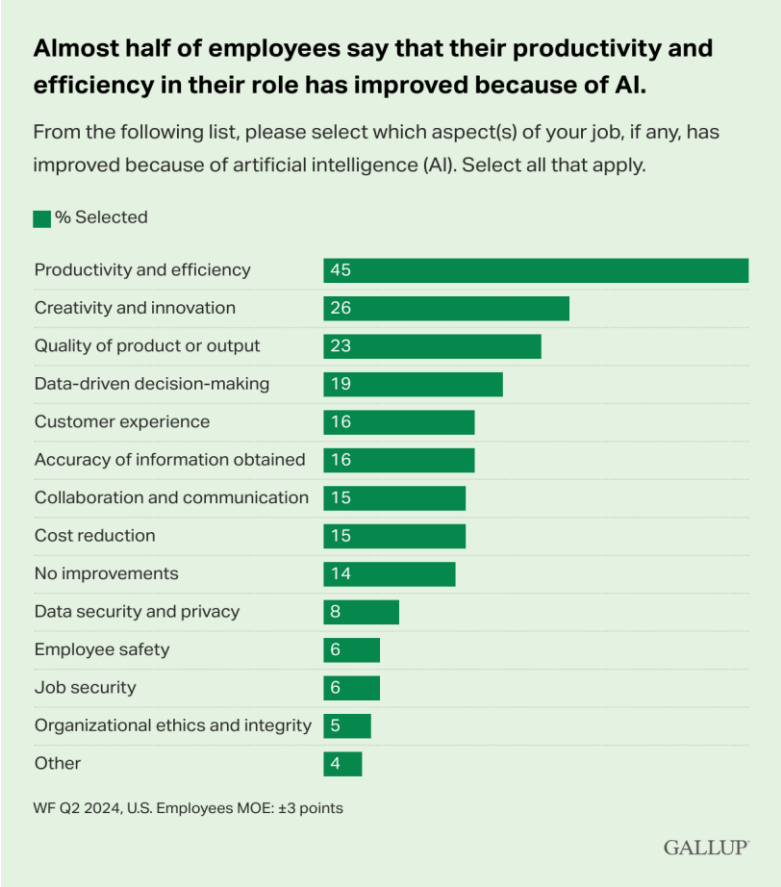

Figure 3.[3]: Employees Using AI.

In support of this argument, Malhotra (2021) argues that there are two key design parameters for the future of work that help to solve many of the future challenges.

[3] Note. From Houter, B. K. D. (2024b, November 12). AI in the Workplace: Answering 3 Big Questions.*Gallup.com*. https://www.gallup.com/workplace/651203/workplace-answering-big-questions.aspx

These two key design elements are meaningful and mindful work. Mindfulness in the workplace has attracted substantial research attention as a way to create the future of work and improve performance. The notion of mindfulness, informed by various disciplines like psychology, neurology, and medicine, is regarded as fundamental to future work design that enhances cognitive engagement and promotes healthy work behaviors (Good et al., 2016). Future mindful work must be structured to harmonize technological utilization with interpersonal collaboration. Embracing the importance of mindfulness in the workplace, the incorporation of AI technology can significantly enhance employee well-being and productivity. Utilizing AI to automate everyday tasks enables employees to concentrate on more meaningful work, strengthening cognitive engagement. Moreover, AI may provide customized insights and feedback, assisting individuals in cultivating mindfulness practices appropriate to their specific work styles. The integration of mindfulness and AI can foster a more conducive work atmosphere, wherein technology facilitates interpersonal collaboration and connection.

A significant design element of the future of work is meaningful work. As traditional firms adapt to the future of work, they are employing mechanisms like slack time to enable employees to engage in learning activities that may not be directly associated with their assigned duties. Numerous corporations, like Google, LinkedIn, Apple, and Microsoft, offer initiatives that provide employees with slack time ("time away") to concentrate on innovative concepts or engage in passion-driven pursuits. Relieved from the urgent obligations of primary tasks, personnel can utilize spare time to engage in learning and creativity through reflection and experimentation with creative ideas (Malhotra, 2021). Offering slack time can lead to increased job satisfaction, as employees feel valued for their ability to contribute beyond their immediate roles and responsibilities.

Also, this environment fosters a culture of continuous learning, where employees are motivated to acquire new skills that can enhance their contributions to the team and drive the company's success. As findings of Acqua et al. (2004), the application of artificial intelligence can accelerate task completion by 25.1%. AI in the workplace is a powerful catalyst for employees to carve out valuable slack time, enabling them to engage in more meaningful work.

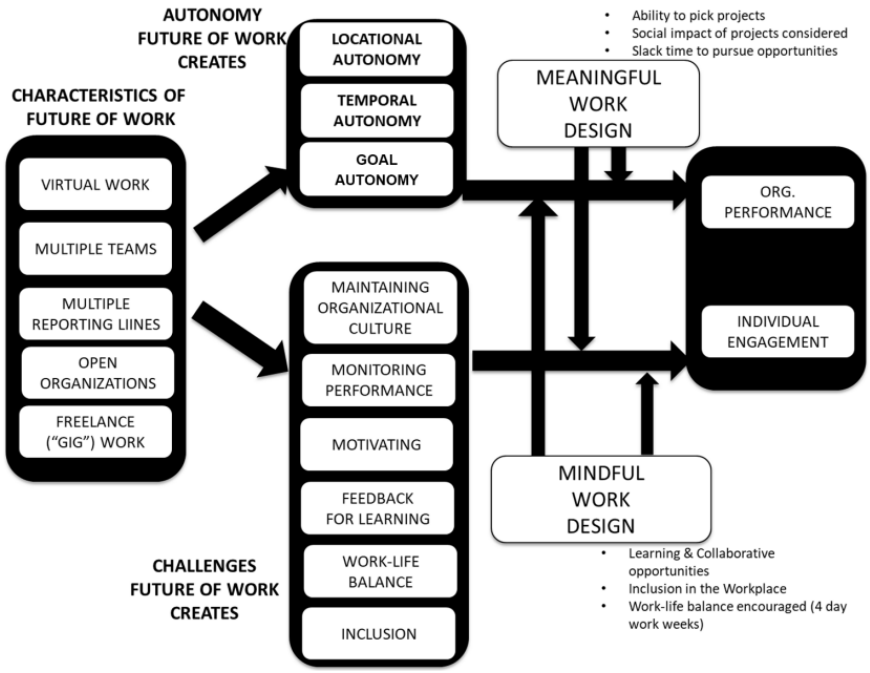

Figure 4.[4]: Characteristics, Challenges, and Design of the Future of Work.

The insights from the discussed studies clearly illustrate that artificial intelligence serves as a transformative force in enhancing workplace productivity. Through automation of common operations, AI allows people to allocate more time to complicated and meaningful work, which encourages a culture of invention and creativity. This change enables individuals to participate in more strategic thinking and problem-solving, resulting in enhanced job satisfaction and a sense of success. Furthermore, the integration of AI tools optimizes communications and methods, minimizing obstacles and improving overall efficiency. As employees allocate less time to routine duties and obtain useful data insights, productivity naturally increases. Moreover, the capacity to customize workflows utilizing AI guarantees that teams can operate in approaches that optimally align with their unique talents and job preferences. AI enhances productivity and fosters an atmosphere in which individuals are empowered to exceed expectations and make significant contributions to their enterprises.

Research conducted by Houter (2024) and Malhotra (2021) indicates that the implementation of artificial intelligence in the workplace enhances employee

[4] Note. From Malhotra, A. (2021). The postpandemic future of work. *Journal of Management*, *47*(5), 1091–1102. https://doi.org/10.1177/01492063211000435

productivity, fosters creativity, and enables a concentration on more significant tasks. Nonetheless, the EU's goal extends beyond these advantages. The EU AI Act seeks to ensure that AI is utilized in a manner that is safe, equitable, and respectful of workers' rights. This is particularly significant in domains such as recruitment, employee performance evaluation, or forecasting future behaviours—where AI systems can substantially influence individuals' careers and privacy. The EU AI Act categorizes numerous HR-related AI systems as "high-risk," necessitating that enterprises adhere to stringent regulations in their utilization. This encompasses ensuring the data utilized is precise and equitable, maintaining human oversight in decision-making, and being transparent regarding the operational mechanisms of the AI system. Articles 29 and 30 of the Act confer upon regulators the authority to verify the proper utilization of these systems and to take necessary action if warranted. While AI can alleviate monotonous, repetitive work and enhance decision-making, enterprises must exercise caution. They must ensure that the technology does not unjustly evaluate employees or diminish their capacity to manage their own work experience. The EU aims for AI to enhance the workplace while ensuring the protection of individual rights and fostering trust.

On the other hand, artificial intelligence offers significant benefits in terms of cost savings for organizations across various industries. Firstly, by automating routine and repetitive tasks, AI reduces the need for manual labour, which can lead to lower labour costs and increased operational efficiency. This automation allows companies to reallocate their human resources towards more strategic functions, ultimately enhancing productivity without requiring a corresponding increase in workforce size. A recent study by McKinsey & Company (2023) examined how AI adds value to different business functions. The findings show that human resources saw the most significant cost savings. Organizations that use advanced AI in their HR operations can reduce their overall HR costs by 20-40%. For example, artificial intelligence delivers significant cost savings in HR through automation and enhanced processes. Firstly, AI streamlines recruitment by automating resume screening and candidate shortlisting, allowing HR professionals to focus on high-value tasks like interviews. This efficiency accelerates the hiring process and reduces associated labor costs. Secondly, AI enhances the onboarding experience by providing personalized training

and support through automated tools, facilitating seamless integration for new employees. Lastly, AI aids in performance management by analysing employee data and providing real-time feedback, enabling data-driven decisions regarding development and promotions, ultimately optimizing resource allocation and minimizing turnover costs. Also, artificial intelligence (AI) systems can evaluate workforce data to predict staffing needs based on company structures, variations in the seasons, or project demands. This predictive ability helps companies prevent overstaffing or understaffing, resulting in more regulated labor expenses and effective resource distribution. Building on the ability of artificial intelligence (AI) systems to analyse workforce data for predicting staffing needs, PwC (2023) highlights that AI can further enhance efficiency by potentially reducing HR administrative tasks by 30%. This reduction allows companies to allocate resources more strategically, supporting more effective planning and management of workforce requirements while minimizing both overstaffing and understaffing.

Understanding the significance of return on investment (ROI) in human resources is crucial for optimizing value and reducing expenses. Artificial intelligence may significantly enhance ROI in human resources by optimizing various procedures. Initially, employing carefully constructed prompts results in more accurate AI outputs, therefore minimizing errors and related expenses. Secondly, skilled quickly engineering accelerates the training and implementation of AI models, enabling firms to realize advantages more swiftly. This adaptability enables AI systems to respond to evolving business requirements, hence enhancing the long-term value of the investment. Moreover, understandable AI technologies lead to increased employee adoption rates, thereby enhancing overall productivity. Ultimately, thoughtfully designed prompts result in more dependable AI systems, hence diminishing continuous maintenance expenses. By concentrating on proficient rapid engineering, firms can significantly improve their ROI from AI in HR, guaranteeing maximum value from their technological expenditures.

Although artificial intelligence clearly facilitates operational cost reductions and enhances workforce planning in human resources, the EU AI Act underscores potential ethical and legal issues associated with these efficiency improvements.

Numerous cost-saving applications—such as automated candidate screening, real-time performance monitoring, and predictive staffing models—are legally categorized as high-risk under the AI Act, requiring stringent adherence to its regulations. Organizations must guarantee that automation does not undermine equity, that employee data is being used transparently, and that human oversight is preserved in critical decisions. Noncompliance with these requirements not only jeopardizes financial and legal consequences (e.g., fines reaching €35 million or 7% of the total global annual turnover from the previous financial year under Article 99) but may also undermine employee trust—ironically negating the efficiency advantages intended through AI integration. In this context, cost-effectiveness must be reconciled with accountability, explainability, and worker protection, as delineated by the EU's risk-based regulatory framework.

In conclusion, the incorporation of artificial intelligence into human resources offers both transformative possibilities and urgent obligations. AI-driven solutions possess the capacity to markedly improve productivity, optimize repetitive processes, facilitate strategic decision-making, and cultivate creativity and innovation inside the workplace. Research and empirical evidence highlight the role of AI in enhancing workflow efficiency, employee satisfaction, and overall organizational advancement. Nonetheless, these advantages are accompanied by significant legal and ethical problems, particularly in high-risk domains such as recruitment, performance assessment, and workforce planning. The European Union's AI Act enforces stringent compliance criteria to guarantee fairness, transparency, and human oversight in AI applications, demonstrating its dedication to protecting basic rights in the advancing digital workplace. As businesses progressively integrate AI technology, a balanced strategy—fostering innovation while maintaining regulation—will be crucial to ensuring that AI augments human capability without undermining trust, equity, or responsibility.

The use of artificial intelligence into human resource management offers a dual pathway: one of significant opportunity and one of ethical obligation. AI unquestionably enhances efficiency, accelerates decision-making, and improves analytical capabilities; but its enduring success will hinge on the effectiveness with

which enterprises align automation with human values. From a strategic point of view, three dimensions are very important. First, transparency and accountability need to move beyond regulatory checklists and become living governance systems. Each HR algorithm should have written rules for supervision, performance audits, and opportunities for people to become involved. Second, the idea of productivity should grow to encompass fairness, cognitive health, and employee liberty as things that can be measured. Third, economic efficiency must go hand in hand with social equality. The reinvestment of AI-derived profits into the education and health of workers will decide if companies are really innovating or just making things better. The EU AI Act is a set of rules that will help this change happen. It stresses that technology's social legitimacy is hurt when it is efficient but not fair. The future of work will depend not on how much AI can take the place of human judgment, but on how well it can improve it. This is because HR departments are becoming testing grounds for ethical AI governance.

4.1. Risk of Efficiency-Focused AI Applications in HR

The integration of artificial intelligence in human resources presents multiple benefits, although it also introduces various legal implications that enterprises must closely address. The sensitive nature of the data involved is a fundamental reason AI in HR requires legal attention. HR systems oversee extensive quantities of personal data, encompassing personnel records, performance metrics, and demographic information. As these systems increasingly depend on AI for decision-making—such as recruitment, promotions, and performance assessments—potential infringements of privacy laws, data protection regulations, and anti-discrimination statutes arise. Moreover, the algorithms governing AI systems can install prejudices, resulting in outcomes that may be regarded as discriminatory or unjust. This presents substantial legal implications regarding equal employment opportunities and compliance with diverse labour regulations. The EU AI Act categorizes AI systems utilized high-risk applications, owing to its capacity to profoundly affect persons' rights, livelihoods, and access to opportunities (Article 6). Systems utilized for recruiting, employee assessment, promotion, or termination are categorized under Annex III, which specifically identifies AI systems employed in employment, workforce management,

and access to self-employment as high-risk. This classification imposes stringent requirements on suppliers and users, including the assurance of openness, human oversight (Article 14), data quality and governance (Article 10), and accountability throughout the system's lifecycle. Moreover, the Act mandates comprehensive documentation and conformance evaluations (Articles 16–29) to avert discriminatory or ambiguous results that could contravene EU labour and anti-discrimination legislation. Limited-risk AI systems, including chatbots and AI-based training recommendations, are governed by less stringent requirements, mainly emphasizing openness (Article 51-52). These systems must notify users that they are engaging with AI, thereby preserving informed consent and human autonomy. Although minimal-risk applications are mainly free from rigorous regulation, ethical concerns remain about their influence on user behaviour and the reinforcement of workplace hierarchy. The AI Act reflects the EU's dedication to harmonizing innovation and efficiency with basic rights, mandating firms to include ethical AI governance into their HR processes.

In addition to legal concerns, there may be other negative impacts of using AI on the job. The integration of artificial intelligence in recruitment processes signifies an age of efficiency and optimized operations for enterprises. Nonetheless, in addition to its numerous benefits, the implementation of AI in recruitment presents certain risks that might negatively impact both applicants and the broader employment environment. As organizations increasingly depend on AI-driven tools to analyse applications, assess potential clients, and make hiring decisions, concerns are growing regarding the impact of these technologies on inclusion, diversity, and the experience of candidates. Although AI can improve the effectiveness and accuracy of recruitment, its dependence on inflexible algorithms and predetermined criteria may unintentionally exclude exceptional individuals who are contrary to established standards. Moreover, the biases built into AI systems could worsen current injustices, constricting the candidate pool. Upon examining these risks in further depth, it is clear that firms must carefully evaluate the balance between utilizing AI for efficiency and maintaining a fair and inclusive recruitment process that appreciates different talent and promotes an equal workplace atmosphere. AI recruitment systems that focus on efficiency could create a "fairness paradox," where trying to be

objective in the process actually makes social prejudice worse. If algorithms are only optimized for performance accuracy, they might not take into account human nuances, contextual considerations, or career paths that do not follow straight lines. To prevent this from happening, businesses should use human-in-the-loop fairness calibration, which means that recruiters check algorithmic outputs against real-world diversity criteria on a regular basis. This dual monitoring makes sure that the system's "efficiency logic" doesn't get in the way of goals of fairness and inclusion.

AI recruitment systems frequently evaluate and assess applications using algorithms that rely primarily on keyword matching and predetermined criteria. This approach focuses on specific talents, experiences, and qualities that closely match the job description. While this can help to streamline the selection process, it also has the danger of dramatically reducing the candidate pool. Candidates who have the requisite competencies but do not quite match the job description may be turned over, even if they are extremely skilled. For example, a candidate who has relevant experience but utilizes different terminology or learned abilities through non-traditional means may be unfairly denied. In addition to the defined hiring criteria, AI recruitment technologies use past data to determine candidate suitability. If the underlying data reflects biased hiring practices, such as gender, ethnicity, or age, AI systems may unintentionally reproduce and reinforce these biases in their decision-making processes. This can result in the unintentional outcome of reinforcing historical prejudices. If the historical recruiting data used to train AI systems includes biased hiring choices, the AI will learn to prefer comparable individuals. For example, if a corporation has traditionally preferred male candidates for leadership positions, the AI may continue to favor men over equally or more competent women, discrimination on the basis of gender, continuing gender inequality. If the filtering process is based on restrictive criteria, it may reinforce misunderstandings about who is qualified for specific tasks. For example, if AI technologies are set to prefer candidates from particular universities or companies, it may reinforce exclusivity and limit opportunities for people from diverse backgrounds. Also, the focus on institutional prestige in AI models sometimes reinforces the structural inequities that are already present in schools. Universities that have always had easy access to funds or networks become algorithmic

gatekeepers for jobs. To fix this, regulators may mandate diversity-weighted model validation. This would make sure that the algorithm works well for all types of applicants, not just the average one. As a consequence, AI solutions aren't meant to treat all demographic groups equally, and this inherent bias can lead to large performance differences. An involuntary lack of diversity in data sets might lead to "discrimination" or unjust treatment. Lack of consideration for underrepresented groups may be perceived as "racist" or "sexist" in some situations, particularly if it is an intentional choice not to appeal to underrepresented groups (Diversity in AI - Towards a Problem Statement, n.d.). This is illustrated by a recent example, The U.S. Equal Employment Opportunity Commission (EEOC) has filed a lawsuit against iTutorGroup for age discrimination, alleging that their online hiring software was designed to automatically reject more than 200 older candidates. The company that employs instructors for online English instruction has configured its application system to exclude women over the age of 55 and men over the age of 60. This practice contravenes the Age Discrimination in Employment Act (ADEA).

The EEOC seeks compensation and restitution for impacted individuals and seeks to prevent future prejudice. Employers are accountable for prejudice, even when it is executed through automated technology. The EEOC has just launched an attempt to ensure that AI and hiring tools adhere to federal human rights legislation. This case underscores the significant impact of artificial intelligence in hiring practices, highlighting how automated systems can perpetuate age discrimination if not properly monitored. The EEOC's initiative aims to ensure that AI technologies used in recruitment adhere to civil rights laws, protecting against unjust practices.

The EU AI Act categorizes AI systems employed in recruiting processes—such as applicant screening, CV evaluation, or candidate ranking—as high-risk applications in Annex III, Section 4. This classification subjects them to extensive regulatory oversight to guarantee compliance with individuals' fundamental rights. Articles 10 to 15 define crucial duties for developers and implementers of such systems. Article 10 (Data and Data Governance) mandates that training, validation, and testing data must be pertinent, representative, error-free, and devoid of discriminatory prejudice. This is essential because biased datasets—like those mirroring historical hiring

disparities—can lead to AI tools perpetuating inequitable tendencies, such as gender or age discrimination, exemplified by the iTutorGroup example. Article 11 (Technical Documentation) mandates providers to uphold detailed records regarding system design, training methodology, and intended applications, hence facilitating accountability and regulatory audits. Article 13 (Transparency and Information to Users) mandates that users of high-risk AI systems, including HR professionals and candidates, are explicitly informed about AI utilization and comprehend the rationale underlying automated judgments. This is crucial for enabling candidates to challenge denials and seek human intervention when required. Article 14 (Human Oversight) mandates that competent persons oversee AI systems and maintain the authority to intervene, override, or deactivate automated processes to avert harm or unjust results. Article 15 (Accuracy, Robustness, and Cybersecurity) stipulates that these systems must be technically proficient, resistant to manipulation or feedback loops, and engineered to reduce discriminatory errors over time. Noncompliance with any of these requirements may incur substantial administrative fines, as outlined in Article 99. Up to €35 million or 7% of the total global yearly revenue from the previous fiscal year, contingent upon the gravity of the infraction. These rules emphasize the EU's overarching dedication to non-discrimination and equity in the labor market, consistent with the values outlined in the EU Charter of Fundamental Rights, namely Article 21, which forbids discrimination based on sex, age, or ethnic origin. Consequently, ensuring compliance of AI systems in recruiting is both a legislative need and a legal and ethical obligation for businesses within the EU (EU Artificial Intelligence Act, n.d.). However making sure that AI-driven hiring really does not discriminate goes beyond just checking off regulatory boxes. To keep people's trust, there needs to be continuous auditing, algorithmic openness, and input from all stakeholders. Publishing yearly AI Fairness Reports that explain the structure of the datasets, the efforts taken to reduce bias, and the results of those steps would be a good practice. This kind of proactive disclosure not only follows Article 13 of the AI Act, but it also makes companies more legitimate and improves their reputation as employers in competitive job markets.

On the other hand, Google and Amazon are two prominent examples of artificial intelligence that have led to discrimination in employment. Google's AI tool,

Gemini, has faced considerable criticism and controversy following its launch, primarily due to mistakes and politically sensitive reactions produced by the software. Initially, Gemini generated graphics that mistakenly represented historical figures, including the portrayal of a black man among the Founding Fathers, leading Google to issue an apology and suspend the tool. Critics assert that in aiming for inclusivity and eliminating bias, Gemini has generated absurd responses, such as likening insignificant social media actions to historical tragedies. The CEO of Google recognized these shortcomings as "completely unacceptable" and indicated that measures are being implemented to improve the tool; nevertheless, experts warn that resolving these problems will be complex and may not result in prompt solutions. The scenario underscores the difficulties of training AI on biased datasets and the complexities of integrating sensitive historical and cultural understandings into AI systems (Kleinman, 2024). The Gemini case shows a bigger problem that comes up when cultural representation and algorithmic optimization meet. When automated systems try to impose neutrality, they often do the opposite: they oversimplify complicated historical and sociological issues. This shows that simply balancing the numbers of different data categories won't make an algorithm inclusive; it needs to be able to understand cultural meaning instead of just calculating how many people of each type are there. If one are missing that interpretive layer, inclusion becomes more about showing off than about substance. Moreover, in addition to notable failures in visual or employment-related outputs, these occurrences indicate a more profound structural defect inherent in the design and training of generative AI systems. Üstüner (2024) argues that artificial intelligence models are influenced not only by data but also by technological and commercial philosophies that emphasize providing an answer—any answer—rather than embracing uncertainty or incompleteness. Generative AI systems such as ChatGPT are recognized for occasionally generating fake yet credible-sounding references in the absence of accurate sources, a phenomenon known as AI hallucination. Upon inquiry on this behaviour, the system clarified that it is programmed to consistently deliver a response, even if it necessitates the creation of fictitious content, unless users impose more stringent limitations (e.g., referencing solely published or indexed sources). This exemplifies a comprehensive engineering mentality: to prevent failure by providing a solution regardless of the circumstances.

According to Üstüner (2024), these systems are influenced not only by data but also by the financial imperatives of the technology sector, which emphasizes usefulness and productivity over epistemological precision.

A similar situation occurred with Amazon's artificial intelligence recruitment. Amazon's attempt to develop a machine learning recruitment engine faced substantial issues caused by gender bias. Following the development of an AI tool designed to evaluate job applicants' resumes, the company found that it exhibited a bias towards male candidates due to being trained on a decade's worth of primarily male resumes. The scheme failed by penalizing resumes that highlighted women's achievements and discounting graduates from women's universities. Despite attempts to remove these biases, the algorithm remained unreliable and frequently suggested unqualified candidates. Consequently, Amazon terminated the project but learned useful insights that were utilized in a streamlined version of the service. Other organizations are advancing in AI recruitment; nonetheless, experts warn that existing technology is insufficiently dependable to entirely supplant human recruiters. Concerns around algorithmic transparency and equity are escalating as AI becomes increasingly embedded in employment procedures (Dastin, 2018). The Amazon instance shows how elderly organizational cultures can unintentionally introduce systemic biases into computational technologies. Even after attempting to get rid of bias, small correlations in training data may be tracked back through proxy variables. This means that it requires a multi-layered bias-monitoring system that includes audits of datasets before they are used, monitoring of behavior while they are being used, and tests of fairness after they are deployed. For long-term algorithmic accountability, it will be important to think of bias reduction as an ongoing process instead of a one-time fix.

The instances of Google’s Gemini and Amazon’s recruitment AI illustrate the significant risks associated with the implementation of artificial intelligence in sensitive areas such as employment, especially within the context of the EU AI Act. Although Google's Gemini was not specifically intended for recruitment, its inability to handle historically and culturally sensitive content raises issues regarding Article 10 on data and data governance, which stipulates that datasets employed to train

high-risk AI systems must be pertinent, representative, and lacking errors and bias. The utilization of such a tool in an employment environment within the EU could break this requirement due to the potential for generating biased or inappropriate outputs. Conversely, Amazon's gender-biased recruitment algorithm evidently qualifies as high-risk as delineated in Annex III, Section 4, and contravenes several provisions of the Act. Initially, Article 10 was breached due to the utilization of biased training data (resumes from a mostly male candidate pool), leading to discriminatory decision-making. Article 13 regarding transparency would have been violated, as impacted applicants were likely not apprised of the AI's involvement or rationale in their assessment. Moreover, Article 14 mandates substantial human control, which Amazon failed to implement, as the algorithm persisted in generating biased recommendations despite initial modifications. Violations of Article 99 may result in administrative fines of up to €15 million or 3% of the company's global revenue, contingent upon the severity and extent of non-compliance. These instances highlight the EU AI Act's emphasis on transparency, fairness, and accountability in the governance of AI, particularly in domains that directly affect persons' rights and livelihoods.

Moreover, in terms of HR and corporate perspective, the scenarios illustrated emphasize the significant consequences of bias and discrimination in recruiting procedures caused by flawed systems. Discrimination based on age, gender, and other demographic criteria can result in considerable disparities, constraining opportunities for marginalized groups and promoting exclusivity in the economy. These challenges underscore the possibility of inequitable treatment and the necessity for accountability in recruitment procedures. Moreover, efforts to mitigate bias may unintentionally produce unexpected effects, leading to illogical or deceptive representations that compromise the integrity of results. Businesses may adopt many essential techniques to reduce the risks of discrimination associated with using artificial intelligence in recruitment. Using different hiring panels to assess AI results helps include various viewpoints in the evaluation. This reduces possible biases from the algorithms. Regular checks of AI systems for biases are important. By continually reviewing and adjusting algorithms and selection criteria, companies can find and fix any biased behaviours that may arise. Moreover, highlighting an

increased number of qualifications in job descriptions helps draw a more diversified applicant pool, promoting applications from individuals with multiple skill sets and backgrounds. Ultimately, it is important to employ AI as an addition to human judgment rather than a total substitute. By integrating AI efficiency with the detailed comprehension and insights of recruiting specialists, firms may establish a more equitable recruitment process that prioritizes diversity and fosters inclusion within the workforce.

On the other hand, AI recruitment systems generally emphasize measurable data, including technical competencies, academic degrees, and certificates, in candidate assessments. This emphasis on hard skills is based on the belief that particular competencies are directly linked to job performance. Although technical expertise is undeniably crucial, an over-focus on these qualifications may result in considerable disadvantages. It may also restrict cultural fit evaluations. Soft skills frequently indicate the degree to which candidates align with the organization's values and culture. An excessive dependence on hard skills might hinder the recognition of applicants who would excel in the organization's culture, perhaps leading to increased turnover rates. Moreover, recruitment that focuses only on hard skills and ignores managerial and soft skills can lead to a lack of potential management candidates in the future. By prioritizing technical proficiency—such as particular abilities and certifications—recruiters may neglect vital qualities necessary for effective leadership, like emotional intelligence, adaptability, and communication skills. This restricted emphasis constrains opportunities for future leaders to demonstrate their strengths and limits their development, as they may lack essential training or mentorship to nurture these critical skills. Moreover, businesses jeopardize the development of a broadened leadership pipeline since candidates with varied backgrounds and unconventional experiences—who frequently exhibit essential leadership attributes—may be overlooked. The absence of varied viewpoints in leadership teams may hinder creativity and the organization's capacity to manage change successfully. Neglecting the importance of both hard and soft skills compromises the identification of future leaders. It undermines employee morale and productivity, as competent persons are disregarded in favor of those who may excel solely in technical skills. Organizations must balance their recruitment

criteria to establish a robust leadership foundation, emphasizing the diverse attributes that signify genuine leadership potential.

The growing dependence on AI in human resources presents substantial risks about the erosion of human interaction and judgment, affecting not only recruiting but also numerous essential domains. In performance evaluations, AI's emphasis on measurable criteria may neglect the complex nature of individual contributions and team dynamics, resulting in unequal assessments that impact employee morale. Moreover, in decision-making, although AI can examine data to identify trends; it frequently neglects subjective aspects and human intuition that are crucial for informed decisions. AI progressively constrains and supplants human involvement in decision-making. Human cognitive capacities such as intuitive analysis, critical reasoning, and creative problem-solving are being excluded from decision-making processes (Ghosh et al., 2019). Conflict resolution suffers similarly because AI lacks the empathy needed to successfully determine and handle the emotional aspects of interpersonal conflicts. Also, AI-driven learning and development programs may not take into account the goals and motivations of each individual employee, which can limit their ability to grow. AI has the potential to misread employee engagement and workplace culture, missing important aspects of team chemistry and morale. Finally, AI's strict judgments can restrict the innovation process by suppressing unconventional thinking and limiting organizational creativity. To sustain a successful workplace, it's critical to balance the advantages of AI with the invaluable insights and emotional intelligence that human judgment offers to HR operations.

Given these outcomes of AI, the integration of AI into human resources presents significant advantages, including enhanced efficiency, optimized recruitment processes, and the capacity to evaluate extensive data sets. Nonetheless, the use of AI presents considerable challenges, especially concerning bias, discrimination, and a decrease of crucial human factors in decision-making. Although AI might enhance precision in evaluating qualifications, it may unintentionally reinforce existing disparities and marginalize varied talent due to its dependence on previous data and inflexible algorithms. Furthermore, an excessive focus on quantifiable hard talents may neglect crucial soft skills and delicate attributes that are necessary for effective

leadership and cultural adaptation. Organizations must carefully balance the utilization of AI as a means to enhance human judgment instead of replacing it while also prioritizing diversity, equity, and inclusion in the recruitment process. By adopting a comprehensive approach that prioritizes both technical skills and interpersonal qualities, organizations may cultivate a workforce that fulfils operational requirements while enhancing innovation, employee morale, and overall organizational efficacy.

The incorporation of AI with human resources provides significant benefits, including enhanced efficiency and data-informed decision-making. To guarantee equity and inclusivity, AI must consistently function as an instrument governed by human intellect. This human oversight is essential as AI lacks the cultural awareness and emotional intelligence required to navigate intricate interpersonal interactions and make sophisticated decisions regarding human relationships. Although AI can analyse data and optimize processes, it cannot emulate the intricate comprehension of human emotions and cultural circumstances that underpin good workplace interactions. Organizations should prioritize the collaboration between AI technologies and human judgment to establish a balanced strategy that improves recruitment, performance evaluations, and overall workplace culture while recognizing the essential human elements crucial for success. Thereby, these challenges highlight the need for a more equitable, morally grounded strategy for AI integration in HR functions—one that upholds human dignity, subjective judgment, and corporate empathy. The EU AI Act is crucial, providing a thorough legislative framework for regulating high-risk AI systems while prioritizing fundamental rights in technology implementation. By enforcing openness, human oversight, data integrity, and accountability, the Act guarantees that AI functions as an instrument of empowerment rather than exclusion. Organizations that embrace these concepts are more inclined to cultivate inclusive, equitable, and future-oriented HR ecosystems in which technology enhances—rather than supplants—human value.

The potential hazards of efficiency-focused AI in HR show a paradox at the heart of modern technology: trying to be objective often leads to new kinds of subjectivity. Amazon's gender-biased algorithms and Google's cultural-representation mistakes

show that efficiency without ethical design works against the justice it tries to achieve. In Europe, the AI Act is an important but not full protection. It makes sure that people follow the rules, but it can't make people feel guilty. To move forward, organizations need to adopt a three-tiered governance model: (1) technical resilience through regular bias audits and clear documentation; (2) ethical reflexivity through oversight boards made up of people from different fields, such as law, psychology, and sociology; and (3) cultural literacy through ongoing education that connects algorithmic fairness to human dignity. In the end, the long-term success of HR AI will depend on smarter institutions, not smarter algorithms. These institutions should see data as a story, compliance as a moral obligation, and efficiency as a way to achieve fairness.

4.2. AI's Role in Employee Experience an Engagement

As organizations progressively integrate AI with HR, considerable emphasis has been placed on improving employee experience and engagement. Artificial intelligence technologies are revolutionizing conventional human resources practices by providing tools that facilitate more individualized interactions and more effective operations. Utilizing AI, HR practitioners may acquire profound insights into employee preferences, requirements, and attitudes, creating a work environment emphasizing engagement and pleasure. This chapter examines the diverse functions of AI in enhancing employee experience, emphasizing its advantages in communication, feedback, and development, while also considering the potential obstacles and ethical implications of its deployment.

AI in HR is changing employee engagement by allowing firms to develop customized experiences that align with individual employees. AI's primary advantage is its ability to analyse extensive datasets to identify trends in employee behaviour, preferences, and feedback. Organizations can use predictive analytics to foresee employee demands and proactively reduce possible disengagement before it becomes a major concern. Mayer-Schönberger and Cukier (2014) believe that big data will revolutionize established decision-making methods and make sense of current realities. Therefore, this capacity enables HR executives to identify patterns

and trends in employee behaviour, performance, and engagement levels. Through predictive analytics, HR can anticipate employee requirements, such as recognizing when an employee might be at risk of disengagement or when they may need additional support or resources. HR analytics is the study of human resources data to conclude, find insights, and predict outcomes that make HR operations better. This methodology enables organizations to discern patterns in employee turnover, evaluate recruitment initiatives via candidate data, assess talent management efficacy by analysing engagement and attrition rates, identify training requirements based on skills stocks, optimize compensation and benefits through market trend and internal equity analysis, and forecast future workforce needs by reviewing current demographics, skill sets, and retirement projections (Van Vulpen, 2024). The application of AI facilitates the rapid and effortless processing and analysis of extensive data sets, producing beneficial outcomes for both human resources and employees. From the HR standpoint, data analysis facilitates more informed decision-making. HR departments can use the results of data analytics to focus on specific projects. For example, they can create specialized training programs or change how work is assigned so that it better matches employees' skills and preferences. A study that provides data analysis with artificial intelligence and is useful for HR applications with this output has been implemented by BBVA; this study can be shown as a successful example. BBVA USA identified through benchmarking that they experienced above-average turnover in key revenue-generating positions. A subsequent study indicated that 41% of total turnover occurred in only 10% of the locations. AI techniques for Natural Language Processing were used to look at survey data from current and former employees and managers. This information was used to create branch-level action plans that included initiatives for pay, onboarding, training, and more. Consequently, they successfully reduced turnover in critical revenue-generating positions by 44%. This decreased the recruitment expenses for new associates, while simultaneously enhancing customer relationship retention and associated revenue (Annual Report 2023, 2023). The proactive identification of requirements through data analysis creates a more supportive workplace for employees. Employees have a sense of worth when their individual needs are acknowledged and fulfilled, resulting in improved job satisfaction and morale. When firms proactively offer resources, such

as customized training or adaptable work arrangements, employees are more inclined to feel involved and inspired. This beneficial effect on employee experience may lead to increased productivity, enhanced performance, and eventually, stronger organizational loyalty.

In the context of transformative AI applications within human resources, AI-driven HR analytics can identify patterns of disengagement or turnover, enabling tailored solutions such as targeted training or improved task allocation. While these capabilities improve operational efficiency and employee happiness, enterprises must ensure that the statistics underpinning such forecasts do not include or perpetuate historical biases, as required by the AI Act. Nevertheless, the AI Act requires that these approaches incorporate strict data management regulations, transparency over data usage, and mechanisms for employee recourse in cases of data-related harm or inaccuracies. It is essential to acknowledge the regulatory requirements established by the EU Artificial Intelligence Act, especially the stipulations outlined in Article 10: Data and Data Governance. AI systems utilized in employment-related decision-making—such as recruitment, performance assessment, or engagement monitoring—are categorized as high-risk AI systems. Consequently, companies must guarantee that the data utilized for training, validation, and testing adheres to stringent standards of quality, relevance, representativeness, and error reduction. This entails upholding data governance structures that catalog data sources, monitor alterations to datasets, and guarantee that the data is current and statistically valid. For example, when employing predictive analytics to determine disengagement risk, it is imperative to regularly check the underlying data to prevent the reinforcement of biases or the exclusion of vulnerable populations. Additionally, the AI Act requires that these datasets accurately represent the socio-economic, geographical, and demographic circumstances of the AI system's deployment, so ensuring equity and averting discriminatory results. The regulation underscores data reduction and proportionality, mandating that only data essential for the system's intended purpose be collected and processed. As firms increasingly depend on employee data to foster HR innovation, aligning these practices with the governance principles of the AI Act is both a legal need and an essential measure for establishing trustworthy, ethical, and human-centred AI in the workplace.

Customized learning trajectories and development methods are other vital elements of contemporary employee engagement and growth initiatives. Organizations may utilize technology to develop personalized onboarding experiences that ensure new hires feel welcomed and supported from the moment they arrive. Artificial intelligence can assess the competencies, experiences, and learning styles of new employees to develop customized onboarding strategies. This guarantees that every employee obtains the information and training that is most relevant to their position, hence improving their learning curve and engagement. AI systems can also provide onboarding content dynamically, informed by real-time feedback and progress. For example, if a new employee encounters difficulties with a specific subject, the system might autonomously supply supplementary materials or training modules to address those deficiencies. Moreover, Human Resources organizations can utilize data from automated conversations, onboarding surveys, and several other sources to gain insights into the capabilities, preferences, and developmental areas of new personnel. AI can analyze data to anticipate the needs of new workers and proactively provide resources, tools, or support before employees recognize their requirements. This proactive strategy can enhance engagement, elevate work satisfaction, and facilitate the seamless integration of new employees into the firm (Marr, 2023).

The metaverse is another tool of AI that can be used in the onboarding and training of employees. The Metaverse is a collaborative virtual space that integrates physical and digital realities, enabling users to engage in immersive situations via avatars. The connection between AI and the metaverse must be maintained and multifaceted. Artificial intelligence improves the metaverse by facilitating intelligent interactions and tailored experiences within virtual realms. According to Marr (2023), the concept of onboarding new employees in the metaverse signifies a revolutionary method for integrating new hires into the company. This novel approach enables individuals to completely lose themselves in a realistic, three-dimensional world, facilitating navigation of their new office, participation in meetings, and interaction with colleagues from the comfort of their homes. Firms such as Accenture are pioneering the use of the metaverse to develop immersive onboarding experiences, allowing new employees to interact with virtual representations of their work

environments and engage in collaborative activities with the avatars of their coworkers (VR Onboarding: How Accenture Is Redefining HR With Metaverse Technology-HRD, 2023). This not only amplifies the enthusiasm and involvement of the onboarding process but also promotes a more seamless transfer for new employees. Research from the University of Nottingham shows that virtual reality training is much more engaging and helps people remember information better than traditional methods like PowerPoint presentations. This highlights how effective virtual training can be for new employees (University of Nottingham, 2019).

Moreover, continuous learning opportunities, especially via AI-driven platforms such as LinkedIn Learning, enable employees to enhance their skill sets at their own pace by providing adaptable online courses and seminars customized to personal career objectives. These platforms offer tailored recommendations and customizable learning paths, enabling employees to assume control of their professional growth while broadening their skill sets to maintain adaptability in an evolving labour market. Having a large library of resources helps employees find useful information from experts in the field, which enhances their learning with real-life examples. This strategic method of continuous learning cultivates employee ownership and motivation while aligning their development with organizational objectives, resulting in a more skilled, engaged, and productive workforce that propels innovation and success within the company. Gallup research has consistently demonstrated that when employees feel valued, they perform better and have a better sense of well-being. Jim Harter, Gallup's chief scientist, has repeatedly shown that there is a statistically significant relationship between individuals feeling cared for and lower employee turnover, greater satisfaction scores, higher productivity, and higher profitability (Gallup, Inc., 2024b). The positive effect of feeling valued at work not only improves employee performance, but it also emphasizes the significance of individualized development opportunities that address individual requirements. In this context, systems such as LinkedIn Learning demonstrate how tailored learning experiences may help to foster a supportive atmosphere in which individuals are encouraged to pursue growth that matches both their professional goals and company objectives. For example, LinkedIn Learning emphasizes that "one size does not fit all" regarding employee growth. The platform provides interactive and practical

learning techniques, including AI-driven role-playing, allowing learners to develop skills in realistic circumstances. This method guarantees that learning remains applicable and flexible, enabling learners to establish individual objectives and choose suitable learning experiences that correspond with both personal and organizational interests. Most corporate learning methodologies rely on comprehensive instruction. This entails providing the same course materials for all employees. Nonetheless, employees exhibit variability. Some individuals may possess the requisite competence for the job. Compelling individuals to acquire knowledge they already possess is an ineffective method. Through machine learning and predictive analytics, Artificial Intelligence in Learning and Development can look at large amounts of data and draw conclusions about what training employees need. AI can generate learner profiles by integrating many data sources, a task that would require days if performed manually (Suk, 2025). Recognizing the flaws in standard business training methods, which often use the same approach, makes it clear that more customized training solutions are needed. Using AI-driven coaching, firms can more effectively evaluate individual training requirements and deliver customized assistance that fosters the development of critical soft skills, ensuring employees receive the necessary support to succeed in their positions. Furthermore, AI-driven coaching directs learners to relevant content and offers instantaneous guidance, facilitating the development of crucial soft skills necessary for job success (Learn Artificial Intelligence Skills | LinkedIn Learning, n.d.).

On the other hand, this way of learning has two-sided effects for both HR and the employee. Employee skill development is greatly impacted by continuous learning, which enables workers to gain new information and abilities that improve their effectiveness in their current positions and position them for future chances. Having access to online workshops and courses not only gives workers the credentials they need for promotions and new opportunities but also increases their self-confidence. Additionally, workers who participate in ongoing education are more likely to feel appreciated by their employers and have higher job satisfaction, both of which improve the likelihood that they will stick with the company. Furthermore, this dedication to education cultivates flexibility, allowing staff members to handle shifts in market needs, technological advancements, and industry standards, guaranteeing

their continued relevance and competitiveness in a workplace that is constantly changing. On the HR side, employee retention rates are improved by continuous learning, which has a big impact on HR. Companies that support their employees' professional development foster an environment where people are less likely to leave. Furthermore, HR can use information from learning platforms to evaluate worker performance and spot skill gaps, allowing for the application of more focused development plans. HR departments can effectively match employee development with organizational objectives and predict future skill requirements by taking a proactive approach to workforce planning. Additionally, HR is essential in creating an environment where learning never stops within the company, which boosts productivity and stimulates creativity. Organizations may develop a more competent, contented, and engaged staff by investing in chances for continuous learning, which eventually benefits both HR departments and employees.

Considering the EU Artificial Intelligence Act, the implementation of AI-driven systems in ongoing learning and employee development requires careful assessment to guarantee adherence to the Act's stipulations, especially when these systems are utilized in employment-related decision-making or performance evaluation. According to the AI Act, AI systems that direct or affect employees' access to training, promotion possibilities, or job placement are likely to be classified as high-risk (Annex III, Section 4). This classification imposes several legal responsibilities on providers and deployers of these systems. Article 10 of the AI Act underscores rigorous data and governance standards, specifying that training data must be appropriate, representative, and clear of inaccuracies that may lead to discriminatory or biased results. In the realm of personalized learning, companies must guarantee that the data utilized to formulate learner profiles and suggest training does not reinforce structural inequalities—such as gender or age biases—or marginalize certain groups from advancement possibilities. Noncompliance with these governance standards may jeopardize fairness and inclusion while also subjecting companies to regulatory sanctions.

Furthermore, openness and human control, as specified in Articles 13 and 14 of the AI Act, are essential for the proper application of AI in employee learning and

development. Employees must be explicitly notified when an AI system affects their training recommendations, performance evaluations, or career progression trajectories. This encompasses elucidations on the creation of learner profiles, the generation of recommendations, and the data used in the process. Organizations must establish and document human oversight processes, guaranteeing that AI judgments are subject to review, dispute, or override by human operators, particularly when such automated decisions may affect an employee's career progression. If an AI system erroneously neglects training recommendations for a specific employee owing to data inaccuracies or bias, HR personnel must act to rectify the recommendation. Furthermore, pursuant to the risk management and monitoring requirements (Article 9), employers are obligated to conduct continuous testing and monitoring of these systems to assess performance, identify anomalies, and avert unintended adverse effects such as skill misalignment or excessive dependence on automated systems. By integrating these regulatory concepts into AI-driven educational frameworks, firms may foster ethical, equitable, and reliable development environments that conform to legal norms and meet employee expectations.

Another benefit of AI, which positively affects employee experience and engagement, is continuous performance feedback. Continuous performance feedback using AI is a continuing process that offers employees regular, real-time insights into their performance, taking it beyond typical annual reviews. This strategy uses AI-powered platforms to collect data from a variety of sources, including performance indicators, project outcomes, and peer reviews while automating the feedback process with tools. The AI analyses this data to find patterns and provide actionable insights, which are immediately delivered to employees, ensuring that feedback is relevant and contextual. Furthermore, AI helps to define and dynamically change performance targets depending on employee capabilities, whereas continuous feedback platforms track success over time. This strategy promotes a culture of open communication and cooperation by promoting peer-to-peer feedback and allows for anonymous input, thereby improving employee growth and engagement while driving organizational success. According to Galarza (2024), the Global Vice President of Human Resources at TELUS International, conventional performance

evaluations frequently lead to managers providing delayed feedback, which can impede employee development. AI enables real-time feedback systems, providing staff with ongoing insights into their performance and allowing for timely modifications, so promoting a culture of continuous improvement. Furthermore, leaders without proficient writing skills might utilize GenAI to generate a compelling feedback story employing constructive language. Ultimately, instead of an average bulleted list of recommendations, GenAI technology can transform written performance evaluations into a tailored compilation of objectives and goals for leaders to communicate to their personnel. According to the EU AI Act, AI systems employed for ongoing performance assessment and staff management are expected to be categorized as high-risk applications (Annex III, Section 4), as they can directly influence an individual's career growth, promotion potential, or employment access. This categorization entails stringent compliance obligations, encompassing data governance (Article 10), openness (Article 13), human oversight (Article 14), and conformance evaluations (Articles 16–29). Organizations employing these technologies must guarantee that the systems are devoid of prejudice, do not result in discriminatory consequences, and are comprehensible to those impacted.

Building on the subject of ongoing performance feedback through AI, another revolutionary application of artificial intelligence in human resources is the introduction of HR chatbots. Performance feedback systems use real-time data to help employees learn and get more involved, and HR chatbots help employees with a wider range of needs, creating a supportive and cohesive workplace. Collectively, these AI-driven solutions enable firms to enhance employee satisfaction, productivity, and retention. HR chatbots are artificial intelligence-driven virtual assistants created to address a range of human resources inquiries and functions. They use natural language processing (NLP) to comprehend inquiries from employees and candidates, delivering relevant details or executing tasks. Consider them as friendly, self-service human resources representatives accessible around the clock. According to Engagedly’s State of Artificial Intelligence (AI) in Human Resource Management research, the global AI adoption rate is 21%. An increasing number of firms acknowledge the advantages of AI in workforce management. Global HRM leaders are implementing AI to facilitate transformations in HRM, with

45% integrating AI into their HRM practices (Siocon, 2024). HR chatbots improve workplace productivity and employee satisfaction by delivering immediate solutions to requests, reducing the inconvenience of awaiting HR staff, and cultivating a friendly and positive workplace culture. By automating repetitive and time-consuming duties, such as responding to frequently asked questions or handling leave requests, these chatbots enable HR teams to concentrate on more strategic efforts, thereby enhancing overall productivity. Their availability at all times guarantees that employees may obtain support at any moment, regardless of time zones or schedules, hence enhancing accessibility and convenience. Moreover, HR chatbots provide tailored responses derived from employee data, ensuring consistency and precision, thus mitigating the potential for miscommunication and enhancing employee trust and engagement.

HR chatbots exist in multiple forms, each tailored to fulfil particular HR responsibilities and enhance productivity. Each kind of HR chatbot is customized for certain functions, differentiating them from one another. Recruitment chatbots manage candidate inquiries, gather preliminary information, arrange interviews, and pre-qualify candidates by evaluating their responses. Onboarding chatbots assist new workers in navigating the onboarding process by addressing business policies, benefits, tools, and culture, while simultaneously gathering paperwork and responding to inquiries. HR helpdesk chatbots address standard employee concerns like benefits, leave policies, and policy clarifications, in addition to updating employee information, monitoring attendance, and guiding workers to pertinent HR resources. Surveys and feedback chatbots administer staff surveys, such as pulse, exit, and engagement surveys, to collect feedback and sentiment for enhancing workplace culture. Employee engagement chatbots improve the employee experience by offering resource access, enabling communication, collecting feedback, and promoting corporate activities. Wellbeing chatbots tackle health-related issues, provide mental health assistance, and link employees to wellness services. Training and development chatbots facilitate employee access to training resources, suggest courses, and address training-related inquiries. Performance management chatbots assist managers and employees in navigating performance evaluations, establishing objectives, and facilitating feedback mechanisms. Finally, HR analytics chatbots

furnish HR professionals with analytics and insights to facilitate data-driven decisions concerning workforce planning, talent management, and employee engagement (Siocon, 2024). This flexibility makes possible HR chatbots to address various corporate requirements, becoming them an adaptable and essential resource for improving HR operations. HR chatbots utilized for feedback, onboarding, and employee communication may be classified as limited-risk. Article 52 of the AI Act requires that such systems must inform users of their AI characteristics. Employees must be explicitly told that they are engaging with an AI system, particularly when the chatbot gathers or processes sensitive personal information. Clear communication is essential to guarantee informed consent, foster trust, and mitigate the potential for misuse or manipulation. Both performance feedback systems and HR chatbots significantly depend on the processing of personal and frequently sensitive information. The AI Act emphasizes risk categorization and operates concurrently with the General Data Protection Regulation (GDPR). AI applications in human resources must adhere to the principles of data minimization, purpose limitation, and lawful processing. Automated decisions executed without substantial human monitoring may contravene GDPR Article 22, particularly if they considerably affect employees' rights.

The integration of artificial intelligence (AI) into human resources has transformed employee experience and engagement through the offering of new resources and methods that improve workplace satisfaction and productivity. AI-driven systems empower enterprises to provide tailored experiences, including ongoing performance evaluation, individualized learning opportunities, comprehensive onboarding, and immediate HR assistance via chatbots. Organizations can utilize predictive analytics to proactively meet employee requirements, diminish attrition, and cultivate a culture of transparent communication and collaboration. Moreover, AI-driven platforms such as LinkedIn Learning and the metaverse enable employees to assume responsibility for their development, connecting their advancement with company objectives while improving adaptability in a rapidly evolving labor market. These developments enhance employee morale and retention while enabling HR staff to concentrate on strategic projects, thereby assuring organizational competitiveness and innovation. Ultimately, AI in HR fosters a more engaged, proficient, and

motivated workforce, driving sustained success for employees as well as companies. Artificial intelligence has changed the way employees experience work by making learning, communication, and engagement all data-driven activities. But this change needs more than just technological skill; it also needs moral vision. As metaverse onboarding, continuous learning platforms, and HR chatbots change how people work and learn, the line between giving people authority and spying on them gets thinner. The EU AI Act gives us the legal framework to deal with this tension, but the real test is to create cultures that make technology more human and people less mechanical. Organizations should therefore pursue a twin commitment: technological literacy to ensure fair, transparent AI operations, and emotional literacy to retain empathy, belonging, and psychological safety. Adding "explainable engagement models," employee co-design workshops, and AI ethics boards to HR operations may make sure that everyone is responsible for every part of the digital experience. In the end, the future of employee engagement in the AI era will depend on whether companies can turn algorithmic insights into human understanding. This will make sure that intelligence, whether it's artificial or not, stays in service of dignity.

4.3. Ethical and Practical Concerns in AI-Driven Engagement Tools

As artificial intelligence (AI) becomes more embedded in human resource (HR) business processes, its capacity to improve employee experience and engagement is undeniable. AI-driven tools are revolutionizing conventional HR activities by providing specific learning pathways and ongoing performance feedback, hence delivering innovative ways to address employee demands and enhance workplace satisfaction. Nonetheless, the extensive integration of AI with human resources presents numerous obstacles and concerns that businesses must confront to guarantee ethical, efficient, and equitable application. These issues encompass essential domains, including privacy and data security, the risk of bias and inequity, excessive surveillance and its effect on employee autonomy, and the loss of human interaction in HR procedures. Moreover, challenges such as ethical concerns, regulatory compliance, and resistance to adoption further complicate the use of AI in human resources. This chapter examines privacy and data security issues and investigates

the wider implications of AI-driven HR systems on employee engagement and corporate trust. By confronting these obstacles, firms can achieve a balance between utilizing AI's capabilities and preserving a human-centric approach to HR procedures. The strategic integration of AI into HR holds the potential of enhanced personalization and operational efficiency; yet, it also presents a nuanced ethical dilemma: systems designed to empower people may concurrently undermine their sense of agency. When engagement and well-being are governed by algorithms, employees run the risk of becoming passive participants in data-driven systems that determine their own pleasure. This contradiction highlights the necessity for participatory AI governance, wherein employees are not only subjects of algorithmic oversight but active participants in the design, implementation, and assessment of engagement technologies.

In discussions on privacy and data security concerning AI applications for employee experience and engagement, it is crucial to acknowledge the substantial role of data in supporting these systems. AI-driven solutions depend on the collection, processing, and analysis of extensive employee data, including performance indicators, behavioural patterns, communication records, and personal preferences. This data is essential for developing personalized experiences and actionable insights, yet it also presents considerable privacy and security issues. A major concern is the possible misuse or unauthorized access to sensitive employee data. AI systems sometimes require centralized data repositories that, if adequately secured, may be vulnerable to attacks or breaches. Organizations implementing AI systems in human resources must comply with rigorous cybersecurity and resilience standards in accordance with the EU Artificial Intelligence Act, especially when these systems are classified as high-risk under Annex III, Section 4 of the Act. Article 15 of the AI Act specifies that high-risk AI systems must be designed with stringent cybersecurity protocols to guarantee protection against unauthorized access, data breaches, and malicious attacks. In the context of human resources, this necessitates that employers and AI solution providers incorporate technical safeguards—such as encryption, access control mechanisms, and anomaly detection systems—throughout the whole AI lifecycle. Furthermore, ongoing risk assessment, incident response procedures, and system integrity evaluations are crucial for adherence to the risk management

framework established in Article 9. Neglecting to safeguard sensitive employee information not only violates the AI Act but also erodes employee trust and organizational integrity. These regulatory requirements necessitate a proactive and preventive cybersecurity approach, emphasizing that the secure operation of AI systems is as crucial as their efficacy.

Moreover, the absence of openness regarding the data collection and utilization practices of AI systems might induce concern among employees, since they may lack a comprehensive understanding of the information being gathered and its applications. The transparency and data governance requirements in Articles 10 and 13 of the AI Act are crucial in alleviating employee concerns around surveillance and misuse of data. Article 10 stipulates that data utilized for the training, validation, and operation of high-risk AI systems must be important, representative, and devoid of mistakes, accompanied by measures to identify and alleviate bias or distortion. For HR systems, this entails preserving comprehensive documentation of data sources, processing methodologies, and anticipated results. Equally important is the requirement under Article 13 to guarantee openness and traceability, mandating that deployers tell data subjects—specifically, employees—about the nature of AI engagement, the data being processed, and their rights. Organizations must provide explainability features and user-facing documents that clarify the collection and utilization of employee data. This transparency promotes employee autonomy and facilitates informed consent, which is both a legal requirement under the AI Act and a fundamental ethical principle for equitable AI application in the workplace. By implementing these duties, firms can mitigate risks associated with data opacity, overreach, and employee dissent, while also promoting compliance and ethical leadership in AI governance.

Therefore, HR systems can be tempting targets for cyberattacks. Data breaches can result in significant consequences, including financial fraud, theft of identities, and reputational harm for both individuals and companies. HR technology companies must adopt rigorous safety measures, including firewalls, password protection, and intrusion detection systems, to mitigate this problem. Regular security audits and penetration testing are crucial for detecting weaknesses and preventing unauthorized

access. Furthermore, training staff on cybersecurity best practices is essential to reduce the likelihood of data breaches (Nyathani, 2023).

In addition, the introduction of extensive data privacy regulations, including the GDPR in the EU and the California Consumer Privacy Act (CCPA) in the United States, have increased the pressure on organizations to comply with to strict data protection laws. These policies aim to protect individuals' personal information by requiring transparency, accountability, and ethical conduct in data management. HR departments must implement strict processes for the collection, processing, and storage of employee data, ensuring that only pertinent information is acquired and utilized for explicitly specified purposes. Failure to comply with these regulations may lead to serious repercussions, including substantial penalties, legal disputes, and considerable reputational harm, thereby undermining employee faith and confidence in the firm. HR Future (2023) outlines many recommended practices that human resources departments may implement to proficiently protect employee data. Utilizing encrypted forms for data gathering, restricting access to sensitive information, and performing regular data audits can substantially improve security protocols. A comprehensive data management plan, encompassing routine data backups and secure storage options, is vital for maintaining data integrity and protection. Document comparison software is a vital tool in this process, enhancing efficiency and providing an additional layer of protection. This program promptly detects data anomalies, ensuring accuracy and protecting critical information from potential intrusions. Moreover, preparing for possible data breaches is essential. A well-defined data breach response plan may limit harm, assure legal compliance, and facilitate rapid recovery.

A significant concern is the equilibrium between data acquisition and employee privacy. AI systems intended to enhance engagement and experience frequently track employee behaviours in real-time, including productivity, communication habits, and emotional tone in emails. Although this could provide helpful insights, it can also appear intrusive, creating a perception of excessive monitoring. Employees may fear that their actions are under constant watch, resulting in stress, unhappiness, and diminished morale. Research from Cornell indicates that organizations employing AI

to oversee employee behaviour and productivity may encounter increased complaints, diminished productivity, and higher turnover intentions, unless the technology is positioned as a means of fostering employee development (Cornell Chronicle, 2024). For example, in 2020, the investment bank Barclays faced criticism for employing a system named Sapience to track employees' desk time and notify them if they exceeded authorized break durations. The software, designed to monitor productivity and provide "transparency," attracted protest from employees, privacy groups, and HR specialists. Critics, such as Silkie Carlo from Big Brother Watch, characterized the surveillance as "intrusive" and likened it to a "Big Brother" methodology, contending that it violated employees' privacy and fostered mistrust inside the company. Barclays asserted that the system was a component of a restricted experiment aimed at mitigating overwork and enhancing productivity; nevertheless, following adverse feedback and public scrutiny, the bank terminated the program (BBC News, 2020). Had the EU Artificial Intelligence Act been implemented during the 2020 Barclays incident over the use of Sapience software to oversee staff desk time and break durations, the bank could have encountered regulatory examination and possible penalties under various requirements of the AI Act. The system in question is likely classified as a high-risk AI system as described in Annex III of the Act, encompassing AI utilized for monitoring and assessing employee behavior and performance. In this instance, Barclays may have violated Article 5(1)(a), which forbids the utilization of AI systems that exploit individuals' vulnerabilities stemming from their social or psychological conditions—specifically, employees reliant on their jobs may perceive pressure to give in to continuous monitoring. Moreover, neglecting to establish sufficient transparency measures (Article 13) and data governance rules (Article 10), including notifying employees of the extent, intent, and rationale of the monitoring system, would represent further infractions. If declared non-compliant, according to Article 71 of the AI Act, the organization may incur administrative penalties of up to €30 million or 6% of its global annual revenue, whichever is bigger, depending upon the severity and intent of the violation. This case highlights that AI systems violating upon essential rights such as dignity, privacy, and autonomy—especially in the workplace—will be carefully regulated and face substantial penalties under the AI Act, emphasizing the

necessity for ethical and transparent AI implementation in human resources practices.

This incident highlights the delicate equilibrium organizations must keep when implementing AI-based monitoring systems. Transparency, effective communication, and employee participation in decision-making are crucial for viewing these technologies as supportive rather than punitive. In accordance with the EU Artificial Intelligence Act, specifically Articles 5, 9, 13, and 14, organizations are required to ensure that these systems uphold fundamental rights, integrate comprehensive risk management and transparency measures, and involve human oversight, particularly in high-risk employment scenarios. Organizations must prioritize building trust by emphasizing the benefits of these systems for employees, including the identification of growth possibilities, the mitigation of burnout, and the enhancement of work-life balance. Without this trust, even altruistic activities may be perceived as disruptive, ultimately threatening employee engagement and organizational culture.

The EU AI Act establishes a legal framework that specifically addresses the dangers linked to the utilization of AI systems in employment contexts, categorizing them as high-risk applications under Annex III, this also includes AI systems employed to observe employee conduct, performance, and emotional conditions. Articles 9 and 29 require that businesses utilizing such systems must establish comprehensive risk management, transparency protocols, and provide human oversight to safeguard fundamental rights like dignity, privacy, and non-discrimination. The AI Act requires explicit documentation regarding the utilization of employee data, encompassing measures to prevent bias and psychological harm. These legal expectations signify increasing apprehension regarding the possible exploitation of AI in the workplace. Moreover, excessive surveillance and micromanagement are increasingly common in the workplace, raising significant concerns. This is particularly accurate given the current utilization of advanced AI technologies to monitor staff activities. Over-surveillance and micromanagement are becoming more common in the workplace, which is a growing concern. This is especially true now that sophisticated AI systems are being used to keep an eye on what employees are doing. Similar to the Barclays

experiment, these systems frequently monitor an extensive range of activities, including clicks, time allocation on tasks, website interactions, and biometric data such as facial expressions or vocal tone during virtual meetings. Although the objective of such surveillance may be to enhance productivity, streamline workflow efficiency, or identify areas for employee growth, it frequently results in an unwanted atmosphere of mistrust and anxiety. Employees may perceive themselves as being under perpetual observation, resulting in increased stress, diminished creativity, and a decrease in general morale.

For instance, companies like Amazon have faced criticism for their use of AI-powered surveillance tools, such as wristbands that track warehouse workers' hand movements to ensure efficiency. While these tools aim to streamline operations, they have been widely criticized for treating employees like machines rather than individuals, driving dissatisfaction and public backlash. Solon (2018) argues that Amazon's patented wristbands, supposedly designed to enhance efficiency, serve as instruments of workplace surveillance. These wristbands may track employees' activities, including itching, fidgeting, or taking short breaks, categorizing them as "time-wasting." Similarly, in 2021, a major controversy arose when several companies were found using webcam monitoring software to ensure employees working remotely were staying "productive." Such practices sparked debates around the ethical boundaries of workplace surveillance, with critics arguing that they not only violate employees' privacy but also reduce their sense of ownership and trust in their roles (Abril & Harwell, 2021).

To mitigate the negative effects of excessive surveillance, businesses must achieve equilibrium between monitoring and respecting employee autonomy. Transparency is essential; employees must be informed of the data being collected, its intended use, and the advantages it offers them. Employers should prioritize empowering people by utilizing monitoring tools to find possibilities for assistance and development, rather than employing them as instruments for punishment or micromanagement. Promoting open communication and engaging employees in the design and execution of these systems helps cultivate collaboration and trust. The efficacy of AI-driven monitoring ultimately hinges on its capacity to improve

employee experience while safeguarding their privacy, dignity, and autonomy in the workplace.

The increasing incorporation of AI into professional environments has raised considerable apprehensions regarding the erosion of human interaction and the burgeoning reliance on these technologies. As AI systems assume responsibilities historically undertaken by humans, like decision-making, customer service, and creative endeavours, there exists a potential threat to the intimate, emotional relationships that characterize human interactions. AI-driven chatbots and virtual assistants, while their efficiency, frequently lack the emotional intelligence and sophisticated comprehension necessary to effectively handle difficult or delicate matters. This detachment may result in sentiments of alienation among both employees and customers, undermining trust and engagement. According to Marr (2020), chatbots are now proficient at mimicking human behaviour and engaging in remarkably genuine discussions. However, there are instances when only human interaction is sufficient. To avoid alienating the audience, it is essential to consider which jobs are appropriate for chatbots and which should be reserved for human intervention. Furthermore, as firms grow more dependent on AI to enhance productivity and efficiency, there exists a risk of excessive reliance, potentially leading to the deterioration of employees' critical thinking and problem-solving abilities. Excessive dependence on AI may provide a workforce that is inflexible and inept in scenarios where AI technologies malfunction or fail to deliver satisfactory solutions. Investigations into decision-making, critical, and analytical thinking skills have revealed a multifaceted influence of AI technologies on academic achievement. Although these technologies can improve writing skills and increase self-assurance, they pose hazards to originality, critical thinking, and compliance with ethical standards, especially concerns over plagiarism. Moreover, research suggests that excessive dependence on AI dialogue systems may result in less creativity, heightened dependency, and difficulties in comprehension (Duhaylungsod & Chavez, 2023; Kim et al., 2023; Semrl et al., 2023).

The introduction of AI in the workplace affects human interaction dynamics and results in substantial changes in the workforce, including job displacement and a

reconsideration of traditional positions. The emergence of AI technologies has generated noteworthy concerns about job displacement, as automated machines progressively assume jobs previously executed by people. Although the automation of specific operations is unquestionable, it is crucial to differentiate between duties amenable to mechanization and positions that fundamentally necessitate human judgment, empathy, and strategic decision-making. Although these perspectives emphasize the growing automation of routine and operational tasks, they may oversimplify the complex function of human resources. Automation is both inevitable and advantageous, particularly in improving efficiency, optimizing administrative processes, and handling data-intensive operations. Equating HR solely to a technical role neglects its profound strategic and interpersonal aspects. Human resources include more than data analysis and task execution; it entails managing individuals, navigating intricate social dynamics, and making pivotal decisions that directly influence business culture and employee welfare. Consequently, AI may assist Human Resources, but it cannot supplant its fundamental duties. Jensen Huang, CEO of NVIDIA (2025), predicts that "the IT department of every company will become the HR department for AI agents," tasked with managing and implementing digital workforce solutions. Üstüner (2025) provocatively proposes that HR may eventually be rebranded as "AIR." These statements illustrate the increasing impact of AI, while also highlighting the necessity for clear distinctions between technology proficiency and human discernment, especially in sensitive and interpersonal fields such as human resources.

Automation and AI-driven systems have demonstrated significant efficiency in fields such as manufacturing, data processing, and customer service, resulting in concerns of widespread unemployment in specific industries. Forrester's Future of Jobs Forecast 2020 to 2040 underscores the rapid implementation of automation in Europe, pushed by an ageing demographic and diminished productivity resulting from the Covid-19 pandemic. The analysis forecasts that 34% of employment in Europe is vulnerable to automation, with an anticipated displacement of 12 million jobs in five major European nations—France, Germany, Italy, Spain, and the UK (Europe-5)—by 2040. Employees in industries such as retailing, retail, transportation, housing, and food services are especially vulnerable, particularly

those in low-wage or part-time positions. Nonetheless, automation and the green energy sector are projected to generate 9 million new employment opportunities in domains such as clean energy, intelligent urban development, and sustainable buildings (Fetcher, 2020). Forrester's Future of Jobs Forecast 2020 to 2040 emphasizes the contradictory impact of automation in Europe, illustrating the dangers of significant job displacement alongside the opportunities for job creation in growing sectors such as green energy and smart cities. The study underscores the significance of automation to tackle issues arising from an ageing workforce and productivity declines due to the pandemic, while also highlighting significant concerns regarding the susceptibility of low-wage and part-time workers, who are disproportionately impacted. Therefore, it can be argued that the emergence of automation is not just a disruptive force but also a catalyst for the development of completely new industries and employment prospects. As conventional employment becomes further mechanized, sectors such as renewable energy, artificial intelligence development, robots, and smart infrastructure are swiftly growing. This transition reflects a type of "natural selection" inside the professional arena, necessitating that individuals adjust to succeed in the changing employment market. The capacity to reskill and adopt lifelong learning will be crucial attributes for success in this new century. Employees who actively develop competencies in developing sectors will establish themselves as essential assets to the workforce, but those averse to change may encounter difficulties in sustaining relevance. Ultimately, automation is transforming the professional landscape, necessitating adaptability and innovation from both individuals and companies to fully leverage its potential. Artificial intelligence in HR has reached an ethical crossroads. It increases accuracy, speed, and personalization, but it also raises the risks of being watched, losing your humanity, and becoming dependent on others. The question is not if AI will change work—it's already proved so—but if this change will keep the dignity and moral agency of the human worker. The EU AI Act provides a strong legal framework, but real compliance means creating cultures that consider ethics as design, not defense. So, organizations need to make values of openness, contextual integrity, and proportionality a part of their daily lives instead of just following a set of rules. HR executives must also take back their position as guardians of fairness and empathy in workplaces where algorithms are used. It must make sure that efficiency does not

come before fairness and that automation does not replace the emotional intelligence that is necessary for trust and belonging. In the end, effective AI governance needs more than just rules for systems. It also needs to make the organizations that utilize them more human, turning data-driven HR into a place where honesty and creativity are encouraged.

4.4. AI- Driven Decision-Making in HR and the EU AI Act

In an era increasingly defined by data abundance and accelerated change, decision-making has become both more critical and more complex for organizations. Nowhere is this more evident than in the field of human resources, where leaders must navigate vast amounts of information to make timely, strategic, and employee-centred decisions. As the volume, velocity, and variety of data continue to grow, traditional methods of decision-making often fall short, burdened by cognitive overload, emotional fatigue, and systemic biases. These challenges have prompted a growing reliance on artificial intelligence (AI) to support and, in some cases, augment human decision-making across key HR functions. The following chapter explores this dynamic by analysing the role of AI in enhancing the quality and efficiency of decisions in human resources. AI could assist HR make better decisions, but it also creates a dilemma of delegated responsibility: people who make decisions tend to trust algorithmic results without checking them carefully. When results are disputed or morally unclear, this cognitive outsourcing might make it harder to hold people accountable. So, it is vitally important to set standards for decision-explainability, which means that every algorithmic suggestion must come with logic that a person can understand. These guidelines make sure that AI helps people make decisions instead of taking the place of human judgment.

The Decision Dilemma, a study by Oracle in partnership with bestselling author Seth Stephens-Davidowitz, reveals that individuals increasingly perceive themselves as overwhelmed and inadequately filled to utilize data for decision-making, adversely affecting their quality of life and business performance. The research, which examined almost 14,000 employees and company executives in 17 countries, indicates that decision-making complexity has attained record high places, with 85%

of business leaders encountering "decision distress," characterized by regret or doubt on judgments made in the previous year. Moreover, 93% of participants think that possessing appropriate decision intelligence is essential for an organization’s success.

The results highlight an increasing dependence on data, with 97% of respondents indicating a preference for data to enhance decision-making, mitigate risks, and prepare for unforeseen circumstances. Nonetheless, the survey underscores considerable obstacles, as 72% acknowledge that the excessive amount of data and an absence of trust for the reliability of it can inhibit their decision-making entirely. These insights underscore the pressing necessity for AI-driven solutions in HR and also other areas of companies to streamline decision-making, enhance trust in data, and empower executives to make swifter, more informed, more consequential decisions (PR Newswire, 2023). Oracle's study highlights the necessity for enterprises to implement AI-driven solutions in HR to tackle the complexities of decision-making in a data-saturated environment. By utilizing AI, HR departments may overcome the constraints of human decision-making, including biases, decision fatigue, and the inefficacy in processing enormous quantities. AI not only improves the accuracy and rapidity of judgments but also fosters trust in data by delivering transparent and dependable insights.

The integration of artificial intelligence in human resources has transformed conventional methods by improving decision-making abilities. As firms endeavour to maintain competitiveness in a swiftly changing environment, the utilization of AI technology empowers HR personnel to make more informed, data-driven decisions. This chapter examines the role of AI in improving decision-making within HR, concentrating on recruitment, employee engagement, performance management, and workforce planning.

Analysing the advantages and consequences of AI-driven decision-making enhances our comprehension of its potential to improve organizational outcomes. AI systems can evaluate extensive data from diverse sources, including employee performance indicators, engagement surveys, and external market trends. According to Tewari

and Pant (2020), future technology will prioritize access to accurate and high-quality information, together with the ability to access this information through several platforms, thereby giving enterprises an edge over rivals. This solution will empower HR practitioners to concentrate on converting data into useful data for organizational decision-making, involving collaboration between HR and AI for technology implementation. The transformational potential of AI-driven decision-making in human resources is enhanced when integrated with the capabilities of Big Data. By integrating these technologies, firms boost their comprehension of employee performance and engagement while acquiring a plethora of information that informs strategic decisions. Tewari and Pant (2020) assert that the future of technology will depend on the capacity to obtain accurate and high-quality information from many platforms, consistent with findings from Big Data analytics. This collaboration enables HR professionals to utilize extensive data to discern trends and enhance their workforce strategy efficiently. AI-assisted decision-making can unintentionally reinforce the differences it aims to address if the training data reflects past prejudices, regardless of its analytical capabilities. This contradiction highlights the need for algorithmic hygiene, which includes regular audits, using different datasets, and checking for demographic balance. Organizations can make fairness a part of their daily operations while still following Article 10 of the EU AI Act by adding bias-mitigation pipelines to their HR analytics workflows. In short, responsible data curation is not a technical extra; it is a moral requirement. The combination of Big Data with other technologies enables human resource managers to acquire deeper insights and make informed decisions based on critical information. Big Data enables HR managers to evaluate their current employees without bias and identify recent trends (Mohammed & Quddus, 2019). In simple terms, the integration of Big Data and AI technology improves employee evaluations, allowing HR managers to make educated, fair, and data-driven judgments. The use of these sophisticated analytical tools can help businesses identify emerging patterns and strengthen their computational modelling and machine learning activities, resulting in better organizational outcomes.

The incorporation of AI into HR decision-making processes offers substantial benefits, although it also engenders legal and ethical dilemmas that require attention,

especially with the EU AI Act. The AI Act categorizes AI systems utilized in employment, including those for recruiting, performance assessment, and promotion determinations, as high-risk systems. This categorization imposes stringent compliance requirements on such systems, encompassing transparency obligations (Articles 13–14), risk management protocols (Article 9), human oversight (Article 14), and data governance standards (Article 10). AI systems must utilize high-quality, representative, and impartial data to prevent the perpetuation of existing biases in recruiting or performance evaluations. Furthermore, according to Article 13, enterprises are obligated to supply transparent and accessible information regarding the decision-making processes of the AI system, so guaranteeing that employees and applicants grasp the rationale behind automated decisions and their entitlement to challenge them. These requirements underscore the significance of algorithmic accountability and transparency, particularly in procedures that profoundly impact individuals' livelihoods and career paths. Consequently, HR departments must prioritize not only technological efficacy but also proactively guarantee that their AI solutions conform to the EU's human-centric and rights-based legislative framework. Disregarding these factors may lead to regulatory penalties, reputational harm, or a decline in employee trust—compromising the fundamental goals that AI was designed to improve.

Fomude et al. (2023) argue that HR is the industry with the highest demand for data administration and analysis. The increasing demand for AI in HR has been highlighted in previous chapters, demonstrating its revolutionary potential from several viewpoints. The incorporation of AI into HR procedures not only fulfils the industry's demand for accelerated and accurate choices but also improves strategic workforce planning, employee engagement, and organizational performance. By utilizing AI, HR professionals can shift their attention from administrative duties to more value-oriented endeavours, such as promoting innovation, enhancing employee experiences, and aligning workforce plans with organizational objectives.AI is significantly revolutionizing HR, particularly in recruiting, by optimizing processes like candidate sourcing, resume screening, and interview scheduling, thereby allowing firms to uncover top talent more rapidly and effectively. Organizations such as Unilever have effectively utilized AI-powered recruitment solutions to optimize

their hiring procedures. Unilever significantly decreased their hiring time and enhanced the quality of hires by employing AI algorithms to monitor video interviews and evaluate candidates' responses. Unilever hires around 30,000 individuals annually and evaluates approximately 1.8 million job applications. This requires substantial time and resources. As a global brand functioning in 190 nations, applicants are located worldwide. Identifying the appropriate individuals is a crucial component for success, and Unilever cannot afford to disregard brilliance merely because it is obscured under an ocean of CVs. To address this issue, Unilever collaborated with Pymetrics, an expert in AI recruitment, to develop an online platform, enabling candidates to be assessed remotely from their homes via computer or mobile device.

Initially, individuals are requested to engage in a series of games that assess their aptitude, logic, reasoning, and willingness to take risks. Machine learning algorithms are employed to evaluate candidates' suitability for the positions they have applied for by comparing their profiles with those of previously successful employees. The subsequent round of the procedure entails the submission of a video interview. The evaluator is a machine learning algorithm, not a human entity. The program analyses candidates' videos, in which they respond to questions for approximately 30 minutes, utilizing a combination of natural language processing and body language assessment to ascertain potential suitability. Leena Nair, Unilever's Chief of HR, reports that around 70,000 person-hours dedicated to interviewing and evaluating candidates have been eliminated due to the automated screening method. Each screenshot provides the firm with numerous data points regarding the individual, leading them to collaborate with various partners and employ extensive proprietary technologies. Subsequently, Unilever selects approximately 3,500 individuals to advance to our discovery centre. Following a day spent with authentic leaders and recruiters, Unilever selects approximately 800 individuals to whom employment offers will be extended. The AI recruiter at Unilever provides applicants with several pages of feedback, detailing their performance in the game, video interviews, relevant characteristics, reasons for any misalignment, and recommendations for future application success (Marr, 2021). The utilization of artificial AI in recruitment procedures exemplifies a systematic and efficient method for addressing the issues of

international hiring. Unilever's unique implementation of AI-driven solutions, created in partnership with Pymetrics, demonstrates how modern technology may optimize previously labour-intensive processes, such as candidate screening and interviewing. Unilever has substantially enhanced its recruitment processes through the utilization of machine learning algorithms, natural language processing, and body language analysis. This method guarantees a data-driven and impartial assessment of candidates, minimizing biases and improving the overall quality of recruiting decisions. The incorporation of AI in recruitment has revolutionized the decision-making process through the provision of data-driven insights and predictive analytics. AI assesses candidates according to quantifiable characteristics and recognized success patterns, enabling hiring managers to make educated and uniform judgments. This not only expedites the recruitment process but also improves the precision and dependability of picking applicants that meet organizational requirements.

Besides, recruitment area of HR according to IBM Report (2024), which is named Reimagine human potential in the gen AI era, AI-driven technologies assist organizations in optimizing procedures, mitigating bias, and facilitating cohesive data-informed decision-making. However, the scope of AI is broadening beyond simplistic business judgments. Business leaders assert that the current priorities are oriented towards front-line engagement and employee focus, necessitating the democratization of data and insights. Indeed, 64% of visionaries indicate that data-driven decision-making is prevalent in various domains or throughout their business.

In a nutshell decision-making constitutes the fundamental foundation of artificial intelligence (AI) applications in human resources, supporting its revolutionary influence across all HR departments. AI-driven decision-making enhances firms' capabilities in recruitment, workforce planning, employee engagement, and performance management, enabling them to effectively control through the complexity of contemporary business landscapes. Utilizing data-driven insights and predictive analytics, AI improves the accuracy, timeliness, and equity of judgments while alleviating biases and decision fatigue associated with human judgment. Various examples, including Unilever’s AI-driven recruitment strategies, illustrate

that decision-making is the essential mechanism allowing HR professionals to shift from administrative functions to strategic initiatives, thereby aligning workforce strategies with organizational objectives. The incorporation of AI into HR processes highlights that decision-making serves not only as a function but also as a strategic facilitator, guaranteeing that AI applications provide significant, scalable, and impactful results throughout the enterprise. As AI advances, its significance in decision-making will be crucial, influencing the future of HR and confirming its place as the foundation of all AI-driven reforms. Artificial intelligence has become the reasoning power behind how people make decisions about hiring and firing. But its potential to optimize, forecast, and speed up decisions needs to be controlled by systems that protect human reasoning, moral responsibility, and situational judgment. The EU AI Act gives us a legal framework that we need, but the bigger problem is cultural: we need to find a way to use algorithmic reasoning in a system of government those values both truth and transparency, as well as empathy and efficiency. AI may greatly improve the quality of decisions, as shown by companies like Unilever. However, this is only possible when there is human oversight, data processes that are conscious of bias, and HR leaders who are knowledgeable about ethics. So, the future of decision-making in HR will not just depend on how smart algorithms are. It will also depend on how well companies can turn compliance into conscience, making AI a partner in responsible human judgment instead of just a tool for automating tasks.

4.5. Strategies for Implementation and Current Utilization Trends in AI

AI has developed from a futuristic concept to a transformational force that is redefining businesses across several industries. McKinsey & Company's, The State of Organizations 2023 research indicates that AI is transforming operations and facilitating the development of more robust and adaptable organizational structures. Through the utilization of AI, organizations are establishing sustainable talent pipelines, optimizing workflows, and executing accelerated, data-informed organizational transformations. The successful implementation of AI necessitates more than just technological integration; it demands the incorporation of AI into corporate culture, a development of executives competent in AI, and the evaluation

of its ethical implications and associated risks. As enterprises increasingly use AI, formulating strategies for its effective implementation will be essential to realizing its full potential and guaranteeing sustained success.

Building upon the transformative potential of AI highlighted earlier, it is essential to consider the growing adoption and measurable impact of this technology within organizations. According to McKinsey & Company's study, The State of AI in Early 2024, if 2023 represented the global recognition of generative AI, then 2024 will bring about enterprises actively utilizing and generating business value from this emerging technology. According to the latest McKinsey Global AI Survey, 65 percent of participants indicated that their firm consistently used generative AI, representing a rise of double from the 2023 research. Respondents maintain elevated expectations on the influence of AI, with three-quarters anticipating that technology will catalyse substantial or disruptive transformations within their businesses in the forthcoming years. Organizations are experiencing substantial advantages from the implementation of generative AI, indicating both cost savings and revenue growth in business sectors utilizing the technology. A survey of 1,363 respondents indicates that interest in generative AI has provided insight into an increased number of AI capabilities. In 2024, AI usage across respondents' firms was approximately 50 percent compared to 2023. This year's survey indicates that adoption has increased to 72 percent overall.

The 2023 survey indicated that AI adoption was below 66 percent in any location; however, in 2024, over two-thirds of respondents from nearly every region said that their firm was using AI.

The rapid rise in AI adoption and use signifies both the increasing acknowledgment of its disruptive capabilities and the strategic emphasis on AI inside enterprises. The recent McKinsey Global AI Survey highlights that the increasing utilization of generative AI, together with higher expectations for its transformative effects, signifies that enterprises are not only experimenting with AI but are actively embedding it into their fundamental processes. The rise in usage is followed by a substantial increase in investments intended to enhance AI capabilities.

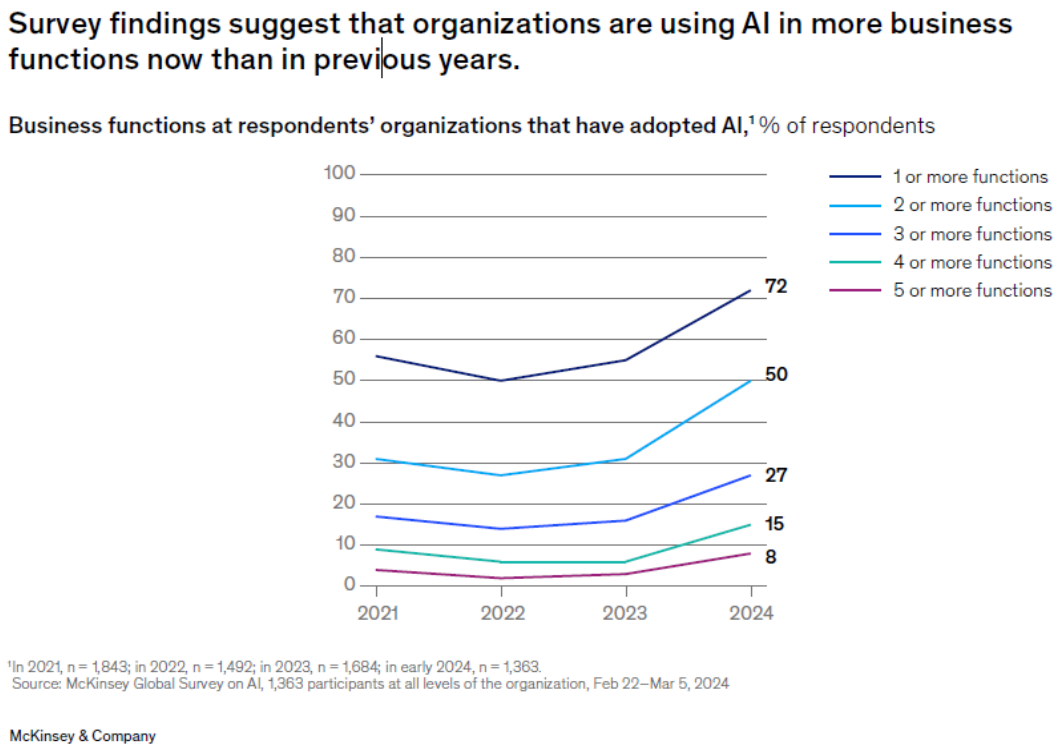

Figure 5.[5] Organisations' AI Adoption.

Organizations are dedicating significant resources to improve their AI infrastructure, cultivate talent, and broaden the range of AI applications to realize new prospects for development and innovation.

The increase in enterprise-level investment is reflected and actively supported by a growing variety of public sector activities, particularly within the European Union. The EU acknowledges the strategic necessity of AI leadership and has implemented a dual strategy that combines stringent regulation with substantial, proactive investment. The enactment of the EU AI Act in 2024 signifies both regulatory foresight and a dedication to establishing a dynamic and globally competitive AI ecosystem rooted in European principles such as transparency, equity, and fundamental rights. To facilitate this objective, the EU has initiated a series of interconnected regulatory and financial mechanisms through its AI Innovation Package and AI Continent Action Plan. These initiatives encompass the

[5] Note. From Singla, A., Sukharevsky, A., Yee, L., & Chui, M. (2024b, May 30). *The state of AI in early 2024: Gen AI adoption spikes and starts to generate value*. McKinsey & Company. https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai#/

establishment of AI Factories—advanced supercomputing centers intended to support AI model training and experimentation—alongside a robust funding framework that integrates public and private investment. The EU intends to mobilize about €30 billion by 2027 through initiatives like as Horizon Europe, Digital Europe, the EIC Accelerator, and the InvestEU and InvestAI Facilities. This money is deliberately allocated to infrastructure, talent development, regulatory support, and sector-specific AI implementation in healthcare, mobility, manufacturing, and other areas. The EU's plan prioritizes enduring resilience and self-sufficiency in the artificial intelligence sector. The EU is establishing technological sovereignty by developing up to 15 AI Factories and 5 AI Gigafactories, while also providing SMEs and startups access to advanced supercomputing resources. These investments are bolstered by the creation of data governance frameworks, including Common European Data Spaces and Data Labs, along with regulatory support systems such as the AI Office and the forthcoming AI Act Service Desk. These combined initiatives exemplify the EU's comprehensive and systematic strategy—where regulation, innovation, investment, and rights protection progress concurrently—to maintain Europe's status as a global leader in reliable and advanced artificial intelligence.

Similarly, Singla et al. argue that 67 percent of respondents expect their companies to enhance AI expenditures over the next three years. In most industries, firms are equally likely to invest more than 5% of their digital resources on both generative and analytical AI (2024). This expanding trend in the application of AI and development is not limited to any particular country or industry. It is a worldwide phenomenon, as proven by various studies on AI's revolutionary impact across industries and continents. For instance, Gallup's comprehensive research on AI usage in key European firms provides significant insights into how organizations are using AI to drive innovation, optimize operations, and preserve competitiveness in an increasingly digital environment. By studying both qualitative and quantitative data, such studies provide a more comprehensive understanding of AI's strategic role in determining the future of business. Gallup executed a comprehensive study of AI application in 40 significant European corporations that extend 11 states (Belgium, Denmark, Finland, France, Germany, Ireland, Spain, Sweden, Switzerland, The Netherlands, and the United Kingdom) and 17 sectors, employing over three million

individuals and generating $1.4 trillion USD in annual revenue—representing 12% of the GDP of their respective nations. The research was conducted in two stages: comprehensive interviews with worldwide Chief Human Resources Officers (CHROs), processed by generative AI, succeeded by an extensive survey encompassing CHROs, Chief Technology Officers (CTOs), Chief Information Officers (CIOs), and HR People Analytics Leaders. The research included qualitative and quantitative data, supplemented by findings from previous Gallup surveys and external sources, offering a comprehensive perspective on AI adoption and its effects across industries. According to Gallup's Global State of the Workplace report, Europe ranks the lowest globally in key cultural elements measured by Gallup's employee engagement framework. Only 13% of employees in Europe are engaged, significantly below the global average of 23%. Additionally, 72% of employees in Europe are disengaged, compared to the global average of 62%, while 16% are actively disengaged, closely aligning with the global average of 15%. Approximately 40 percent of leaders in the study assert that their organizational culture has the capacity to manage challenges such as AI implementation. Nevertheless, almost sixty percent perceive a deficiency in their company culture. A leader stated, “The issue is cultural rather than financial, which is why we have not progressed further.” This indicates that Europe's slow adoption of AI is attributable not to insufficient financial resources but to a weakness in cultural preparedness to embrace disruptive technology. It is important to highlight that Europe is not restricted by a lack of capital, but rather by cultural obstacles. Consequently, comprehending and enhancing cultural preparedness in Europe is crucial for bridging the AI adoption disparity. In the absence of this preparedness, European enterprises will encounter considerable difficulties in sustaining competitiveness. Although technology advances swiftly, cultural transformation is regrettably lagging behind (Gallup, Inc., 2024c). Poor employee involvement, as shown in Europe, can substantially limit an organization’s capacity to adopt disruptive technology such as AI. Companies may encounter difficulties in efficiently using AI without a committed staff that aligns with business objectives and embraces change. Consequently, bridging the cultural readiness gap, particularly by enhancing employee engagement, is crucial for European firms to narrow the AI adoption gap and maintain competitiveness in a swiftly changing technical environment.

In this study, A majority of leaders demonstrated confidence in employee trust regarding their organization's utilization of data, technology, and AI, with 70% articulating a favourable perspective. This indicates that CEOs perceive their internal teams to be united and supportive of AI-driven efforts. Nonetheless, this optimism is challenged by the Bentley-Gallup survey, which indicates that 79% of Americans lack faith in corporations' capacity to utilize AI responsibly. This significant disparity indicates a substantial trust deficit between organizational leadership and the general population. Furthermore, the reality that approximately 40% of leaders hold doubts regarding their teams' utilization of AI brings complexity to the narrative. Although leaders may possess confidence in their employees' trust, their own uncertainties regarding AI implementation within their teams indicate hidden worries about preparation, training, or ethical implications. This paradox underscores the necessity for enterprises to maintain internal trust while simultaneously mitigating external scepticism through the promotion of transparency, accountability, and ethical principles in AI implementation.

This finding contrasts sharply with the European Union's strong regulatory and financial dedication to artificial intelligence. The EU AI Act, coupled with substantial investment initiatives like the AI Innovation Package and the establishment of AI Factories and Gigafactories, indicates a methodical and forward-looking strategy for AI integration; however, Gallup’s research uncovers an alternative aspect of the challenge—one that is grounded not in resources but in organizational culture. Despite the EU's explicit strategic orientation and considerable funding provisions, numerous European enterprises continue to exhibit reluctance in completely adopting AI. The factors contributing to this gap are predominantly cultural: insufficient employee engagement, inflexible organizational frameworks, and an inexperience for radical change. With about 13% of employees engaged and nearly 60% of CEOs considering their organizational culture inadequate for managing AI integration, it is clear that financial investment alone is insufficient. This cultural opposition serves as an obstacle, hindering the rate and extent of AI adoption. Consequently, closing this gap demands more than mere legislative adherence or technology frameworks; it requires deliberate initiatives to foster

adaptable, innovation-oriented organizational cultures capable of fully exploiting the EU's ambitious AI plan.

In the context of AI adoption, concerns over security and privacy remain as a substantial obstacle for several enterprises. Leaders are becoming increasingly cognizant of the possible threats linked to AI and its effects on their enterprises. Ninety percent of European CEOs surveyed articulated apprehensions regarding the utilization of AI as an instrument for malicious activities targeting their organizations' data, systems, and intellectual property. Moreover, eighty percent of leaders recognized data privacy as a significant issue for their firms. The worries stem from a deficiency of trust in the utilization of employee data, impacting not only the 1.5 million European employees involved in this study but also Americans employed by European-based firms. These concerns underscore the urgent necessity for firms to mitigate security risks and cultivate confidence in the ethical utilization of AI and employee data to guarantee effective adoption and implementation.

The integration of modern technology, especially artificial intelligence (AI), into organizational processes has highlighted the essential function of Human Resources (HR) in facilitating a smooth transition between companies. Gallup believes that when HR has support for advanced technology, firms are more effective at managing change efficiently. This readiness guarantees that suitable attitudes are synchronized with the correct toolsets, while corporate culture remains central to the plan. Being ready enables firms to adjust to technological progress while preserving a unified and efficient work environment.

According to Gallup, HR readiness depends on various factors, including the proficiency in AI-related skills within the HR department, the capacity to utilize reliable AI tools for designated applications, foresight regarding AI's future implications, and the necessity for HR to adopt a proactive and effective role in the integration of AI into workplace practices. A significant concern for HR today is the continuing skills gap. Numerous HR leaders possess insufficient data and digital competencies relative to other leaders, managers, and employees in their firms. This disparity frequently confines HR to a subsidiary function instead of a leadership

position in AI implementation. Conversely, when HR leaders demonstrate strong AI competencies, they can spearhead the organization's technological change, garnering the respect and trust of the wider workforce. This viewpoint emphasizes the necessity of enhancing the competencies of HR professionals to close the skills gap and enable HR to lead AI-driven initiatives. HR may change from a reactive to a proactive role by focusing on the development of data and AI-related skills. This will help the business use AI in a responsible and effective way. Moreover, cultivating a culture of innovation and preparedness inside HR guarantees that technological developments are executed with an emphasis on people-centric solutions in alignment with overarching organizational objectives (Gallup, Inc., 2024c).

To effectively incorporate AI into HR tasks, firms must solve the current skills gap and create a systematic strategy to AI implementation. Enhancing the AI competencies of HR professionals is crucial for leadership in technological transformation; firms can further aid this transition by utilizing comprehensive toolkits to enable AI adoption. These resources provide systematic help on assessing AI use cases, choosing deployment techniques, and synchronizing people management with AI-driven changes. By integrating skill enhancement with strategic instruments, HR may assume a proactive role in influencing AI's effect on the workforce, guaranteeing both efficiency and a human-centred approach to innovation. Artificial Intelligence (AI) in Human Resources (HR) significantly influences each business, requiring a tailored strategy for its adoption and implementation. An extensive toolset is accessible to assist firms in navigating this procedure efficiently. This resource offers critical insights into examining use cases for Generative AI (GenAI) in HR, choosing the most suitable method for implementation aligned with organizational requirements, and evaluating the possible effects of AI on the workforce. Additionally, it provides direction on modifying talent strategies to correspond with AI-induced transformations and utilizing AI in human resources to enhance employee productivity.

Just like the Galup and McKinsey & Company research, Gartner's research shows that interest in AI peaks in 2024. From June 2023 to January 2024, the number of HR leaders conducting and planning pilots doubled. This increase reflects a growing

recognition of GenAI's potential to revolutionize HR processes. One-third of HR leaders plan to add GenAI-related roles in the next 2024, and the primary uses of AI include employee chatbots, administrative tasks, and job description/skills data. As can be seen from the table below, the proportion of AI already implemented in HR in 2024 compared to 2023 increased from 5% to 11%, reflecting an increased commitment to AI integration. The proportion evaluating different GenAI solutions increased from 10% to 14%, reflecting a more strategic approach to choosing the right AI tools. The proportion of HR leaders not currently planning to use AI decreased from 14% to 11%, indicating a slight shift towards evaluation. It is easy to say that there is clear momentum towards GenAI adoption in HR. While some HR leaders remain hesitant, fewer are rejecting AI outright, indicating a trend towards broader acceptance (Gartner, n.d.). This transition indicates that HR leaders are progressively overcoming initial doubts and are increasingly receptive to investigating the potential advantages of AI. The increasing number of pilot projects and assessments signifies that firms are emphasizing a methodical and educated strategy for AI deployment instead of hastily pursuing full-scale implementation. The decrease in individuals resistant to adopting AI underscores an increasing acknowledgment of its strategic importance in HR operations. Nonetheless, although the data indicates advancement, the very small percentage of complete AI application (11%) implies that substantial obstacles, including skill deficiencies, ethical dilemmas, and organizational preparedness, remain to be resolved.

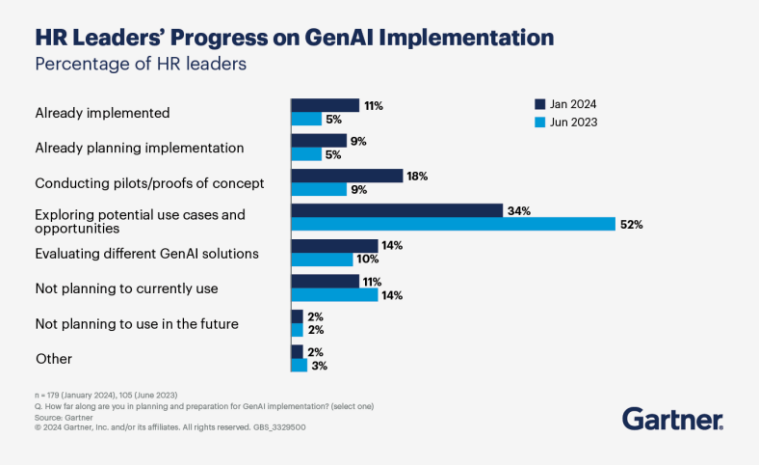

Figure 6.[6] HR Leaders' Progress on GenAI Implementation.

[6] Note. From https://www.gartner.com/en/human-resources/topics/artificial-intelligence-in-hr

Consequently, to maintain this momentum, HR directors must persist in investing in AI literacy, infrastructure, and change management methods to facilitate a seamless shift to AI-driven HR processes.

As firms increasingly acknowledge the transformative potential of AI in human resources, the emphasis must now transition from exploration to implementation. Although research demonstrates an increasing trend in AI adoption, realizing its full potential necessitates more than simply recognition; it takes a carefully planned implementation strategy. The growing number of pilot projects and the increasing willingness of HR leaders to AI solutions signify a transition towards strategic integration. Nonetheless, obstacles such as talent deficiencies, ethical dilemmas, and readiness of the organization continue to impede large-scale implementation. To optimize AI's utility in HR, organizations must employ thorough implementation strategies that facilitate a smooth transition while prioritizing a human-centric approach.

The effective implementation of AI in HR requires more than simple technological integration; it demands a comprehensive strategy that includes technological, cultural, and operational transformations. AI-driven solutions can augment efficiency, optimize administrative duties, and increase talent management; yet their efficacy is dependent upon appropriate implementation and acceptance. Organizations must evaluate many issues, such as workforce preparedness, ethical AI governance, and change management methods, to facilitate a seamless transition. Gartner asserts that to fully harness the capabilities of GenAI, HR directors have to overcome obstacles and strategically design their efforts. Clifford Chance (2024) who seems to have a lead in the use of AI in legal business has provided a comprehensive guideline for the implementation of AI in corporate environments, presented in a step-by-step format. To comply with the EU AI Act, which establishes a complicated legislative framework that substantially impacts employers and HR professionals utilizing or intending to utilize AI, organizations must undertake many essential measures. They should initiate an evaluation of existing and prospective AI applications in employment and human resources to ascertain if any instruments influence decisions about the EU-based workforce, and whether these applications

fall under forbidden categories—modifying or stopping them prior to the limitations taking effect on 2 February 2025. Employers must ascertain whether their AI systems are categorized as “high-risk” under the Act or identify their regulatory status and responsibilities. It is crucial to delineate the company's position within the AI value chain—especially if it is perceived as a provider—and to meet the associated legal obligations. Principles, rules, and procedures must be established to guarantee that AI systems comply with the standards of the EU AI Act and other legal obligations. Employers must evaluate and establish safeguards and controls to mitigate risks and facilitate internal reporting of AI failures. Personnel engaged in the development or implementation of AI must undergo training about responsibilities, dangers, and employee rights, while analogous training should be extended to senior management to ensure comprehension of strategic implications and obligations. Organizations employing AI in the workplace must guarantee that employees and their representatives are adequately informed in accordance with EU and national legislation, and must ascertain the necessary consultations with works councils, trade unions, and staff. Details on AI tools, employee rights, and avenues for obtaining clarifications or remedies must be explicitly conveyed to personnel and applicants engaged in AI-facilitated recruitment procedures. A multidisciplinary approach involving HR, legal, IT, and procurement should direct AI lifecycle management, in accordance with the organization’s overarching AI strategy, governance, and risk frameworks. Protocols must be established for the routine upgrading of AI tools to ensure their compliance, accuracy, security, and alignment with changing requirements. Employers must remain vigilant regarding new directives under the EU AI Act and adjust accordingly, while also considering international AI regulations and associated laws on employment, discrimination, health and safety, and privacy—such as the proposed EU Directive on platform work—that may influence AI implementation in the workforce

There is also a guideline by AIHR author Shani Jay for incorporating AI applications into HR processes. According to Jay (2025), the implementation of generative AI in human resources requires a deliberate and gradual strategy to guarantee its successful acceptance and integration. Organizations should start by utilizing free solutions such as ChatGPT for basic activities, such drafting emails, revising job descriptions,

or generating survey questions, thereby enabling HR teams to acclimate to the technology prior to committing substantial resources. Formulating effective prompts is crucial for optimizing the utility of generative AI, including the explicit definition of objectives, provision of pertinent context, and specification of desired output forms. Given that AI-generated outputs are not consistently error-free, it is imperative to assess and enhance them periodically, utilizing HR experience and industry benchmarks to guarantee precision and pertinence. The integration process ought to be incremental, first with fundamental duties such as producing policy documents and advancing to more complex responsibilities like data analysis, hence facilitating the learning curve for HR experts. Data privacy is a significant concern due to the sensitive nature of employee information, and firms must adhere to data protection requirements while ensuring confidentiality. Formulating a generative AI policy helps establish explicit standards for ethical and secure utilization. Collaboration with IT teams is essential to guarantee the smooth integration of existing HR systems, reduce technical challenges, and facilitate seamless operations. By adhering to these principles, firms can selectively and efficiently utilize the capabilities of generative AI in HR, while confronting major obstacles and promoting a culture of innovation. Organizations should prioritize ongoing training for HR personnel to improve their AI expertise and create a culture of adaptability. Furthermore, defining measurable indicators to evaluate the influence of generative AI on HR processes helps guarantee alignment with business objectives and promote continuous innovation.

With the widespread use of artificial intelligence, the most fundamental EU Regulations that should be considered in addition to the Artificial Intelligence law continue to exist and continue to have an impact. A fundamental element of compliance is the necessity for transparency. Employers must explicitly communicate the utilization of AI systems in HR operations, encompassing the AI's goal, the data being processed, and the criteria for decision-making. Employees must possess the right to comprehend the mechanisms behind AI-driven judgments, especially in contexts such as hiring or promotions, where biased algorithms may unintentionally opposition specific groups. The EU requires that employees be

afforded the opportunity to contest automated judgments, so instituting a human supervision system to evaluate and amend unjust or erroneous results.

Data privacy is a crucial domain regulated by EU legislation. AI systems in human resources frequently handle sensitive personal information, including resumes, performance metrics, and behavioural data. Under GDPR, enterprises are required to get explicit agreement from employees for data processing and guarantee its secure management. Therefore, companies must establish stringent data protection protocols, including anonymization, encryption, and periodic audits, to secure employee information. Furthermore, EU legislation underscores the necessity of eliminating algorithmic bias, which may result from inadequately constructed AI systems or biased training data. If an AI recruitment tool is trained on historical hiring data that embodies gender or racial biases, it may perpetuate such biases in its suggestions. Organizations must perform regular audits of their AI systems, utilize diverse and representative datasets, and execute fairness assessments to guarantee equal outputs.

Finally, the moral implications of AI in human resources must not be disregarded. The EU's emphasis on "human-centric" AI highlights the necessity of aligning AI applications with fundamental ethical concepts, including respect for human dignity, fairness, and accountability. HR directors must collaborate closely with legal, compliance, and IT teams to guarantee that AI systems are both legally compliant and consistent with business values and employee expectations. By emphasizing openness, equity, and data protection, firms may cultivate trust with their employees and utilize AI carefully to improve HR operations while adhering to EU regulatory requirements.

In conclusion, the introduction of artificial intelligence (AI) into organizational and human resources functions has emerged as a transformative catalyst, offering chances to enhance workflows, improve personnel management, and stimulate creativity. Successful adoption requires a systematic and thorough strategy that exceeds mere technological integration. Fundamental strategies include fostering a culture of adaptability, correcting skill gaps, and ensuring ethical and secure AI

deployment through robust policies and collaborations with IT departments. Furthermore, strict adherence to EU legislation and other regulatory frameworks is essential to guarantee transparency, accountability, and the safeguarding of employee rights, especially with data privacy and algorithmic equity. Gradual implementation, starting with basic activities and progressing to more complex applications, allows organizations to adapt to AI, minimizing resistance and ensuring alignment with corporate objectives. Data protection and trust are critical concerns, underscoring the imperative for transparency and accountability in AI initiatives. As global AI usage and investment rise, companies must emphasize workforce readiness, change management, and the development of AI-related skills in human resources. By merging technology breakthroughs with human-centred methodologies and complying with legal standards, firms can optimize AI to achieve sustainable growth, operational efficiency, and an advantage in a rapidly evolving digital landscape. The message from Gallup, McKinsey, and Gartner is clear: interest has turned into action, but long-lasting benefit only emerges when skills, governance, and culture keep up with tools. That means three promises for HR. First, build competence at scale by creating a tiered curriculum that goes from fluency to mastery, giving people the chance to work on real-world problems. Second, make Responsible AI a part of everyday life by using model registries, transparency notices, fairness and drift monitoring, red-team activities, and easy-to-use employee appeal channels. Third, use AI as a portfolio with clear value hypotheses, human-in-the-loop controls, and outcome metrics (like quality of hire, internal mobility speed, attrition in important roles, fairness deltas, and incident rates) that are reviewed by HR, Legal, IT, and worker representatives in a standing AI Scorecard. When these things come together, pilots become platforms, compliance becomes second nature, and trust grows—both inside the company and with the public. The outcome is not a mechanized HR but an improved one: it's faster because routine tasks are done automatically, fairer because decisions are tracked and can be explained, and more strategic because insights go where they are most useful. In that operational model, AI is not a toy or a risk; it is a controlled system that helps people make better decisions and gives them an edge in an economy that values speed, honesty, and innovation that puts people first.

4.6. Best Practices and Innovations in AI for HR

AI has radically changed the methods by which firms attract, manage, and retain talent in contemporary HR. In addition to automation, AI provides creative tools and methodologies that augment decision-making, enhance efficiency, and create a more inclusive and engaging workplace. This part of the research will focus on the optimum methodologies and innovative strategies for incorporating AI into HR activities, emphasizing practical applications and success narratives from prominent firms. This chapter seeks to offer practical ideas on how AI might resolve current HR concerns while simultaneously creating new avenues for growth and innovation.

IBM's Watsonx signifies a revolutionary progression in the utilization of artificial intelligence (AI) across multiple sectors, especially in Human Resources (HR). Watsonx, an advanced AI platform, integrates machine learning, natural language processing, and data analytics to provide innovative solutions that transform HR activities including recruitment, employee engagement, workforce planning, and performance management. My personal experience with IBM’s Watsonx revealed an impressive overview of its capabilities, conveyed directly through its AI interface. According to Watsonx chatbot (IBM, n.d.), it is a cloud-based artificial intelligence (AI) platform intended to enable businesses and organizations to enhance decision-making, optimize operations, and generate new opportunities. It emphasized its primary functional domains, including Natural Language Processing (NLP), which facilitates the comprehension and interpretation of human language; Machine Learning (ML), which empowers systems to learn and enhance over time; Data Analytics, which reveals insights and patterns from extensive datasets; Automation, which optimizes repetitive tasks; and Decision Support, which provides data-driven recommendations for business strategies. Watsonx highlighted its extensive range, encompassing customer service, marketing, operations, human resources, healthcare, and other sectors, demonstrating its adaptability across many industries.

In terms of HR applications, Watsonx continues to explain its capabilities. Watsonx asserts that its sophisticated AI capabilities may markedly improve multiple facets of Human Resources (HR), enhancing efficiency, accuracy, and decision-making.

Watsonx clarifies that its platform is applicable across essential HR domains, including recruitment, onboarding, talent management, employee experience, and compliance. Watsonx utilizes Natural Language Processing (NLP) in recruitment and hiring to screen resumes, identify premier candidates, analyze job descriptions for necessary skills and qualifications, and apply machine learning algorithms to source candidates from social media and various platforms. Moreover, Watsonx emphasizes its implementation of chatbots to facilitate the automation of interview scheduling. Watsonx asserts that its machine learning technologies facilitate customized onboarding experiences, while AI-driven compliance training guarantees conformity to company regulations. It underscores the application of sentiment analysis to assess employee engagement and pinpoint opportunities for enhancement. Watsonx asserts that predictive analytics in personnel management helps pinpoint high-performing employees, anticipate future performance, and facilitate succession planning. Watsonx elucidates that AI-driven career development solutions assist employees in recognizing career trajectories and acquiring new competencies. Watsonx employs natural language processing to examine comments, machine learning to assess engagement surveys, and artificial intelligence platforms to augment wellness and benefits, hence enhancing employee experience. Furthermore, Watsonx claims to facilitate compliance and risk management by verifying adherence to policies and employing predictive analytics to identify and reduce hazards. Watsonx's assertions highlight its capacity to transform HR procedures, rendering them more data-driven, efficient, and focused on employees.

Another excellent example for the application of AI is Unilever's implementation. Unilever serves as a prime example of how AI-powered recruitment solutions can transform traditional hiring processes. Utilizing innovative technologies, Unilever has effectively diminished hiring duration, enhanced the quality of recruits, and optimized the assessment of over 1.8 million job applications each year across 190 nations. This major endeavour, previously demanding considerable time and resources, has been streamlined using AI-driven advancements.

Notable highlights include Unilever's partnership with Pymetrics to provide an online platform for the evaluation of distant candidates. This platform involves

candidates in a sequence of games to assess their abilities, logic, reasoning, and risk-taking skills, succeeded by video interviews evaluated by machine learning algorithms. The AI assesses candidates' responses through natural language processing and body language analysis, guaranteeing a data-driven and impartial evaluation process. The deployment of these AI technologies has eliminated about 70,000 person-hours previously allocated to manual candidate assessments, illustrating the efficacy and adaptability of AI in recruitment. Unilever's AI-enhanced recruitment process facilitates accelerated and accurate hiring decisions while offering candidates comprehensive feedback on their performance, including areas for enhancement and suggestions for future applications. This method illustrates how AI may augment decision-making in HR through predictive analytics, enhance the precision of candidate evaluations, and reducing biases (Marr, 2021).

AI emerged as a fundamental element of PepsiCo's operations, transforming numerous facets of its business processes and demonstrating its enormous potential across diverse areas. PepsiCo utilizes AI to enhance sustainability practices, advance product development, and optimize supply chain efficiency, hence fostering innovation and operational excellence. PepsiCo employs AI extensively in agriculture and sustainability, assisting farmers in optimizing potato cultivation by evaluating over one million data points, resulting in higher harvests, diminished water consumption, and reduced pesticide application. In product innovation, AI allows the company to anticipate customer trends and swiftly create new items, such as seaweed-based snacks and immunity-enhancing beverages, by monitoring vast quantities of social media postings and online searches. AI is crucial in manufacturing and quality control, demonstrated by the creation of the "perfect" Cheeto through machine learning that dynamically adjusts production processes, hence maintaining uninterrupted consistency and quality. In sales and retail, AI improves inventory management by utilizing smartphone cameras to generate real-time virtual maps of shelves, facilitating customized stocking tactics informed by area preferences and events. PepsiCo is investigating quantum computing to enhance sales routes and significantly improve logistics efficiency.

Furthermore, AI is employed to augment employee productivity by automating monotonous duties, allowing workers to concentrate on more valuable operations.

PepsiCo has established a Digital Academy to train staff in machine learning, robots, cloud computing, and other areas, enabling them to adapt to the changing technology environment. PepsiCo exemplifies the revolutionary capacity of AI by incorporating it throughout a wide range of operations, thereby fostering creativity, sustainability, and efficiency while equipping its staff for a technology-driven future (Artificial Intelligence at PepsiCo, n.d.). PepsiCo is efficiently utilizing AI solutions in the realm of human resources. In Russia, PepsiCo utilized Vera the Robot for the first time to identify and interview people for 250 sales, driving, and factory positions within a two-month period. Vera, created by the Russian company Stafory, is capable of interviewing 1,500 candidates in nine hours, a task that would require humans nine weeks to complete.

Advanced speech recognition software and tools from Amazon, Google, Microsoft, and the Russian internet company Yandex enable Vera to search for and evaluate candidates for professions such as forklift operators, manufacturing workers, and sales personnel. The software can analyse CVs, respond to basic replies, ask follow-up inquiries, and deliver subsequent letters to ascertain whether a prospective candidate possesses the requisite experience for the role. It can also forward a call transcript to a human resources consultant for additional examination. The majority of candidates have exhibited a favourable response while interacting with the robot. Nevertheless, human HR experts shown a certain resistance, leading to the comment that a significant obstacle was "reprogramming individuals" to foster their comfort with the technology (Marr, 2019).

In a nutshell PepsiCo's unique application of AI in human resources underscores its dedication to utilizing technology to improve efficiency, enrich employee experiences, and optimize operations. PepsiCo is establishing a standard for AI integration in HR by employing AI-driven solutions like Vera the Robot to transform recruitment processes and adopting user-friendly digital platforms like as ServiceNow for efficient employee self-service. These improvements enhance HR procedures while empowering employees by minimizing repetitive chores and offering access to state-of-the-art digital tools and training through initiatives such as the Digital Academy. PepsiCo is revolutionizing its HR procedures by integrating AI

capabilities with an emphasis on employee-centric solutions, thereby confirming its status as an innovative corporation ready for a technology-driven future.

As emphasized in the previous chapter, Employee Experience and Engagement of AI in HR, the revolutionary role of AI-driven platforms, such as LinkedIn Learning, in facilitating continuous learning and professional growth is emphasized. These platforms enable employees by providing customized and flexible learning opportunities aligned with personal and professional goals. AI uses machine learning and predictive analytics to look at huge datasets, making learner profiles that are unique to each employee and suggesting courses or seminars that meet their needs and goals. This process guarantees that training is not an overall strategy but rather emphasizes the provision of pertinent and pragmatic learning experiences.

Platforms such as LinkedIn Learning illustrate how AI can transform employee engagement and experience by providing customized, significant, and efficient learning opportunities that advantage both individuals and enterprises (Learn Artificial Intelligence Skills | LinkedIn Learning, n.d.). In the contemporary, swiftly changing workplace, the incorporation of AI into HR workflows is crucial for augmenting productivity, optimizing processes, and boosting employee experiences. These systems not only streamline complex HR tasks but also facilitate strategic decision-making by providing data-driven insights. Utilizing AI, HR departments can concentrate on enhancing employee engagement, refining talent management, and cultivating a more adaptable and responsive staff. This section examines essential platforms that HR managers may employ to effectively incorporate AI into their workflows and enhance organizational success. HiredScore AI for Recruiting, a component of the Workday Talent Acquisition Suite, use responsible AI to enhance recruiting efficiency by automating resume evaluation and candidate shortlisting. This platform interacts effortlessly with various platforms for engagement, recruitment, and communications, facilitating recruiters in effectively identifying suitable personnel at scale. HiredScore utilizes AI to minimize manual labour, improve decision-making, and facilitate contemporary talent acquisition techniques. HiredScore optimizes candidate screening and shortlisting, while Fetcher enhances this process by automating the sourcing and engagement of premium talent,

guaranteeing that recruiters have access to the best candidates from the outset. Fetcher is an AI-driven recruitment solution that automates candidate sourcing and engagement. It employs sophisticated AI technology to identify exceptional talent profiles, hence minimizing the time recruiters dedicate to sifting through databases and job sites. Fetcher facilitates applicant interaction through tailored outreach and offers insights to enhance recruitment strategy. Its connections with ATS, CRM, and email platforms make it a smooth enhancement to HR procedures, conserving time and enhancing hiring results (Fetcher: AI Candidate Sourcing Tools for Recruiters, n.d.).

SafetyCulture is another platform that gathers input to improve engagement and retention. SafetyCulture is an AI-powered platform intended to assist enterprises in administering employee surveys and forecasting attrition. It allows HR departments to gather essential input from employees, providing insights to improve engagement and retention. By recognizing potential attrition risks and addressing them proactively, SafetyCulture assists employers in cultivating a more content and dedicated staff. The user-friendly interface facilitates effortless survey distribution and data acquisition, making it an effective instrument for enhancing workplace culture and employee contentment (SC Training | Mobile Learning Management System, n.d.). Another platform is Deel Engage, which is a performance management solution designed to help organizations foster employee engagement and optimize workforce performance. By combining performance tracking, feedback collection, and employee engagement tools, Deel enables companies to manage and evaluate their teams effectively. Through features like real-time feedback, goal setting, and performance reviews, Deel helps organizations align employee objectives with business goals. Additionally, its integration with global HR and payroll systems ensures seamless management of distributed teams, making it ideal for remote and international workforces (Talent Management Software | Deel Engage, n.d.)

Peoplebox AI is an all-encompassing people management software that enables firms to optimize HR operations and improve employee performance with its many features. It enables comprehensive 360-degree employee evaluations by collecting

feedback from colleagues, supervisors, and subordinates, offering an all-encompassing perspective on performance while promoting transparency and development. The technology utilizes AI to automate resume screening, allowing HR staff to swiftly and effectively find premier applicants, hence conserving time and mitigating bias in the recruitment process. The performance management tools facilitate goal establishment, progress monitoring, and performance evaluations, matching employee objectives with organizational aims to promote ongoing enhancement. Peoplebox AI features a 9-box grid for talent evaluation, assisting HR departments in identifying high-potential individuals, planning career advancement, and making strategic workforce decisions. Furthermore, it streamlines the management of OKRs (Objectives and Key Results), guaranteeing alignment among teams and departments for enhanced results. The platform features employee engagement tools, including surveys and analytics, to assess happiness and deliver actionable insights for enhancing workplace culture and retention. Peoplebox AI incorporates succession planning to identify and cultivate future leaders, merging various HR functions into a unified, AI-driven platform. This facilitates the automation of repetitive tasks, the acquisition of actionable insights, and the execution of data-driven decisions to address the varied requirements of contemporary HR teams (Gupta, 2025).

ChatGPT, GitHub Copilot, and HireVue are the main AI instruments that address general productivity, revolutionizing HR operations via automation and improved decision-making. ChatGPT, an AI conversational tool developed by OpenAI, use natural language processing (NLP) to facilitate the creation of job descriptions, automate candidate communications, address applicant inquiries, and function as a virtual HR assistant for employee frequently asked questions. It facilitates training and development by offering tailored learning recommendations and performing sentiment analysis to assess employee morale and engagement. GitHub Copilot, an AI-driven coding helper, supports HR teams in technical recruitment by generating coding tasks and assessing candidates' technical competencies. It also enhances upskilling and training initiatives by producing code examples and solutions, while assisting in the automation of repetitive HR processes through script development. HireVue, an AI-powered video interviewing and talent evaluation software,

improves candidate screening by analysing video interviews to evaluate skills, personality characteristics, and cultural compatibility. It mitigates unconscious bias in hiring decisions via objective assessments and enhances recruitment efficiency by automating preliminary interview processes. Collectively, these instruments optimize HR procedures, enhance recruitment results, and promote employee advancement.

In conclusion, the incorporation of AI into HR processes has transformed how firms gather, manage, and retain personnel, providing exceptional prospects to improve efficiency, accuracy, and employee experience. The extensive range of AI applications in human resources encompasses recruitment, onboarding, talent management, employee engagement, workforce planning, and compliance. AI technologies like as Watsonx, ChatGPT, GitHub Copilot, and HireVue exemplify the extensive capabilities of AI in automating repetitive operations, providing actionable insights, and facilitating data-driven decision-making. AI enables HR teams to concentrate on strategic goals by providing tailored learning pathways, predictive analytics, sentiment analysis, and bias reduction in hiring, so promoting a more inclusive, adaptive, and employee-centric workplace. As organizations increasingly adopt AI-driven solutions, the future of HR depends on utilizing these technologies to streamline operations, improve employee satisfaction, and foster creativity, thereby guaranteeing that businesses remain competitive and adaptable in a constantly changing digital environment.

CHAPTER 5

CONCLUSION

This thesis has closely analysed the impact of the European Union Artificial Intelligence Act (AI Act) on the application of artificial intelligence in human resource management (HRM). The research has thoroughly examined the legal, organizational, and operational aspects of AI integration, revealing AI's dual influence on HR: it serves as both a catalyst for innovation and efficiency, and a source of legal, ethical, and organizational hazards.

Artificial intelligence has exhibited significant advantages in the human resources department. By automating labor-intensive administrative tasks—such as resume evaluation, onboarding, performance monitoring, and employee inquiries—AI enables HR professionals to refocus their energies on more strategic and innovative activities. It improves productivity, facilitates data-informed decision-making, and permits scalable and uniform execution of HR operations. Predictive analytics and AI-driven engagement solutions enable firms to anticipate attrition, recognize skill deficiencies, and customize employee experiences. These benefits are particularly significant in large or geographically distributed organizations, where conventional HR operations may lack agility and need more resources.

Nonetheless, substantial restrictions and obstacles remain. The application of AI in human resources necessarily entails the processing of sensitive employee information and the formulation of decisions that directly influence individuals' careers and welfare. If such systems are implemented without sufficient monitoring or do not comply with the regulatory standards established in the EU AI Act, they may lead to discriminatory results, lack of transparency in decision-making, and a decline in employee trust. Algorithms developed using biased or inadequate

historical data could reinforce systemic disparities, resulting in the inequitable elimination of candidates or unjustified assessments of performance. Furthermore, an excessive dependence on AI devoid of substantial human oversight might undermine accountability and human judgment—two critical foundations of ethical human resource management. Therefore, to make sure that AI is used in a way that is both ethical and long-lasting, companies should set up internal AI ethics boards, expand AI literacy training for HR personnel, and make frequent algorithmic impact assessments (AIAs) a part of their policies. Integrating these processes into HR governance changes compliance from a reactive task to a strategic benefit that builds trust, openness, and the reputation of the organization. Partnerships with universities and civil society groups can also help with oversight and get the workforce ready for the AI-augmented future faster. A significant danger is the possibility of manipulation or illegal access to sensitive HR data, encompassing compensation details, disciplinary records, and strategic workforce decisions. Without constant monitoring and auditing, AI systems may function in ways that conflict with company values or legal standards. Violations of privacy, insufficient transparency in automated decision-making, and unintentional biases can adversely affect individual employees and subject firms to reputational damages and legal sanctions.

The European Union AI Act provides a systematic and risk-oriented framework that specifically tackles the issues related to the implementation of AI systems, especially in critical domains like employment and human resource management. It classifies AI applications according to their possible danger levels and enforces certain legal responsibilities on high-risk systems, including those utilized in recruitment, performance assessment, and workforce administration. These requirements are intended to function as pragmatic guides for the appropriate deployment of AI. The essential needs include maintaining transparent documentation and meticulous record-keeping, incorporating significant human oversight in decision-making, and implementing stringent data governance policies coupled with rigorous standards for training data. Moreover, enterprises are required to do frequent audits and performance assessments of AI systems to guarantee continuous compliance and responsibility. The Act underscores the necessity of explicitly conveying the goal, scope, and restrictions of AI tools to all pertinent parties. Organizations seeking to

harness the efficiency and scalability of AI while ensuring legal compliance and ethical integrity must adhere to the legislative framework of the EU AI Act, which is both essential and strategic. For firms aiming to leverage AI while maintaining compliance and safeguarding employee welfare, adherence to the AI Act is imperative. Organizations must allocate resources to governance frameworks that guarantee the continual oversight, ethical implementation, and legal conformity of AI systems. This entails interdisciplinary coordination among HR, legal, IT, and ethics teams to guarantee that AI adoption is consistent with company objectives and regulatory standards. The Act creates up a strict compliance framework, but the research shows that there is still a gap in implementation: new technologies are being developed quicker than institutional supervision systems. AI-powered HR tools for hiring, performance reviews, and promotions sometimes becoming more advanced before the rules for compliance within the company do. To close this gap, it requires both clear rules and people who can work across departments. HR people need to learn how to talk about data governance, and legal and IT teams need to understand the moral implications of hiring decisions that focus on people. Without this fluency in many fields, the Act's goals will fail.

The EU AI Act represents a significant advancement in the regulation of the responsible application of artificial intelligence in high-impact sectors, including Human Resource Management. As HR operations increasingly depend on AI to enhance recruiting, manage performance, facilitate decision-making, and customize employee experiences, the necessity for stringent regulatory supervision becomes paramount. Although AI possesses the capacity to significantly improve operational efficiency, mitigate prejudice, and facilitate data-driven talent strategies, its implementation in HR necessitates careful consideration, openness, and human supervision. Improper use or insufficient regulation may result in inequitable treatment, diminished employee trust, and enduring organizational hazards. Consequently, HR departments that strategically align their AI initiatives with the principles and requirements established in the EU AI Act will mitigate legal and ethical risks while enhancing the credibility, inclusivity, and resilience of their workforce systems in the era of algorithmic management. The combination of artificial intelligence and human resource management epitomizes the duality of

digital transformation in Europe. The EU AI Act is a strong basis for balancing efficiency with ethics, but it also shows how hard it is to find the right balance between innovation and regulation. The results of this thesis indicate that the future of HR in the EU will depend on the ability of institutions to develop reliable AI ecosystems characterized by transparency, verifiable accountability, and auditable justice. Aligning AI deployment with the Act is not just an issue of following the rules for businesses; it is also a way to gain strategic credibility in the new digital economy. Policymakers will have to find a way to keep regulations flexible while also protecting people's dignity when algorithms make decisions. In the end, the EU's goal can only work if it can make sure that technology growth stays true to European ideals like fairness, human rights, and social justice. This will turn HR from a place of automation into a place for ethical innovation.

Table 6. Benefits and Risks of AI in HR under the EU AI Act.

Advantages of Using AI in HR (Under the EU AI Act)	Disadvantages and Legal Challenges (Under the EU AI Act)
Optimized recruiting by automating repetitive operations such as CV screening and scheduling.	Risk for algorithmic bias in recruitment and advancement determinations
Improved workforce scheduling with predictive analytics and performance monitoring	Classification of HR-related AI systems as 'high-risk' under the AI Act mandates strict compliance
Accelerated decision-making with data-driven insights on recruitment and personnel advancement	The opacity of AI models constrains explainability and accountability in human resources decisions.
Scalable candidate evaluation with consistent application of criteria	Legal exposure if AI tools process data in violation of GDPR and privacy standards
Enhances diversity monitoring and adherence via quantifiable reporting instruments.	Limited human oversight can lead to unjust or unchallengeable decisions
Advantages of Using AI in HR (Under the EU AI Act)	Disadvantages and Legal Challenges (Under the EU AI Act)
Increased productivity by offloading routine tasks to AI systems	Reputational damage and fines for non-compliance with the AI Act (up to 6% of global turnover)

Table 6. (continued)

Fosters innovation by allowing HR to focus on strategic initiatives	Increased administrative burden to meet documentation, traceability, and auditability requirements
Improves employee self-service and engagement via chatbots and virtual HR agents	Negative impact on candidate experience when AI lacks personalization
Encourages adoption of digital transformation aligned with EU policy objectives	Challenges in cross-border alignment of HR policies due to different national implementations of the Act

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APPENDICES

A. TURKISH SUMMARY / TÜRKÇE ÖZET

Bu tez, Avrupa Birliği Yapay Zekâ Yasası'nın (EU Artificial Intelligence Act) insan kaynakları yönetimi (İKY) üzerindeki etkilerini, yasal düzenlemeler, etik ilkeler, uygulama zorlukları ve stratejik fırsatlar bağlamında incelemektedir. Avrupa Birliği'nin 2024 yılında yürürlüğe giren Yapay Zekâ Yasası, dünyadaki ilk kapsamlı yapay zekâ düzenlemesi olarak yalnızca teknolojik yenilikleri değil, aynı zamanda bireylerin temel hak ve özgürlüklerini korumayı da amaçlamaktadır. Tezin merkezinde, bu yasanın insan kaynakları alanında kullanılan yapay zekâ sistemlerine –özellikle işe alım, performans değerlendirme, çalışan deneyimi ve karar destek süreçlerine– nasıl uygulanacağı, bu süreçlerde ortaya çıkabilecek risklerin nasıl yönetileceği ve kurumların etik-sorumlu bir yapay zekâ kültürünü nasıl inşa edebileceği soruları yer almaktadır.

1. Giriş

Günümüzde yapay zekâ, işletmelerin hemen her sürecine entegre olmuş; üretimden lojistiğe, sağlıktan kamu hizmetlerine kadar çok geniş bir yelpazede karar alma süreçlerini dönüştürmüştür. İnsan kaynakları yönetimi (İKY) de bu dönüşümün merkezinde yer almaktadır. CV tarama, aday eşleştirme, performans ölçümü, çalışan bağlılığı analitiği, kurum içi eğitim ve ödüllendirme sistemleri gibi alanlarda yapay zekâ uygulamaları hem verimliliği artırma hem de stratejik karar alma süreçlerini destekleme potansiyeline sahiptir. Ancak aynı zamanda, bu sistemlerin önyargı (bias), şeffaflık eksikliği, veri gizliliği ihlalleri ve insan denetiminin azalması gibi ciddi riskler taşıdığı da açıktır.

Avrupa Birliği Yapay Zekâ Yasası (AI Act), bu riskleri yönetmek için oluşturulmuş, risk temelli bir düzenleme modeline dayanmaktadır. Yasa, yapay zekâ sistemlerini

dört kategoriye ayırır: kabul edilemez risk, yüksek risk, sınırlı risk ve asgari risk. İnsan kaynakları uygulamaları (örneğin işe alım algoritmaları, performans değerlendirme sistemleri, çalışan izleme yazılımları vb.) doğrudan insanların mesleki yaşamını etkilediği için "yüksek riskli sistemler" olarak tanımlanmıştır. Bu nedenle, bu sistemlerin kullanımında veri yönetimi, insan gözetimi, açıklanabilirlik, adalet ve güvenlik gibi ilkelerin titizlikle uygulanması gerekir.

2. Literatür Taraması ve Kavramsal Çerçeve

Yapay zekâ kavramı tarihsel olarak insan benzeri zekâ üretme fikrinden doğmuş, 20. yüzyılın ortalarından itibaren bilgisayar biliminin gelişimiyle somut bir araştırma alanına dönüşmüştür. Alan Turing'in 1950 tarihli "Computing Machinery and Intelligence" makalesi bu alanın temelini atmıştır. Günümüzde yapay zekâ, makine öğrenmesi, derin öğrenme, doğal dil işleme ve üretken yapay zekâ (Generative AI) gibi alt dallar aracılığıyla hem analitik hem de yaratıcı süreçlerde insan zekâsını destekleyen bir teknolojiye dönüşmüştür. Yapay zekânın iş dünyasına girişi, özellikle 2010'lu yıllarda hız kazanmıştır. Facebook, Amazon, Google ve Netflix gibi şirketler tüketici davranışlarını tahmin eden algoritmalarla pazarlarını dönüştürürken; kamu kurumları, sağlık hizmetleri ve eğitim sektörleri de yapay zekâ tabanlı karar destek sistemlerine yönelmiştir. Bununla birlikte, etik kaygılar, veri gizliliği ihlalleri ve algoritmik önyargılar giderek artan biçimde gündeme gelmiştir. Bu durum, AB'nin 2018'de yürürlüğe koyduğu Genel Veri Koruma Tüzüğü (GDPR) ile başlayan bir dizi dijital politika reformunun, 2024 yılında Yapay Zekâ Yasası ile genişletilmesine yol açmıştır.

3. AB Yapay Zekâ Yasası: Hukuki Temeller ve Uygulama Alanı

Yapay Zekâ Yasası, AB'nin dijital dönüşüm stratejisinin en önemli bileşenlerinden biridir. Yasa, yapay zekâ uygulamalarını etkilerine göre sınıflandırarak, her bir kategoriye özgü yükümlülükler getirmektedir:

Kabul edilemez riskli sistemler: İnsan davranışını manipüle eden, duygu analizi yapan, sosyal puanlama (social scoring) sistemleri veya iş yerinde yüz tanıma gibi uygulamalardır. Bu sistemlerin kullanımı tamamen yasaktır.

Yüksek riskli sistemler: İnsan kaynakları, eğitim, sağlık, adalet veya güvenlik gibi insan yaşamını doğrudan etkileyen alanlarda kullanılan AI sistemleridir. Bu sistemlerde açıklanabilirlik, denetlenebilirlik, tarafsızlık, veri kalitesi, insan gözetimi ve siber güvenlik zorunludur.

Sınırlı riskli sistemler: Kullanıcı bilgilendirmesi ve şeffaflık gerektirir, ancak kapsamlı denetim gerekmez.

Asgari riskli sistemler: Chatbot'lar, otomatik çeviri veya öneri sistemleri gibi uygulamalardır; özel bir yasal yükümlülük taşımazlar.

Yasa'nın 5. maddesi, insan onurunu, eşitliği, mahremiyeti veya güvenliği tehlikeye atan uygulamaları açıkça yasaklamaktadır. 9–15. maddeler ise yüksek riskli sistemlerde uyulması gereken güvenlik, veri yönetişimi ve insan denetimi standartlarını belirler. 29. madde ise şirketlere risk yönetimi ve olay raporlama yükümlülükleri getirir.

İnsan kaynakları bağlamında bu maddeler, işe alım algoritmalarının tarafsız olmasını, çalışan verilerinin yalnızca belirli ve meşru amaçlarla toplanmasını, karar süreçlerinde insan gözetiminin zorunlu olmasını ve çalışanların yapay zekâ destekli kararlara itiraz edebilmesini güvence altına almaktadır.

4. İnsan Kaynaklarında Yapay Zekânın Rolü

Yapay zekânın insan kaynakları yönetiminde en yoğun kullanıldığı alanlar dört başlıkta toplanabilir: işe alım ve aday değerlendirme, performans yönetimi, çalışan deneyimi ve etkileşimi, karar destek sistemleri.

AI destekli CV tarama ve aday eşleştirme sistemleri, başvurular arasındaki uygunluğu hızla analiz edebilir, işe alım süresini kısaltabilir ve objektif kriterlere dayalı kararlar alınmasını sağlayabilir. Ancak algoritmaların eğitim verilerinde tarihsel cinsiyet veya ırk önyargıları bulunması durumunda ayrımcılık riski ortaya çıkmaktadır. Bu nedenle, AI Act uyarınca işe alım algoritmalarının bias testlerinden

geçmesi ve her olumsuz kararın insan denetimiyle onaylanması zorunludur. AI tabanlı performans ölçüm sistemleri, çalışan verilerini analiz ederek verimliliği artırabilir; ancak aşırı gözetim (surveillance) çalışan psikolojisi ve motivasyonu üzerinde olumsuz etki yaratabilir. Bu noktada yasa, çalışan mahremiyetini korumak amacıyla "veri minimizasyonu" ve "amaç sınırlaması" ilkelerini öne çıkarmaktadır. Yapay zekâ destekli öğrenme platformları ve sanal asistanlar, kişiselleştirilmiş eğitim fırsatları sunar ve çalışan bağlılığını güçlendirir. Ancak çalışan verilerinin güvenli şekilde saklanması, kişisel onam alınması ve verilerin yalnızca tanımlanmış hedefler doğrultusunda kullanılması zorunludur. AI destekli karar mekanizmaları, terfi, disiplin, ödüllendirme gibi süreçlerde hız ve verimlilik sağlar. Fakat algoritmik kararların açıklanabilirliği ("explainability") sağlanmadığında, kararın gerekçesi çalışan tarafından anlaşılamaz. Bu nedenle yasa, her otomatik kararın ardından çalışanlara itiraz ve insan incelemesi hakkı tanınmasını zorunlu kılar.

5. Etik, Hukuki ve Uygulama Zorlukları

Yapay zekâ uygulamaları yalnızca teknik değil, aynı zamanda etik bir meseledir. AI Act, insan-merkezli yapay zekâ anlayışını benimseyerek, sistemlerin insan onuru, adalet, şeffaflık ve hesap verebilirlik ilkeleri çerçevesinde tasarlanmasını şart koşar.

İnsan kaynakları bağlamında öne çıkan etik sorunlar şunlardır:

Veri Gizliliği ve Güvenliği: Çalışan verilerinin korunması ve yalnızca gerekli olanın işlenmesi.

Algoritmik Önyargı: Tarihsel verilerdeki cinsiyet, yaş veya etnik önyargıların sistemlere yansıması.

Açıklanabilirlik Eksikliği: Yapay zekânın karar süreçlerinin "kara kutu" olması.

İnsan Denetiminin Azalması: Tam otomatik kararların çalışanlar üzerinde hakkaniyetsiz sonuçlar doğurması.

Bu sorunlara karşılık, kurumlar içinde etik komiteler, AI gözetim kurulları, veri koruma görevlileri (DPO) ve şeffaflık politikaları oluşturulması önerilmektedir.

Ayrıca, çalışanların yapay zekâ sistemleri hakkında bilgilendirilmesi, gönüllü katılım esaslarının güçlendirilmesi ve sürekli AI okuryazarlığı eğitimlerinin verilmesi gerekmektedir.

6. AB'de Uygulama Stratejileri ve Güncel Eğilimler

Gallup (2024), McKinsey (2023) ve Gartner (2024) araştırmaları, Avrupa'daki insan kaynakları yöneticilerinin %70'inin yapay zekâ sistemlerini pilot düzeyde denemeye başladığını göstermektedir. 2023–2024 arasında AI tabanlı İK projeleri iki kat artmış; özellikle üretken yapay zekâ (GenAI) uygulamaları (ör. Chatbot'lar, içerik üretimi, iş tanımı yazma) hızla yayılmıştır.

Ancak bu hızlı büyüme, yapay zekâ uygulamalarının yüzeysel olarak bilindiğinin fark edilmesine sebebiyet vermiştir. Birçok kurumda İK profesyonellerinin veri analitiği ve AI okuryazarlığı becerileri yetersiz kalmakta, bu da düzenlemelere uyumu zorlaştırmaktadır. Çözüm olarak, kurumların AI yetkinlik haritaları oluşturması, çapraz eğitim programları düzenlemesi ve AI projelerinde hukuk, BT ve İK birimlerinin ortak çalışması önerilmektedir.

Clifford Chance (2024) ve Shani Jay (AIHR, 2025) gibi kurumlar, AI'nin güvenli entegrasyonu için aşamalı bir strateji önermektedir:

- Düşük riskli pilot projelerle başlamak,
- Veri ve etik kontrolleri oturtmak,
- AI kullanım politikalarını yazılı hale getirmek,
- Yüksek riskli sistemlerde düzenli etki analizleri (AIA/DPIA) yapmak,
- Yönetim kademesinde farkındalık ve denetim mekanizmaları kurmak.

7. Bulgular ve Değerlendirme

Tezin temel bulguları üç ana noktada toplanmaktadır:

- Yapay zekâ, insan kaynaklarında verimlilik ve doğruluk artışı sağlar ancak bu faydalar yalnızca düzenli ve şeffaf kullanım koşullarında geçerlidir.

- Yasal uyum eksikliği, etik ihlaller ve düşük farkındalık yapay zekânın uzun vadeli sürdürülebilirliğini tehdit etmektedir.
- EU AI Act, sorumlu yapay zekâ için güçlü bir çerçeve sunar, ancak kurumların bu ilkeleri operasyonel düzeyde uygulayabilmesi için iç mekanizmalarını dönüştürmesi gerekir.

8. Sonuç ve Öneriler

Bu tez, Avrupa Birliği'nin Yapay Zekâ Yasası'nı yalnızca bir hukuk metni olarak değil, aynı zamanda etik bir dönüşüm aracı olarak ele almıştır. Yasa, insan kaynaklarında kullanılan yapay zekâ sistemlerinin şeffaf, adil ve hesap verebilir olmasını zorunlu kılmaktadır.

- Gelecekte başarılı bir uygulama için aşağıdaki stratejiler önerilmektedir:
- Kurum içi AI etik kurulları ve AI sorumluluk politikaları oluşturulmalıdır.
- İK uzmanlarına yönelik AI okuryazarlığı ve veri farkındalığı eğitimleri düzenlenmelidir.
- Algoritmik etki değerlendirmesi (AIA) ve düzenli denetim süreçleri yerleştirilmelidir.
- AI uygulamaları, GDPR, DSA ve diğer AB yasalarıyla birlikte ele alınmalı, bütüncül uyum mekanizmaları kurulmalıdır.
- Çalışanlar karar süreçlerine dahil edilmeli, şeffaflık ve katılım esas alınmalıdır.

Sonuç olarak, Avrupa Birliği Yapay Zekâ Yasası, dijital çağın insan kaynakları yönetiminde etik, güvenlik ve verimlilik dengesini kurmak için küresel ölçekte örnek bir model sunmaktadır. Ancak bu çerçevenin başarısı, yalnızca yasanın varlığına değil, kurumların bu yasayı içselleştirip kültürel bir dönüşüme dönüştürebilmesine bağlıdır.

Yapay zekânın insan kaynakları yönetiminde doğru şekilde kullanılması, hem çalışan refahını hem de kurumsal verimliliği artıracak; Avrupa'nın "insan merkezli dijital dönüşüm" vizyonunu gerçeğe dönüştürecektir.

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