Master thesis: "AI in Human Resources Management in the Greek Public Sector"

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Abbreviations

AI (Artificial Intelligence)

ASEP (Supreme Council for Personnel Selection)

CV (Curriculum Vitae)

DESI (Digital Economy and Society Index)

EEATAN(National Supervisory Authority for AI)

EFQM (European Foundation for Quality Management)

EKDDA (National Center for Public Administration and Local government)

EU (European Union)

GenAI(Generative AI)

GDPR (General Data Protection Regulation)

HRM (Human Resource Management)

HR (Human Resources)

IMF (International Monetary Fund)

ISO (International Organization for Standardization)

ML (Machine Learning)

NLP (Natural Language Processing)

OECD (Organization for Economic Cooperation and Development)

TLoD(Three Lines of Defense)

UNESCO (United Nations Educational, Scientific and Cultural Organization)

Abstract

The integration of AI in Human Resources Management within the Greek Public Sector has the potential to address chronic inefficiencies, enhance fairness, and modernize administrative processes. This thesis examines the feasibility of AI implementation in HRM by analyzing the sector's traditional challenges, including outdated recruitment systems, skills mismatches, and bureaucratic processes. By leveraging AI technologies, the Greek public sector can streamline workflows, reduce biases, and make data-driven decisions that align with modern governance goals. However, issues such as data privacy, algorithmic biases, resistance to change, and technological limitations must be addressed through modernizing regulatory frameworks, upgrading infrastructure, and achieving stakeholder engagement. This study concludes that while integrating AI in HRM is complex, it offers transformative opportunities to enhance efficiency and equity in public administration both for the public servant and for decision-makers. The findings highlight the need for a balanced approach that respects ethical principles, ensures transparency, and invests in both human and technological resources for successful implementation.

Key words: AI in HRM, HRM in the Greek Public Sector, Ethical considerations, efficiency and fairness in the public sector, workforce dynamics, SWOT analysis for implementing AI in HRM in the Greek Public Sector

1.Introduction

This thesis examines the integration of Artificial Intelligence (AI) into Human Resource Management within the Greek Public Sector. By examining the challenges, opportunities, and practical applications of AI, the study aims to shed light on how this technology could address long-standing issues in public administration.

In the first chapter, we examine the major challenges in HRM within the Greek public sector. These include outdated recruitment processes, mismatched skills, and limited career development opportunities. It also explains the research approach and the thesis structure, providing a roadmap for what follows.

In the second chapter, we refer to the legal framework that governs AI implementation in Greece, focusing on key regulations like GDPR and the AI Act. It discusses how these laws impact HRM, especially in terms of protecting data privacy, ensuring transparency, and maintaining accountability. The chapter emphasizes the importance of aligning AI adoption with both European and Greek legal standards to ensure ethical usage.

In the third chapter, the focus shifts to how AI can be applied specifically to HRM in the Greek public sector. The chapter dives into the opportunities AI presents—from streamlining recruitment to enhancing workforce planning—and addresses potential challenges, such as ethical concerns and algorithmic bias. Examples from other countries are included to showcase how similar obstacles have been tackled successfully.

In the fourth chapter, we examine case studies of potential AI implementation on HRM, coming from other public sectors as well as from HRM trends provided from worldwide private companies. In this chapter we feature a SWOT analysis of AI integration in the Greek public sector, along with case studies such as South Africa's potential experience with AI in public administration. The discussion also highlights how AI can enhance transparency, accountability, and operational efficiency.

Finally, in the fifth chapter we summarize the findings and propose a plan for implementing AI in HRM. It emphasizes the need to address systemic issues, invest in infrastructure, and engage stakeholders to ensure AI adoption is both effective and equitable. Future research

directions are also proposed to deepen understanding of AI's long-term impact on workforce dynamics and organizational culture.

1.1 Research problem

Implementation of AI in Human Resources Management (HRM) in the Greek Public Sector is rather a new field of study. Following the law 4961/2022 regulating the upcoming technologies, such as AI both in the private and public sector, a number of mandatory general rules reducing vulnerability of human rights is implemented from August 2024, foreseeing a transitional period of two years. Before that no AI application has ever been used in human resources management in the Greek Public Sector, but it is assumed that after the implementation of the law many attempts are to be made given state officials' claims in the Media. Given the current state of affairs this thesis is conducted under the research question "Can Artificial Intelligence (AI) be effectively integrated into Human Resources Management (HRM) within the Greek Public Sector to improve efficiency and increase fairness?"

1.2. Challenges in HRM in the Greek Public Sector

According to HRM theory, there are seven responsibilities of which the relevant department (Administrative or Personnel Department) is accountable for: 1) supply and demand management 2) recruitment 3) education and upskilling of the employees 4) evaluation 5) payment policy 6) health and safety issues at the workplace 7) employment relations. (Wolfgang Mayrhofer, 2021) Unfortunately, it has diachronically been reported by various national and international organizations such as OECD, considering the Greek Public Sector's efficiency, that HRM faces many challenges.

More specifically, regarding supply and demand management and recruitment, a yearly programming is conducted by the Cabinet, according to Law 4622/2019 based on the requests that the Public Services report. While the procedure has facilitated and speeded up recruitment there is a great delay in publicizing the needs of the services in personnel and of the selection process from the Supreme Council for Civil Personnel Selection. Recently, implementation of Law 4765/2021, considering recruitment methods, has maintained bureaucratic and slow decision-making processes, hindering innovation and flexibility in HR practices.

Education and upskilling of the personnel pose another great challenge for the Greek Public Sector. Two main reasons lead to poor education and lack of modern skills for Greek Public

servants. The first one is workforce aging, which leads to limited willingness for knowledge transfer and high percentages of retirement, urging for younger workers recruitment to fill the gaps. (Rossidis Ioannis, 2018) Considerable gaps in workforce are also the main reason why public servants are not allowed by their supervisors to attain training courses provided by EKDDA and its department Institute of Training. Special emphasis should also be given to combatting the digital skills gap which according to DESI index is high in comparison with the EU average and could lead to digital divide. The second one is talent retainment, due to lower salaries compared to the private sector, limited career progression opportunities and a lack of performance-based incentives.

Considering evaluation, an alternative to the traditional method of evaluation reports according to the present Law 4940/2022 which is not fully implemented yet, HRM in the Greek Public Sector utilizes best practices from Quality Management, such as the "Common Evaluation Framework". Quality Management in general, is a total of actions enhancing resources management so that every participant (both public servants and citizens) is satisfied. It is also a dynamic process aiming to improving public products and services. More specifically, some Greek public organizations apply the given self-assessment tool which was inspired by the EFQM Excellence Standard. The criteria that are taken into consideration are 1) leadership, 2) human resources,3) strategy and planning,4) collaborations and resources ,5) procedures,6) results on citizens 7) results on human resources 8) results on society and 9) main performance results. (Gogalis, 2023)

Although provisioned the framework sought limited use. It is estimated that in the year 2007-2018 only 27 organizations adopted the framework, which was adequately accepted by the staff due to the acquaintance of the Greek Public Administration to programmatic management and targeting though measuring indicators. Some reasons explaining its limited use are the recent financial crisis and budgetary constraints which led to the downgrade of HRM in the Greek Public Sector, resistance to change, lack of implementation of voted reforms, and the fact that important decisions for the organizations function are taken by the political system. (Gogalis, 2023)

Payment policy, health and safety issues at the workplace and employment relations have all been negatively affected by economic constraints. Imposed austerity measures during the financial crisis of 2008 and conditionalities of the Memorandums Of Understanding resulted in budget cuts for all public services and a freeze in public sector hiring. This has resulted in staff shortages, increased workloads, and decreased morale among employees. (Ladi, 2014)

Finally, political interference to HRM policy cannot be overlooked, given the constant change in HRM and recruitment regulations (Rossidis Ioannis, 2018), a fact rendering career progressing opportunities under specific rules unachievable, hindering the rule of law constitutional principle. Indicatively the law regulating promotion to responsibility positions, currently 4670/2020, has seen 6 alterations between 2006 and 2020.

1.3 Methodology and Structure of the Thesis

This thesis constitutes a bibliographic research and includes an analysis of reports using keyword searches such as: “AI implementation to HRM”, “AI in the Public Sector”, “Greek Public Sector and AI”, “HRM in the Greek Public Sector”. This method was chosen, given the absence of AI implementation in HRM in the Greek Public Sector, the relatively brief implementation of Law 4961/2022 and the AI Act, and the limited quantitative data available. ChaGPT and Consensus AI app where also used and their contribution is described in our Anex.

2. The legal aspect

As Greece constitutes a member-state of the EU, European law among Greek law play an important role in regulating AI implementation in the Greek Public Sector. Besides the classification of European law as superior to the national one , according to the theory of the hierarchy of legal origin digital governance and implementation of new technologies was first regulated by the EU.

Following a chronological order, the first legal framework regulating data protection across the EU was GDPR (Regulation (EU)2016/679) (M. SCHULZ, 2016). By nature, HRM necessitates the processing of personal data such as employee records, performance evaluations, and recruitment data. There are several articles affecting HRM even though they have seen limited use in the Greek Public Sector. Under GDPR, AI systems must adhere to principles such as lawfulness, fairness and transparency (article 5). According to this, employees of both the private and the public sector should be informed about how their data are being used by AI, especially when decisions such as hiring, promotion and dismissal are based on these data.

Furthermore, the data collected should only be used for legitimate and specific purposes according to the purpose limitation principle (article 5). Employee's data should not be used beyond what they have consented to, such as commercial reasons. Under the same article another principle of data protection is data minimization. AI systems must avoid excessive data collection, ensuring that the amount of the demanded data is limited to what is essential for specific HRM tasks.

GDPR grants employees with another set of fundamental rights such the ones that generate from recognizing employees as data subjects. According to that employees have the right to access their personal data, correct inaccuracies, object to automated decisions and request explanations. AI systems used in HRM must be designed in a way that allows for human intervention where needed, and employees should have the ability to challenge decisions made by AI. A more specific case is regulated in article 22, according to which when AI systems influence HR processes (such as hiring) GDPR establishes the right not to be subjected to decisions based solely on automated processes without meaningful human intervention.

The GDPR Regulation was implemented in the Greek legal order by the law 4624/2019, specifying additional provisions relevant to public sector applications of AI in HRM. It provides further safeguards for processing sensitive personal data, such as health or ethnic background. Public authorities are also mandated to perform data protection impact

assessments (DPIAS) when deploying AI systems that significantly affect employee rights, ensuring compliance with data protection principles at every stage. (Sioufas, 2024)

While GDPR regulated the data subject's rights, emerging technologies and especially AI weren't mentioned in the Regulation's body. This reason along with the growing AI application to a wide number of tasks both in the private and public sector, as well as in everyday life, urged the need for its regulation. The AI Act aimed to cover this need.

The AI Act which was adopted in 13 March 2024, created a regulatory framework for AI in the EU, focusing on systems classified as high-risk, including those used in HRM. Under the AI Act , AI systems in HRM must undergo risk assessments to prevent discrimination and bias. This can be especially relevant in recruitment, performance evaluations and promotions. On top of that, it introduces the principle of human oversight, which ensures that AI systems cannot autonomously make decisions that affect employees without the possibility of human review. In HRM this application is crucial where employee's rights or career paths are affected. Additionally, the AI Act complements GDPR by provisioning obligations specific to AI such as conducting algorithmic impact assessments. Applying this provision to the public sector, it could mean that public sector organizations will need to put in place accountability mechanisms to track the performance of AI systems and ensure they are functioning lawfully. (Barezzani, 2024)

Regarding the integration of AI in the public sector, Greek Law 4961/2022[1] titled "Emerging Information and Communication Technologies, Strengthening Digital Governance and Other Provisions" was recently enacted. The law regulates the implementation of new technologies such as AI into the Greek public and private sectors, while ensuring legal safeguards for their ethical and transparent use. For the purposes of our research only relevant to the present thesis parts of the law will be mentioned. One area of regulation is of course AI employment in the public sector for decision-making or decision support, provided there are adequate safeguards to protect the rights and freedoms of individuals affected by AI-generated decisions. Requirements for algorithmic impact assessments and provisions on transparency, accountability and fairness are also included.

Relatively to GDPR in AI Act the principle of transparency is further enhanced because the criteria that led to the algorithmic impacts are publicly provided. Information as: a) the time

[1] https://www.kodiko.gr/nomothesia/document/810877/nomos-4961-2022

when the system starts to operate b) the operational capabilities and technical characteristics of the system c) the categories of decisions taken or supported by the system d) the performance of an algorithmic impact assessment. On top of that public organizations are responsible that the decision based on an AI system affecting a legal or natural entity was based in an understandable and easily accessible form. Complaints about the system's transparency are handled by the National Authority for Transparency (ΕΑΔ). (Sioufas, 2024)

In summary, the legal framework governing AI in HRM in the Greek Public Sector combines both the GDPR's data protection rules with Greek national laws and the recent AI Act. The Public Sector must ensure that AI systems are compliant with these laws, focusing on transparency, fairness and human oversight to protect employee rights.

2.1 The Greek HRM Administrative Law

There is not such a thing as HRM in the Greek Public Sector, but Laws regulating staff-related procedures such as recruitment, rights and responsibilities coming from being a public servant, evaluation policy related to promotions, payment policy and mobility (a process relevant to rotation). Of course, HRM principles constitute a characteristic of the private sector, that the public sector has partially and tailored to its unique cause-protecting the public interest-implemented during the New Public Management era. Today, due to budgetary constraints, evidence-based policy making stemming from rapid technological changes and the widening of the states' activities, the public sector is forced to balance the need between fairness and efficiency.

Recruitment in the Greek Public Sector is basically regulated under Law 4765/2021[2], according to which in order to be employed in the public sector one must participate to yearly written competitions. ASEP (Supreme Council for Civil Personnel Selection) is the authority responsible for ensuring public sector hiring adheres to legal standards, an independent authority secured by the Greek constitution in article 103.

Among other responsibilities ASEP, established under Law 2190/1994, oversees the recruitment process, which consists of the following steps: a) public announcement, b) submission of applications, c) examinations and evaluation, d) merit lists, e) appointments. In order to increase transparency and combat meritocracy the Greek Constitution provisions that vacancies in the Public Sector are pronounced publicly through ASEP's platform, as well as in other public channels. The announcement includes general and special job descriptions, eligibility criteria and the application process. The candidates who are interested submit their applications in ASEP's platform, accompanied by the demanded documentation such as degrees, certifications and relevant working experience. The aforementioned process is expected to be the only method for covering vacancies in the Greek Public Sector, given the implementation of Law 4765/2021 which fortifies a panhellenic written competition.

In the case of the implementation of the written competition system, applicants participate in written competitions, testing their knowledge, skills and qualifications. Based on the examination results and other criteria, ASEP creates a merit list, ranking candidates according to their scores. Finally, candidates who are ranked highest are offered positions. Exceptions to

[2] https://www.kodiko.gr/nomothesia/document/665199/nomos-4765-2021

this system constitute special categories of employees such as people with disabilities who are entitled to a number of reserved positions to promote equal opportunities and short-term contracts which cover short-term projects or urgent needs.

Recruitment process can be subjected to judicial review after appeals from candidates who believe the recruitment process was unfair or biased to the administrative courts. This ensures that the entire process remains subject to legal scrutiny and accountability. This same process can also be seen as a barrier to quick cover of the Public Service's growing needs, especially after the financial crisis of 2008 and the massive retirements. On top of that, the process described above has been digitalized under Law 4807/2021[3] as applications, merit lists and other recruitment-related procedures are increasingly managed online. ASEP's digital platform allows candidates to track their application status and receive updates in real-time.

Crucial to the Greek Public Administration's function is the selection of executive positions, a term used for promotions to a higher level in the administrative hierarchy. Promotions are held through a different procedure responsible for creating two types of personnel: the common employee and the supervisors of every level. According to Law 4369/2016 which was amended from Law 4674/2020, the criteria under which the selection of supervisors takes place, are candidates' formal qualifications, their work experience, the average grade of the two previous evaluations and the score of the structured interview. The criteria have different weightings depending on the level of the organizational unit of the level of the position of responsibility to be filled. There are three main types of positions of responsibility, each one selected from different councils, all consisting of public servants and more specialized personnel, such as representatives from ASEP or EKDDA. For the selection of Head for the position of Directorate General, responsible is the Special Selection Board for Heads of Administration (SSCEO), with the exception of Local Authorities of the first degree. For the selection of Heads of Directorate competent are the Selection Boards for Heads of Administration (SSCs), which are set up in each institution. For the selection of Heads of Department, the competent bodies shall be the Staff Councils of the institutions.

With the amendment of 2020 the competition for the organizational unit at the level of General Directorate level becomes an interministerial competition, while for the other organizational units it is held within the institution. For the selection of Heads of organizational units four criteria will be taken into account: formal, educational and professional qualifications

[3] https://www.kodiko.gr/nomothesia/document/726080/nomos-4807-2021

professional training, work experience and the exercise of responsibility, the scores of the evaluation reports over the last three years and the scores of the interview.

For all the above Councils authorized to select on the promotions of a number of candidates, competing for an executive position, which is also accompanied by a monthly raise in the employee's salary, a possible AI implementation could lead to serious changes in the current system. Such decisions made by AI algorithms lack explainability and could lead to mistrust or resistance to this change. Another key implication is the data on which the AI algorithm is trained and to avoid perpetuating bias on historical inequalities. The available data, provided by the Greek Public Sector's Human Resources Registry can provide the data on which the algorithm can be trained but first they need to be classified and analyzed which is another process, not very popular in the Public Service. Nevertheless, one crucial benefit this application could have is transparency achievement and meritocracy consolidation, given the tradition of clientelism in promotions in the Greek Public Sector as well as political interference. (Koskina Aikaterini, 2008) On top of that, bureaucratic traditions emphasizing hierarchy, seniority, and education as determinants of career progression despite supported by the Law could be challenged, given the introduction of a new tool, which an easier detect certain soft skills that are not necessarily linked to formal education and seniority.

Once employed to the public service, there are certain rights and responsibilities that regulate our actions outlined by the Civil Service Code (Law 3528/2007) which is currently under revision. The Greek Civil Service Code serves as the primary legal framework governing public sector employment ensuring it operates under principles of meritocracy, accountability and transparency. Important provisions include a merit-based recruitment method, job security and employment rights, promotions and career advancement, the disciplinary framework, basic rights and obligations, performance evaluation, leaves and benefits, dispute resolution and the code of conduct. (Κώδικας Κατάστασης Δημοσίων Πολιτικών Διοικητικών Υπαλλήλων και Υπαλλήλων ΝΠΔΔ, n.d.)

A domain regulated by the Civil Service Code is the recruitment process which has previously been analyzed. Recruitment comes with the most representative right given to public servants: permanence, which means they can only be dismissed for specific reasons defined in the law, such as serious misconduct or failure to perform duties. This job security was designed to protect civil servants from political interference or arbitrary dismissal. Besides permanence, there are a number of supplementary rights a public servant possesses, including the right to

fair treatment, continuous training, and a healthy work environment. In return, they are obligated to serve the public interest, maintain confidentiality when required, and perform their duties diligently.

In another area of HRM, that of promotions and evaluation, the Civil Service Code is supplemented by the relevant laws. More specifically, the evaluation process, a process necessary both for the function of the public service and for promotions, as good evaluation grades are a precondition to applying to positions of responsibility, is regulated by Law 4940/2022. The current law on evaluation aims at achieving target-setting, an indicator that wasn't evaluated on the previous Law 4369/2016, which is now linked to the Ministries' Action Plans. It also integrates the institution of a Human Resources Advisor, and a unified skills framework, including nine soft skills: Orientation to the Citizen, Teamwork, Adaptability, Orientation to Results, Organization and Planning, Problem- Solving and Creativity, Professionalism and Integrity, Knowledge Management, Leadership. At this point, not every Ministries' Action Plan targets have been integrated into the units' objectives, rendering this evaluation criteria inactive. (Passas and Stranis, 2023)

According to article 23 of the given law there is a link between target-setting and payment policy: the civil servants who achieve the provisioned targets of the Unified Government Policy Plan receive productivity-based bonuses. Unfortunately, this provision has not been universally implemented and a limited number of ministries and services have achieved target-setting. A common problem faced by most services is the inability to link the Ministries' Action Plan targets to those of the relevant service and the political unwillingness to specialize and approve them for many reasons.

Regardless of the achievement of the targets, payment policy in the Greek Public sector is regulated under Law 4354/2015[4] in a unified wage scale designed to ensure fairness and transparency. According to this, public servants are classified by pay scales based on their educational qualifications and professional experience. Namely, PE (University Degree Holders), TE (Technological Education Degree Holders), DE (Secondary Education Degree Holders), YE (Compulsory Education Degree Holders). Besides this basic salary public sector employees receive various allowances such as family allowances, position of responsibility allowances, for those in managerial roles, special allowances and performance related bonuses which were described in Law 4940/2022. Unfortunately, during the financial crisis, a severe

[4] https://www.kodiko.gr/nomothesia/document/139067/nomos-4354-2015

cut was implemented in the Greek Public Sector due to the Memorandums of Understanding. However, given the recent rules of the Growth and Stability Pact, the country's adjustment to wealthy macroeconomic indicators is evaluated by net primary expenditure, rendering an increase in expenses almost infeasible.

Another key function of HRM is rotation. While in the Greek Public Sector there is not such a thing as rotation, a similar and very popular among public servants procedure is mobility, regulated under Law 4440/2016 amended by 4674/2020. Mobility originated from the financial crisis times and was primarily seen as a tool to reduce the number of public servants, while it was noted by the OECD as a tool to combat the public sector's human resources misallocation. Mobility serves as a means of better human resources management by creating a Unified Mobility System allowing the transfer of personnel where most needed based on demand. It is a voluntary system enabling civil servants to express interest in transferring to positions in other public services. The declaration of participation in the procedure is being supported by a digital platform "apografi.gov.gr", allowing employees to apply for positions that match their qualifications and preferences creating an open and merit-based process. The process for moving employees is standardized and the three most suitable applicants are being evaluated by a three-party independent committee of the receiving department. The procedure also provisions permanent movement and temporary transfers to address urgent staffing needs in critical services. (Passas and Stranis, 2023)

The system's most dominant criticism is it cannot fill the growing number of vacancies after the massive staff reduction implied by the Memorandums of Understanding resulting in understaffing of critical services such as hospitals due to its voluntary character. Another drawback is that because of the aforementioned understaffing a great number of services such as e-Efka and the Ministry of Health are excepted from the mobility process as the law provisions certain percentages of staff in order to participate, otherwise the service would remain severely understaffed. The problem with this exception is that public servants serving in these positions are not allowed to better match their qualifications and preferences, maintaining the sense of mobility being perceived as a privilege. Nevertheless, mobility is a modernized policy tool, consolidated in technological infrastructure (Digital Organigramme), that enhances transparency and predictability. (Spanou, 2019)

2.2 Regulatory policy proposals

According to the Greek Special Secretariat of Foresight of the Presidency of the Government, following the principles of Future Studies and Strategic Foresight, a field in which the Greek state shall adapt in order to prepare for its transition to the AI era, is protection of the Labor Law from the use of AI in the workplace. In particular, according to the International Monetary Fund (IMF) 60% of jobs in developed economies, most exposed to AI, are expected to experience its effects and the public services could not constitute an exception. This is the reason why national legislation must comply with the requirements of the AI Act, which covers various applications of AI in the workplace and describes clear frameworks and oversight mechanisms for the use of AI systems, with a view to protecting the rights of workers' rights and to establish a clear regulatory environment for the development and implementation of AI. (Συμβουλευτική Επιτροπή για την Τεχνητή Νοημοσύνη, 2024)

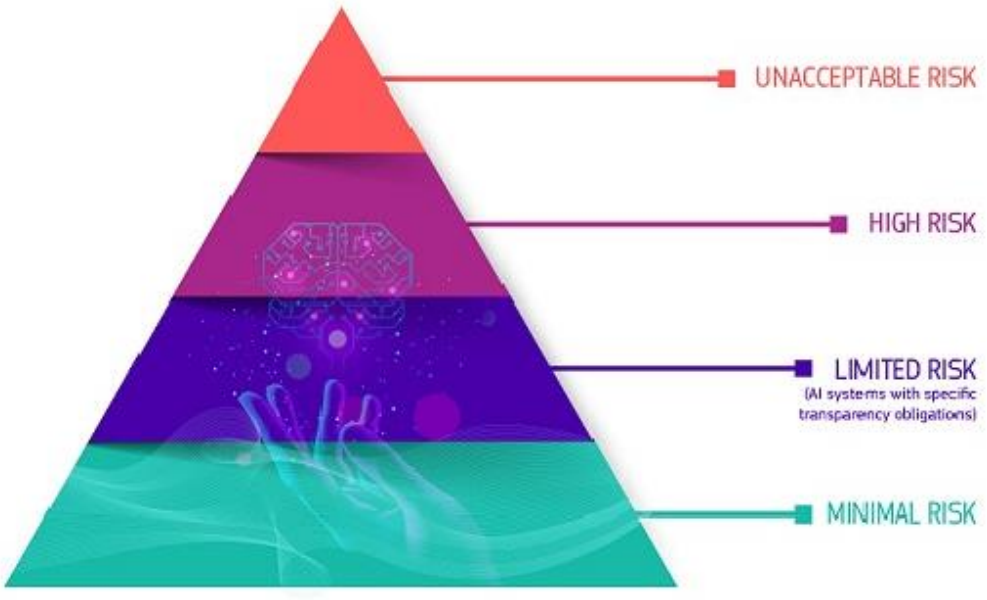


Figure 1 The AI Act introducing 4 levels of risk, source: https://digital-strategy.ec.europa.eu/el/policies/regulatory-framework-ai

More specifically, the AI Act requires the prohibition of AI systems used for emotion-detection of individuals in the workplace. According to the regulation, activities of this kind are categorized as high risk. AI systems used for employment and employee management

decisions, such as recruitment and selection of employees, the terms and conditions of employment, decisions related to promotions and dismissals of employees and evaluation of work are considered to be high-risk.

Linking the Special Secretariat of Strategic Foresight proposal to existing laws regulating Human Resources Management in the Greek Public Sector, such as the Law 4369/2016 as it was amended by Law 4674/2020 for the selection to positions of responsibility, the possible application of AI in the proceedings of the relevant Councils should ensure fair treatment and avoid traditional biases. This can prove to be crucial for the selection of women in positions of responsibility, a gender often underrepresented in higher levels of the Public Administration and generally, in the Greek workplace.

Adapting Greece's regulatory policy to implementing AI in Human Resources Management in the Greek Public Sector is of paramount importance for responsibly integrating the aforementioned technology and for fostering acceptance to its use in a traditionally bureaucratic process(for instance the process of applying for a vacancy in the Greek Public Sector, even though digitalized, still requires numerous service tasks from the personnel as a means of validity check, which could be automized through AI implementation). In line with OECD's Regulatory Policy Outlook for 2021 some of the domains Greece's regulatory policy lags behind other members of OECD and the EU are stakeholder involvement and infrequent consultation planning. (OECD, 2021) The former domains can have positive impact on the staff's acceptance of this technology in HRM given that at the moment no regulation of integrating AI in HRM in the Greek Public Sector has been provisioned.

Furthermore, the report claims the importance of the creation of a National Supervisory Authority for AI (EEATN) to balance the protection of human rights with the promotion of innovation, research, market growth, and fair competition. (Συμβουλευτική Επιτροπή για την Τεχνητή Νοημοσύνη, 2024)

AI's growing impact necessitates independent supervision. This authority's design must emphasize interdisciplinary expertise to address AI's multifaceted nature. A critical aspect is appointing members without conflicts of interest, safeguarding alignment with constitutional and legal supervisory principles. The timeframe for establishing this authority is 2025, reflecting the urgency of this initiative.

Beyond monitoring AI systems, EEATN should manage the development of controlled test environments and safe harbors for AI innovation. These functions are vital for fostering technological progress and attracting investments, as outlined in related discussions on innovation, entrepreneurship, and AI's role in state functions.

Its role will complement existing independent bodies in Greece, such as the Data Protection Authority and the National Telecommunications and Post Commission, which will retain their enforcement powers. EEATN will provide opinions on related matters and collaborate with national and European agencies, ensuring cohesive and comprehensive oversight of AI.

Another proposition includes the regulation and application of AI to promote democracy by enabling broader citizen participation in consultative processes. (Συμβουλευτική Επιτροπή για την Τεχνητή Νοημοσύνη, 2024) This way, acceptance to its use for multiple purposes will be cultivated, HRM in the Greek Public Sector included. For instance, consultation processes can be streamlined, potential use of chatbots in the Greek website where public consultations take place : open.gov.gr can summarize public feedback, and manage vast amounts of online input. Indicatively, technologies like Taiwan’s pol.is system demonstrate how AI can gather diverse perspectives, distill insights, and foster consensus. This capability not only improves decision-making efficiency but also promotes democratic governance of technology itself.

Consultative democracy’s aim is to create a framework for AI that aligns with societal values. Building "digital trust" in online platforms is essential for this vision. Continuous public evaluation, democratic representation, and citizen engagement in critical decision-making processes are key strategies to achieve this goal.

One innovative practice for fostering democratic participation is organizing local citizen assemblies. These gatherings, enhanced by open AI tools, can engage diverse voices in collective discussions and decision-making. Additionally, adopting best practices in democratic consultation—supported by advanced AI applications—can improve public parliamentary deliberations, especially during legislative processes.

3.AI in HRM and in the Public Sector

3.1 Opportunities in HRM sub-categories and already discussed applications

AI is revolutionizing industries, and HRM is no exception. In a rapidly evolving business environment, organizations are leveraging AI to enhance efficiency, improve decision-making, and redefine employee experiences. From recruitment and onboarding to employee engagement and leadership development, AI offers HR professionals innovative tools to streamline processes and address complex challenges. The emerging opportunities for the employees as well are promising.

AI deployment in HRM can enhance efficiency and fairness in a horizontal manner through enabling transparent (meaning that AI integration must be noted in the organization's HR policy, which is accessible to employees) strategic HR planning. Of course, while AI supports resource allocation and organizational performance, its application in strategic HR planning remains experimental. Organizations can benefit from integrating AI with knowledge-sharing frameworks to enhance adaptability and resilience. (Afzal, 2023)

Strategic HR planning becomes more and more important to ensure resilience of organizations, as the former is challenged by our multi-crisis environment. According to relevant literature review, AI deployment in strategic HR planning can maximize profit through reducing human errors of strategic analysts, supporting decision-making, and automating repetitive tasks. This also frees HR professionals for higher-priority work, enhancing efficiency. An added advantage is organizational development. AI necessitates adapting policies and blending human and AI to foster innovation. Adaptation also means to detect the shift in labor dynamics, as AI job replacement. (Jatobá, Ferreira, Fernandes, & Teixeira, 2023)

After the organization has completed its strategic planning which is the first most important HR sub-category, the second key function, the recruitment process, can profit from AI deployment through automating repetitive tasks such as candidate screening, database maintenance, interview scheduling, and addressing applicant queries. This significantly reduces the time and effort required, allowing HR teams to focus on strategic activities like sourcing and personnel management. Additionally, it provides a more important role for the HR manager, that must be trained to adapt and use AI systems in their field. AI-powered

systems ensure a streamlined, fair, and effective candidate selection process by analyzing applications and matching them to job descriptions. Chatbots further enhance the process by identifying, contacting, and guiding suitable candidates, managing new hires, and scheduling interviews. These tools promote accuracy in identifying top talent while improving the overall hiring experience. (Kaur, 2023)

More specifically, AI applications such as facial recognition identify candidates' skills and compatibility with job requirements. However, challenges remain in maintaining accurate and unbiased datasets, as seen in Amazon's flawed AI recruitment tool. (Afzal, 2023)

A process similar to recruitment but with a different outcome, performance management, can also receive benefits from AI integration. Performance management involves setting and evaluating employee performance goals. Applications span various sectors, including law, banking, and academia. Research has also explored AI’s ability to assess the organizational impact of HR practices, forecasting how these influence future performance. AI’s insights enable personalized and objective performance evaluations, enhancing both individual and organizational outcomes. (Qamar, 2021)

Another crucial opportunity arises for job-description and onboarding. AI simplifies onboarding by delivering essential information—such as job descriptions, company policies, and team details—through mobile applications or structured data systems. This ensures that new employees quickly familiarize themselves with the company, promoting long-term retention. By addressing candidate questions through AI systems, HR staff can reduce their workload and ensure a smooth and efficient onboarding process. Tailored onboarding enhances employee satisfaction and helps establish a productive working relationship early on. (Kaur, 2023)

Nevertheless, some existing less popular applications can also have great impact on Human Resources Management efficiency. AI in compensations is one of those, creating efficient compensation systems, utilizing its ability to process extensive numerical data. Compensation involves employee remuneration, often enhanced with equity sharing or profit-sharing. Despite its significance, AI's application in this area remains underexplored, with only a single study addressing it. AI's capacity to analyze large datasets could revolutionize how compensation packages are designed and optimized for fairness and effectiveness. (Qamar, 2021)

Leadership development is another less discussed opportunity. AI aids leadership by evaluating project managers and trainers, offering insights into their strengths and areas for improvement.

Dashboards provide leaders with actionable feedback, helping them adapt their skills to align with workplace needs. This fosters better decision-making, enhances team dynamics, and supports leadership growth.

Moving to the ways in which the labor force can benefit from AI deployment in HRM, training and development AI can support ongoing employee development by providing customized training resources aligned with individual job roles. It identifies skill gaps by analyzing employee performance and recommends relevant training programs. By offering updates on the latest technologies and work requirements, AI ensures employees stay competent and competitive. This approach not only improves productivity but also fosters a culture of continuous learning, enabling employees to meet organizational demands effectively. (Kaur, 2023) Another point of view could be that businesses implement AI strategically in order to attract and train people for upcoming jobs enabled by AI. (Afzal, 2023)

A relevant AI contribution can focus on competency assessments and career planning. Studies highlight AI's ability to identify competency gaps using data visualization or historical data. AI also aids in forecasting future skill requirements for organizational transformation and aligning career paths with individual skillsets. These advancements allow for tailored training programs and enhanced workforce readiness. (Qamar, 2021)

Besides training, a direct outcome out of AI integration is employee experience enhancement. AI helps create a personalized and engaging employee experience by integrating seamlessly throughout the employee lifecycle. Automated tools collect feedback, assess engagement, and measure job satisfaction with precision. HR departments can use this data to tailor programs that enhance employee well-being, fostering loyalty and satisfaction. AI's role in understanding and addressing employees' needs contributes to a positive and constructive work environment.

Beyond specific HR functions, AI's broader influence on decision-making and organizational efficiency has been a key focus. Studies emphasize AI's ability to enhance decision-making and its transformative role in HRM. Other innovative applications include exploring emotional engagement developing suggestion systems and understanding perceptions of service robots. These diverse applications illustrate AI's versatility and growing importance in HR practices. (Qamar, 2021)

3.2 AI’s challenges on HRM

Redefinition of the labor market landscape

The idea of applying systems that are able to classify data and predict in HRM creates an optimistic vision of promoting efficiency and fairness for the business sector but at the same time, presents challenges especially for the labor force, such as managing potential biases in AI models and addressing the workforce's need for reskilling and adaptability as the labor market evolves.

Major challenges can arise for the workforce, such as the need to secure data privacy and consent while applying AI in the workplace. It is estimated according to an Oracle study that 31% of respondents prefer interacting with humans over machines, highlighting trust issues with AI. A possible mitigation of this phenomenon could require HR professionals staying updated on emerging technologies and trends to address these challenges. Their responsibility becomes even greater if we consider the need to safeguard against breaches. (Kaur, 2023)

Besides data privacy issues, one cannot overlook one of the main reasons why most organizations choose to invest AI in HRM: cost saving and challenging job security. Historically, in the advent of neoliberalism through Europe and the US a global decline in labor's income share has been linked to increased investment in information technology. This trend, combined with reduced worker influence, has led to employees working harder with less autonomy and control over their tasks. Today, it is unknown how this general trend of adopting efficiency-enhancing, yet often work-degrading, technologies will play out with the rise of machine learning (ML) AI. (Charlwood, 2022)

In sectors like retail and distribution, AI has introduced "digital Taylorism," pushing for efficiency while maintaining low wages and job insecurity. Amazon warehouses, for instance, have faced criticism over high injury rates and intense work paces, with even terminations automated (Bloodworth, 2018). In retail, scheduling algorithms reduce labor while limiting benefits-eligible hours, creating instability for workers. (Schulte, 2020)

Of course the challenges burden the organization as well. Already deployed AI applications in HRM, and more specifically those of a certain type, Machine Learning (ML) address the dual challenge businesses face in identifying candidates with the right skills, knowledge, and attitudes while making cost-effective hiring decisions. This includes using advanced algorithms to analyze CVs, conducting gamified tests, and facilitating robot interviews to find

candidates with traits matching top employees. ML allows organizations to efficiently recruit from larger applicant pools, minimizing biases related to educational background, gender, and ethnicity. (Charlwood, 2022)

The deployment of those applications to a broader number of businesses, given the current progress, can provide an efficient, data-driven and long-term strategy to HRM. ML models could assess employee performance more accurately and make unbiased recommendations on staffing, promotions, and pay adjustments to enhance motivation and retention. Additionally, AI chatbots in HR improve operational efficiency by interacting with employees and applicants in real time, providing information, and performing tasks like scheduling or processing requests, freeing HR professionals for complex issues that require human insight.

An alternative but similar way of classification of the challenges is proposed following the theory of the AI life cycle in HR. (Cappeli, 2018) The AI system's function constitutes of four steps: 1)operations(how the organization hires employees) 2) data generation(produced by operations) 3) machine learning(the application of systems that can process the previous data and can predict) 4) decision-making(insights from the machine-learning model are applied in everyday operations). This classification facilitates the development of possible tailored solutions to each stage, following a stagist approach.

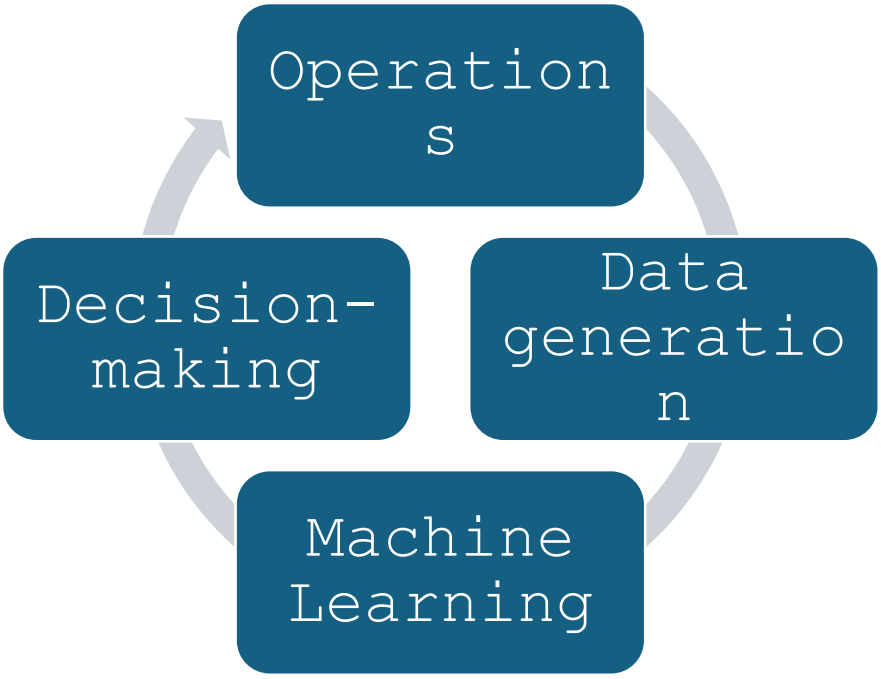


Figure 2: The life cycle of an AI-supported HR practice, source: https://www.researchgate.net/publication/328798021_Artificial_Intelligence_in_Human_Resources_Management_Challenges_and_a_Path_Forward?enrichId=rgreq-df74b00ab3d9d0cd148a35895ade18e5-XXX&enrichSource=Y292ZXJQYWdlOzMyODc5ODAyMTtBUzo3MjQzOTUyODY4NTk3NzZAMTU0OTcyMDcwMzMxOQ%3D%3D&el=1_x_2&_esc=publicationCoverPdf

With regard to operations and data generation, a common challenge is evaluating employee performance and making informed HR decisions. Measuring what constitutes a "good employee" is difficult due to the varied nature of job requirements, limited monitoring capabilities, and prevalent biases. Data collection itself is limited; not all HR activities are recorded, and when they are, data is often fragmented.

Due to the high cost of initial analyses, HR data managers must strategically choose which questions important for the selection process with respect to the organization's needs to investigate. When selecting questions to analyze, an initial audit of data availability is crucial. For instance, using machine learning in hiring requires historical data on both hired and rejected applicants, which many companies lack. Consequently, HR departments must carefully balance the feasibility of desired analytics with available data, recognizing that some important questions may be unanswerable with existing information.

Another dimension of data shortage comes from the perception of employees as to how their data are being used. Not few invasive practices have gained publicity such as social media monitoring and Natural Language Processing (NLP) to analyze the tone of internal employee posts. For the reasons above employees may alter their responses and adjust what they share, thus impacting data accuracy. On top of that Regulations, such as the EU's General Data Protection Regulation (GDPR), and privacy rights like the "right to be forgotten" protect employees, requiring employers to delete certain digital traces over time and comply with data privacy standards.

Moving to the next stage, that of machine learning, while there is a potential for improved predictive accuracy compared to traditional HR methods, which often rely on limited predictors like personality or IQ scores, building accurate algorithms for hiring presents challenges, especially due to the difficulty of accessing reliable performance data. The "selection on the dependent variable" another problem facing ML refers to algorithms based solely on top performers' characteristics, which may ignore whether these traits are unique to high performers or also common among less effective employees. This can lead to inaccurate models and a loss of learning opportunities, especially if hiring decisions rely solely on the algorithm's predictions. To counter this, occasional hiring of candidates outside the algorithm's criteria would allow comparisons and ongoing model refinement, although this approach is rarely used in practice.

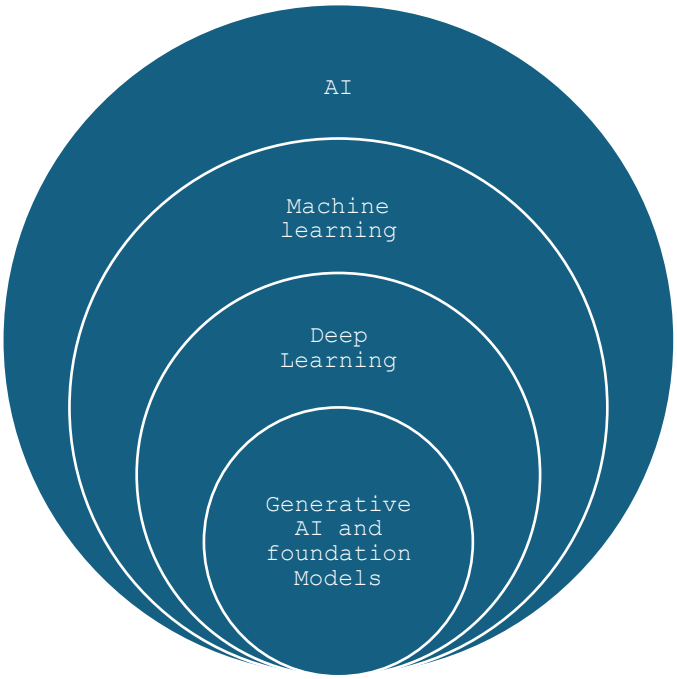


Figure 3 Machine Learning's Fit in the AI context, source:https://www.bcg.com/publications/2023/south-africa-and-artificial-intelligence

A statistical issue, known as the "collider effect" or "range restriction," further complicates ML modeling in HR. When selection criteria limit the diversity of characteristics among employees (e.g., hiring only candidates with high grades) correlations within the employee sample may not reflect relationships in the broader applicant pool. For instance, selecting based on high grades might obscure a positive link between grades and job performance due to limited variation among employees' scores. Self-selection within applicant pools—where only certain types of individuals apply—exacerbates this issue, reinforcing homogeneity within the data and reducing ML accuracy.

Later, on the crucial stage of decision-making, three core challenges can arise: fairness and legal compliance, algorithm transparency, and employee reactions to algorithm-based decisions.

In HR, fairness concerns are paramount. Algorithms trained on historical data risk reproducing past biases; for instance, if previous hiring practices favored certain demographics, ML models may continue to favor these groups, thus perpetuating inequality. A famous example sets Amazon's hiring algorithm when it began selecting against women based on correlated but seemingly neutral factors, such as "Women's Studies" courses. Despite attempts to eliminate direct bias (e.g., removing gender from datasets), algorithms can still identify and act on proxy indicators linked to protected demographics. (Cappeli, 2018)

Another key factor affecting decision-making, transparency, is challenged with the sift from traditional hiring decisions allowing adjustments of individual criteria to complex ML models, aggregating multiple factors, making it difficult to evaluate the influence of single attributes. This lack of transparency becomes a legal and ethical issue, as understanding an algorithm's internal logic is essential for ensuring fair and defendable HR practices.

Last but not least, how employees perceive algorithm-based decisions is another crucial factor. While using algorithms for positive actions like promotions might be acceptable, applying predictive models to negative outcomes, like layoffs, could be ethically contentious. Utilizing ML to predict potential misconduct or future poor performance could conflict with principles of fairness, as such predictions are probabilistic and may not account for individuals' actual behaviors.

One potential solution is incorporating causal discovery within ML to distinguish factors that genuinely affect job performance, like "grit" or motivation, from non-causal predictors, such as demographic data. Causally-informed algorithms are likely to be viewed as fairer since they emphasize an individual's relevant characteristics rather than group-based assumptions. (Cappeli, 2018)

3.3 AI in the Public sector

It must be noted that at the time this thesis is being conducted the notion of investing in AI as well as Blockchain prototyping and testing for the cause of promoting the public interest has started to fade away at a global level(only limited implementation has been observed such as AI chatbots in governmental websites and generally iterative operations). Nevertheless, one cannot omit the potential to bring transformative improvements to the public sector by enhancing efficiency, improving public services, and support data-driven decision-making. Equally, the possible implications cannot be overlooked as governments must address ethical concerns, ensure transparency, and invest in AI responsibly to maximize its benefits for society.

To begin with, its benefits come from the ability to analyze information and take data-driven decisions quicker than humans do. This can save lots of working hours, especially in understaffed services and prevent false decisions that affect many members of society, or in a simpler way reduce administrative burden. In the same context, AI can undertake repetitive tasks and free up human capacity for more creative obligations, leading to a new model of public services. The described service delivery can also augment the skills and capabilities of humans, as well as the way that humans and machines alongside cooperate, a fact that hasn't been adequately considered by public managers. (Ines Mergel, Helen Dickinson, Jari Stenvall & Mila Gasco, 2023)

In order to achieve the maximum utility AI implementation in the public sector can bring, governmental trust is essential. Unfortunately, nowadays governments face low levels of governmental trust, a fact undermining the quality of democracy, due to low productivity and quality of public services. This is the very reason why governments must convince the electorate that AI is the best solution for a given problem, that it is ethical, fair and trustworthy and that there is space for experimentation and flexibility, and that it does not constitute another fancy statement. In this direction, the development of a National Strategy on AI can help citizens understand how AI can improve public services so as them to be citizen-centric tailored. The Finnish example is indicative: the AuroraAI Strategy provides an inclusive goal to AI implementation by connecting its efficient deployment with the welfare of its people, businesses and society. (Berryhill, 2019) On the contrary, in Greece the request for a National

Strategy for AI is still pending, while the Ministry of Digital Transformation claims that its development is in process.[5]

Nevertheless, safeguarding democratic principles while implementing AI in the public sector is crucial for the outcome and acceptance of this attempt. Many international organizations, namely the OECD, the European Commission and UNESCO have developed guidelines to help governments responsibly adopt AI technologies. (Berryhill, 2019)The first most important guideline is transparency and explainability. Public sector AI systems should be transparent, allowing citizens to understand when and how AI is used in public services, and decisions made by AI systems should be explainable to non-experts. The second one, is fairness a key priority of democracy, and non-discrimination. Public sector AI should be designed to minimize bias, promoting fair and equal treatment across diverse groups, and preventing discrimination based on race, gender, socioeconomic status, or other characteristics, while minimizing the risk of perpetuating social inequalities. Thirdly, accountability and responsibility are essential in high-stakes decisions, as there should be well-defined roles and responsibilities within public organizations for AI governance, making it clear who is responsible for the outcomes of AI-driven decisions. The fourth principle refers to privacy and data protection, provisioning the use of only necessary data for the purpose, and complying to GDPR, respecting citizens right to data privacy.

The fifth principle highlights robustness and security, coming from continuous monitoring and periodic audits that help ensure AI systems remain effective and safe over time, adapting to new risks and challenges. The sixth principle emphasizes on AI's ethical use, for the purpose of a social benefit. According to that, it is of primary importance that AI aligns with public sector values emphasizing welfare, safety, and the improvement of quality of life for citizens. Regarding the seventh principle of public and stakeholder engagement, consultation becomes of top priority, involving citizens and other stakeholders in discussions about AI implementation helps build trust and addresses public concerns. Lastly the eight principle of legal and regulatory compliance highlights not only adherence to national and European legal frameworks but also to public sector's recognized standards such as ISO standards to ensure quality and safety in AI development and deployment.

[5] https://digitalstrategy.gov.gr/project/ethniki_stratigiki_texnitis_noimosinis

3.4 Ethical considerations

Despite the potential it brings to the public service, AI is linked to ethical considerations, as it shares decision-making with humans rendering the notion of what is right or wrong different between humans and machines. The integration of AI in public sector functions, requires adherence to ethical principles and values at all stages of its application. As AI becomes more embedded in public services, ensuring its responsible and fair use is increasingly critical. Some key ethical considerations include : data privacy, algorithmic bias and fairness, the impact on decision-making in public administration, cognitive bias, and the long-term impacts on workforce dynamics. (Alhosani, 2024)

As was mentioned before, the adoption of AI in administrative functions reshapes decision-making processes, often replacing human judgment with automated discretion. This shift raises questions about maintaining organizational legitimacy, ensuring alignment with societal values, and balancing human and AI-driven decision-making in public service delivery. (Alhosani, 2024)

An integral part of AI applications is data, which AI systems handle in vast amounts, part of which frequently being sensitive information. This is the reason why concerns about potential data leaks and privacy breaches can arise. For this reason, while the use of large datasets to train algorithms increases these risks, data security through encryption, error reduction, and cybersecurity monitoring can provide a solution to mitigate them. (Alhosani, 2024)

The issue of algorithmic bias is also prevalent to the discourse of the ethical considerations of AI deployment in the public service. Such an application can perpetuate or even amplify biases present in training data, potentially marginalizing certain societal groups. For instance, errors in facial recognition technology have led to discriminatory outcomes, such as misidentifying individuals based on race. However, AI systems can also be designed to promote fairness and equity by carefully addressing these biases in algorithms. (Alhosani, 2024)

Public sector decision-makers face new challenges in integrating AI outputs with traditional human-sourced advice. Cognitive biases in processing AI-generated insights require further exploration to understand the implications for decision-making quality and accuracy. (Alhosani, 2024)

While AI offers efficiency gains, automation of repetitive tasks, and enhanced decision-making, it also brings risks such as potential job displacement and disruptions to traditional workforce structures. The broader effects of AI on government functions and society remain uncertain, necessitating proactive strategies to address these challenges. (Alhosani, 2024)

Policymakers and public administrators must navigate these complexities to harness AI's benefits responsibly while mitigating its risks. Continued investment in AI research and implementation, alongside ethical and regulatory frameworks, is essential to ensure that AI aligns with the core values of public service. (Alhosani, 2024)

While data privacy and security, and the high functional and investment cost is not downgraded the most serious problem remains the ethical risk. The ethical risk is the way in which AI can alter an organization not only in technical terms but also in its core public values such as accountability as there is ambiguity in who takes the decision, or equity as automated service delivery may result in a lack of access by vulnerable and marginalized groups of people. There are three main categories of ethical challenges.

According to (Tsamados et al, 2022) the first revolves around epistemic questions on how AI systems utilize data to produce specific outcomes. Possible examples are the use of incomplete data that can lead to incorrect or misleading conclusions, or biased data that may result in unfair decisions. Furthermore, as AI relies on machine-learning to improve decision-making, its function cannot easily be inspected. As a result, this complexity can create black boxes that hinder public servant’s ability to explain and justify decisions.

The second one is normative concerns about the ethical impact of AI-driven decisions, such as unfair outcomes, where certain groups benefit disproportionately, and unintended consequences. The third category relates to accountability and responsibility, which often arise from both epistemic and normative concerns. AI can create situations where it is difficult to assign responsibility to specific individuals or teams for decisions made. Moreover, the degree of automation varies across public services, ranging from systems that allow public servants to adjust decisions to full automation, which creates ambiguity. (Tsamados et al, 2022)

3.5 Addressing the ethical risks

The ethical risks generated from AI’s adoption to public sector organizations can have a general negative impact to public trust in governmental institutions, in a time when democracy is being

contested, even in historical Western states, adding to the complexity of contemporary societies and the solutions that traditional institutions can provide to problems occurring in a multi-crisis environment. For this reason, there have been attempts to address ethical AI risks. One of them constitutes the Three Lines of Defense (TLoD) risk management model. (Sattlegger, 2024)

The TLoD framework constitutes a study that by dividing risk management into three layers: operational management, compliance oversight, and internal audit, examines the experiences of Dutch public sector organizations, evaluating the model's effectiveness in distributing responsibility for managing ethical AI risks. The implemented methodology consists of surveys and interviews where interviewees include risk managers, ethics advisors, and data officers in Dutch public sector organizations. The research assessed their perceptions of ethical AI risks and the applicability of the TLoD model. (Sattlegger, 2024)

In the first place, the survey categorizes the main types of ethical AI risks. It is important to note that these types are dynamic, requiring ongoing reflection and adaptation. More specifically the major ethical risks include bias and discrimination, responsibility gaps, opacity and lack of explainability, erosion of public trust and amplifications of inequalities that have been mentioned before.

Then, the TLoD framework organizes risk management roles across three distinct levels. The first level, called first line, provisions operational management, responsible for identifying, assessing, and mitigating risks during daily operations. The second level, equally called second line, includes oversight and compliance functions, including policy development and guidance to the first line. The third level, called third line, concerns internal audit, providing independent evaluations of the effectiveness of risk management practices.

According to the results of the study, from applying the aforementioned model to public organizations, the first line which holds primary responsibility for ethical AI risk management, proved that responsibilities are often unclear and inconsistently distributed among algorithm developers, users, and data owners. A possible explanation is that most public sector organizations lack formal processes for identifying high-risk AI applications and decisions are often left to individual actors without standardized guidelines. Furthermore, while many organizations employ tools like the Dutch government-endorsed IAMA, there is confusion over responsibilities for conducting and acting on assessments. The same confusion of responsibilities is equally observed in the Greek Public Sector, even in the absence of AI implementation. A supplementary finding was that despite developers being tasked with

mitigating bias, these efforts were fragmented and lacked integration with broader risk management practices. (Sattlegger, 2024)

Findings from the second line which focuses on risk oversight and compliance, often involving roles like ethics officers or expert teams indicated that the role of Ethics Officers played a critical role in developing ethical guidelines, advising on AIAs, and fostering organizational awareness. On the contrary, the function of data ethics expert teams, comprising cross-functional members, showed that they often operate informally, limiting their effectiveness. Also, the algorithm registers, used as transparency tools, faced challenges in ensuring consistency and quality of reported information. (Sattlegger, 2024)

The third line, which involves independent audits to evaluate risk management processes provided some challenges. It was proven that in practice few public sector organizations conduct audits specific to ethical AI risks. On top of that, internal audits, data protection officers, and ethics commissions often lack clarity regarding their responsibilities, leading to oversight gaps. Additionally, advisory bodies for ethics provide independent ethical reflections but struggle with integration into formal risk management processes. (Sattlegger, 2024)

Overall, the TLoD model provides a useful structure for attributing ethical risk management responsibilities, but significant gaps remain. According to the findings, the first line's lack of clear guidelines and the second line's inconsistent oversight hinder effective risk management. Furthermore, newly established roles, such as ethics officers, require unique skills combining technical expertise, ethical understanding, and organizational knowledge. We cannot also overlook the fact that ethical risks are often treated as compliance issues rather than opportunities to proactively integrate human values into AI design. Finally, poor alignment between the three lines of defense results in fragmented practices and weak accountability mechanisms. (Sattlegger, 2024)

Nevertheless, regardless of the findings the TLoD model remains a coordinated effort to provide solutions on AI ethical risks management in public sector organizations, as it opens the academic discourse on this topic.

3.6 Dimensions of AI in the public sector

Besides the cost-benefit analysis of implementing AI in the public sector, an academic discourse has opened on the dimensions it can have. (Ines Mergel, Helen Dickinson, Jari Stenvall & Mila Gasco, 2023) One of these dimensions is the technology-deterministic approach, according to which public organizations are negatively biased towards AI implementation, as its development takes place outside of the administrative organizations' natural spaces and culture. Algorithmic decision-making can be in conflict with bureaucratic reality plus many past technologically-based attempts to modernize the public administration have failed and resulted in the erosion of trust in governmental accountability.

An additional critical dimension is the data-induced decision-making dimension. By automating decisions through algorithms that process vast datasets beyond human capability, AI promises enhanced efficiency through faster, pattern-based choices and insights from past procedures. However, this automation introduces accountability challenges, as AI biases interact with civil servants' implicit practices. This dynamic shifts decision-making power between data-driven algorithms and public managers, requiring careful oversight to mitigate unintended consequences in public administration.

The last dimension is the organizational transformation one which focuses on using automation to modernize and replace aging workforce processes, enhancing digital transformation. AI-driven decision-making aims to replicate or improve work practices, tested in AI labs and integrated into existing routines. This shift requires balancing automated systems with human expertise, addressing workforce challenges like retraining staff for complex, individualized cases.

4. Possible Applications

4.1 The example of a possible application in South Africa

The implementation of AI into HRM within South Africa's public sector has shown promising potential but is still in its early stages. According to research AI can enhance public service delivery by automating routine tasks, allowing HR personnel to focus on strategic areas, and reducing biases in recruitment and selection processes. The challenges match those discussed before along with the need for a coherent AI governance strategy.

According to *Chilunjika A. et al* study, greatest AI's implementation in HRM opportunities lay in recruitment processes, limiting routine administrative tasks, improving service delivery and cut down of excessive paperwork. (Chilunjika, 2022)

The authors propose a visualization in the first place of the recruitment processes' stages so as to target the areas that could be improved by AI deployment. A traditional recruitment process is organized in five distinct stages. The first stage defines recruitment goals, specifying the number of positions, the desired applicant profiles (including education, skills, experience, and interests), and the timeline for hiring. In the second stage, strategic planning factors are outlined, such as when and where to recruit and the scheduling of recruitment activities. The third stage focuses on recruitment methods and the selection of recruiters, followed by the fourth and final stage, which assesses recruitment outcomes. This model highlights the potential of artificial intelligence (AI) to support human resource functions in South Africa's public sector. AI could take on repetitive administrative tasks, streamline paperwork, and enhance the efficiency of public service delivery. Visually the process is described in five stages:

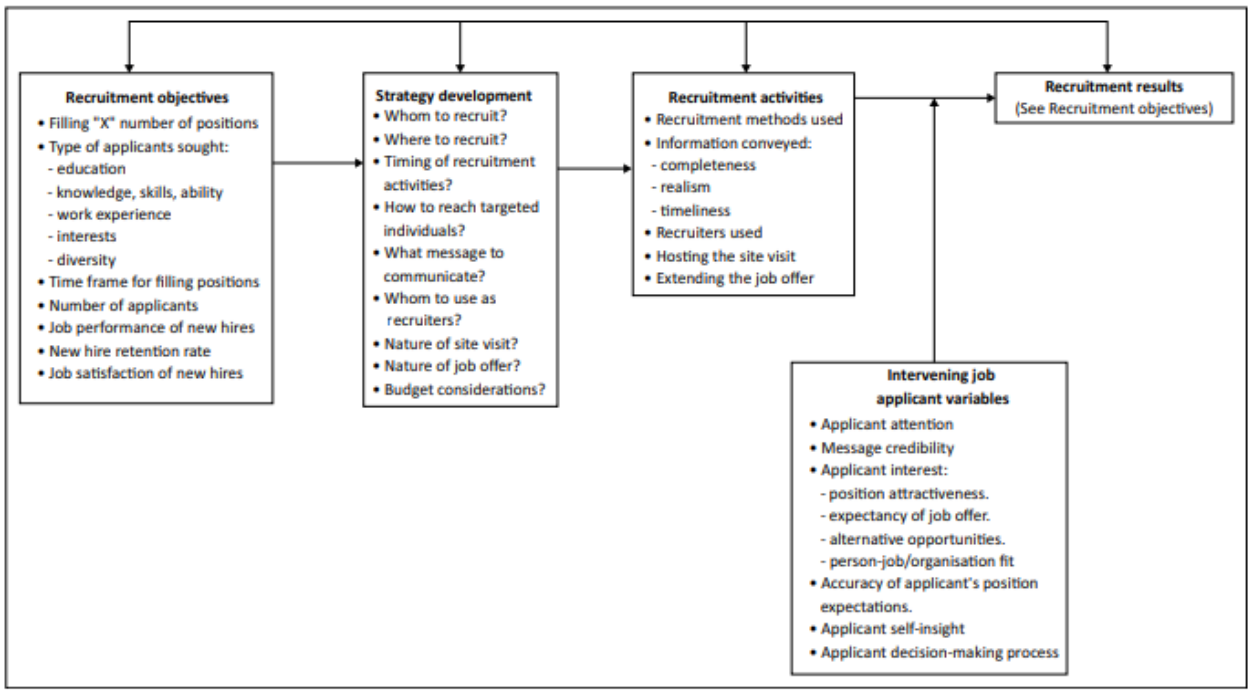


Figure 3 Model of recruitment process, source: Source: Breaugh, A.J. (2008). Employee recruitment: Current knowledge and important areas for future research. Human Resource Management Review, 18(3), 103–118. https://doi.org/10.1016/j. hrmr.2008.07.003

As in many countries, HRM in the public service in South Africa leaves space for improvement. Current shortcomings identified by the South African Public Service Commission highlight issues such as lengthy recruitment processes (often taking over nine months), flawed screening and shortlisting practices, and underprepared selection committee members. These issues contribute to inefficiencies in public service delivery, worsened by limited access to modern technology in areas like KwaZulu-Natal. On top of that, recruitment in South Africa's public sector is largely manual, which delays processes and increases the risk of bias. AI can help remove biases in screening, ensuring resumes are assessed fairly, allowing for an unbiased selection process. This aligns with the goals of South Africa's Employment Equity Act of 1998, which mandates fair hiring practices, and mirrors the private sector's success with AI tools to reduce bias in recruitment.

AI integration would also help address issues of favoritism and patronage in South African public sector hiring. According to (Chilunjika A. , 2021), favoritism—hiring based on connections rather than merit—undermines the recruitment process, often influenced by political connections. AI's ability to automate screening and reduce human intervention can counteract such biases, ensuring recruitment is based on merit rather than personal connections.

In South Africa, specifically, integrating AI in public sector HRM could significantly optimize resources, reduce costs, and improve service effectiveness. Visser and Twinomurinzi (2008) highlighted the potential of e-government to support South Africa's “Batho Pele” philosophy, which prioritizes citizen-centric service. An additional opportunity comes for the combatting of long distances indicative of South Africa’s geography and geomorphology. Through e-government initiatives, which serve as a foundational structure for incorporating AI, public services can become more accessible, efficient, and responsive to citizens’ needs, who noted that ICT systems dismantle the traditional constraints of time and distance. (Chilunjika A. I., 2022)

4.2 Examples from the private sector and international organizations

AI along with programmatic political decision-making can revolutionize, as was mentioned before, HRM in the Greek Public Sector, addressing to all the aforementioned issues. According to Mc Kinsey's recent article in the Public Sector Practice section, a pressing issue for the public sector is talent retainment. While most AI and digital capabilities of governments have nowadays been outsourced to the private sector, because of the challenges in attracting talent, two main propositions are highlighted. One proposition regarding AI implementation is to create alternative talent pools with the use of analytics accelerating hiring from a wide pool of talents containing legal migrants and tech-savvy candidates without any university diplomas. Another practice is to build teams with colleagues of different academic and professional fields which has proved to be effective in the business working environment. (McKinsey and Company,Public Sector Practice, 2024)

Training and upskilling of the workforce is also a field in which AI can provide meaningful solutions. According to Deloitte's Public Sector Human Capital Trends Report 2024 while technology has given limitless opportunities to human performance and innovation, those opportunities cannot be fully exploited due to an observed imagination deficit. This simply means that humans lack soft skills such as curiosity, imagination, empathy etch ,due to technological disruption, that cannot be easily taught . It is important to note that according to the current law on evaluation in the Greek Public Sector 4940/2022, certain soft skills are being evaluated by the Supervisors but there is no mention on how these skills can be cultivated and limited relevant programs have been conducted by EKDDA after 2022. For the reasons above a possible AI implementation could be the creation of a culture of learning from leaders and managers to mobilize employers utilize emerging technologies including AI in such a way to acquire new skills and not just perform tasks in less time. (Deloitte, 2024)

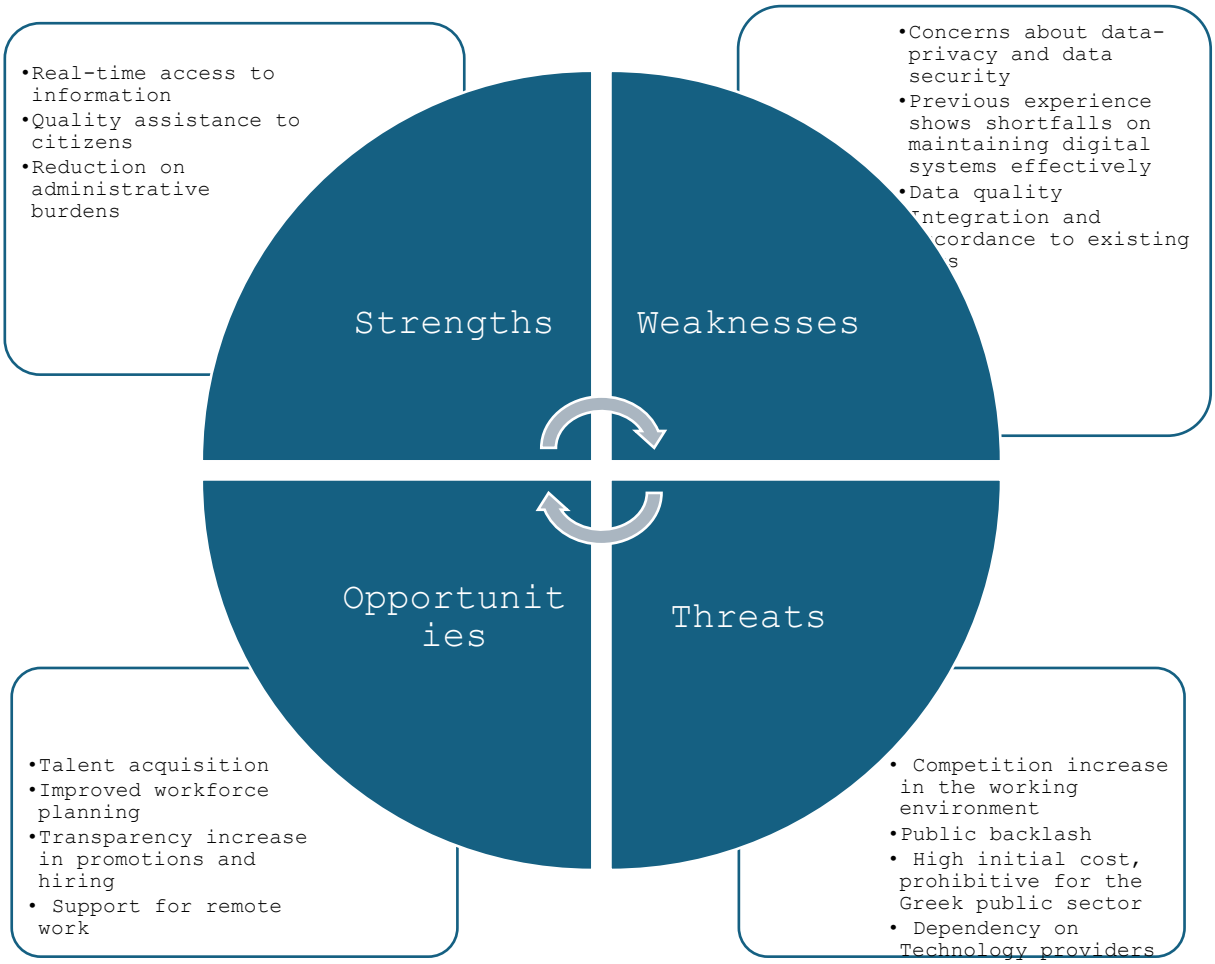
Another proposed application by OECD emphasizes on the regulatory environment. Due to its role to protect and provide for the public interest, the Public Sector's actions are strictly limited to a wide number of laws to achieve fairness and transparency. In the Greek case law production has been characterized as defective given the huge number of laws (over 5000 laws have been voted) as well as their bad quality given the accompanying documents and secondary

laws that are often produced in order to explain their applications to public servants and citizens.

In this direction, the government could increase the effectiveness of the regulatory environment by using the data from the Greek Public Service's cloud applying machine learning in order to predict the areas that need regulation in a timely manner. Machine learning can equally be used so as to better predict the outcome of a law thus providing a cost effective tool to HRM from preventing lost or long-standing cases in the Administrative Courts. (Jamie Berryhill, 2019) On top of that more necessary and well written laws will increase the attractiveness of the Greek Public Sector as a career opportunity.

Of course, all the above applications are indicative and need a number of preconditions in order to be practically implemented in the Greek Public sector. More specifically, AI applications need to be tested in pilot programs in different HR functions, to ensure alignment with legal and regulatory frameworks, to provide training to HR personnel on using AI tools effectively and to address ethical considerations, such as data privacy and bias in AI algorithms. The former will be separately discussed in the third chapter as it also a field that the AI Act regulates and sets on the forefront by categorizing the levels of risks that AI systems set fundamental rights to.

4.3 A SWOT analysis for AI implementation in HRM in the Greek Public Sector



Based on the research of the Special Secretariat of Strategic Foresight entitled "Generative AI Greece 2030" (Τσέκερης, 2023) we will attempt to provide a SWOT analysis for AI implementation in HRM in the Greek Public Sector. The aforementioned research emphasizes the implementation of Generative AI, an AI type that has never been applied to HRM neither in the public nor in the private sector. We will start from the possible futures as described by Future Studies on the possible application of Generative AI in the Greek Public Sector.

Strengths

The integration of AI in HRM presents numerous strengths that can significantly enhance operational efficiency in the Greek public sector. One of the areas where public servants can

benefit from is facilitation of access to information. Real-time access to relevant information with a simple query across various datasets and data types eliminates the need for lengthy searches through documents or isolated databases. Moreover, the required data for public officials is often not available online or through easily accessible sources. Thus, advanced tools like citizen helpdesks powered by generative AI play a crucial role in quickly locating the necessary information. (Τσέκερης, 2023)

An additional strength is the enhancement of quality assistance to citizens through chatbots, allowing public administration to automate responses to the most common queries. This frees up employees to focus on more complex tasks. Furthermore, generative AI offers significant opportunities for cost reduction with minimal impact on the quality of public services. Overall, these strengths highlight AI's potential to transform HRM by enhancing decision-making, promoting fairness, and ultimately contributing to sustainable development in the public sector. (Τσέκερης, 2023)

The issue of reducing the administrative burdens is also crucial to HRM in the Greek Public Sector , providing an area where GenAI implementation can bring tangible changes. One of them is automatically producing in-depth reports, removing the administrative burden from public servants. It can also simplify report conducting and data analysis, allowing for faster decision-making. Similar to producing reports is processing a large volume of documents, such as application forms and contracts using NLP models. For example, in a procurement department, AI can automatically process and categorize supplier bids. With the support of generative AI, the department can detect issues such as incomplete information or incompatible offers, enabling staff to concentrate on more effective evaluation of eligible proposals. Another example constitutes expenditure analysis in budgeting. By analyzing past expenditures, predicting future spending, and forecasting future needs based on trends, GenAI can support informed decision-making for annual cost and resource allocation. This capability streamlines and accelerates budgeting processes within public services. (Τσέκερης, 2023)

Weaknesses

In the context of the Greek public sector, weaknesses of integrating AI in HRM are amplified by structural inefficiencies, regulatory constraints, and cultural factors. Key concerns include issues around data privacy, technological readiness, and resistance to change, which must be carefully navigated to fully leverage AI's benefits.

A key weakness is data privacy and security concerns. Implementing AI in HR requires collecting and processing large volumes of sensitive employee data, including personal, financial, and performance information. The Greek public sector is subject to strict data protection laws such as the GDPR, and non-compliance could lead to significant legal and financial penalties. Data breaches or misuse of AI systems could erode public trust, making it critical to ensure robust data encryption, secure storage, and transparent policies for data usage.

Inconsistent data quality remains another weakness of the Greek Public Administration. The effectiveness of AI systems depends on high-quality data, but the public sector often struggles with fragmented, incomplete, or inaccurate records. Unfortunately, poor data quality can result in flawed AI insights, leading to suboptimal HR decisions. At the same time, efforts to clean and integrate data across departments may require significant time and resources, delaying implementation. (Συμβουλευτική Επιτροπή για την Τεχνητή Νοημοσύνη, 2024)

Relevant to the above, bad quality of laws in Greece, as stated by the OECD, burdens integration of AI to the existing regulatory environment. Many HR systems in the Greek public sector are outdated and not designed to integrate with modern AI technologies. Replacing or upgrading legacy systems can be expensive and time-consuming, especially given the budget constraints and administrative hurdles in public sector projects. Compatibility issues could limit the effectiveness of AI solutions, necessitating extensive custom development work.

Opportunities

Enhancement of the candidate public servants experience is crucial to talent acquisition. A commonly observed problem in ASEP's recruitment process is that, because of the delay of the final results publication successful candidates of young age with the demanded qualifications turn to the private sector instead of accepting the position they previously applied for. There is a need to appeal to a new generation of public servants. For the reasons above, predictive analytics can help identify candidates most likely to succeed in specific roles based on historical data, reducing turnover rates. On top of that, AI can streamline and improve recruitment by automating resume screening, matching job descriptions to candidate qualifications, and even conducting initial interviews via AI-powered chatbots.

Evidence-based policymaking, improving the design and implementation of workforce policies remains a prerequisite for the Greek Public Administration. The Greek public sector often relies on manual reporting, which can lead to delays and inaccuracies. AI-powered analytics can provide insights into workforce demographics, employee satisfaction, and organizational performance, enabling smarter policy decisions. These insights can help address systemic issues, such as skill shortages or retention challenges, through targeted interventions.

Another area of HRM in the Greek Public Sector where opportunities can arise is matching employee qualifications and working experience with digital organigrammes as well as identifying skill gaps. These two processes as it was mentioned in the legal aspect chapter are regulated by the law on mobility and the current law on evaluation. The public sector frequently encounters mismatches between employee skills and job requirements, leading to inefficiencies. AI-powered tools can recommend training programs and career development plans tailored to individual employees, helping build a future-ready workforce. By forecasting workforce trends (e.g., retirements or skill shortages), AI can assist in proactive recruitment and succession planning.

Of course, the most traditional part of HRM, recruitment processes being overly complex and time-consuming can be streamlined, reducing bureaucracy while improving transparency and accountability. In the short term, applications can be developed for monitoring government operations, multi-level governance, risk management in the public sector, and providing citizens with better access to information. Moreover, the use of AI in HR can promote inclusivity by minimizing human biases that often affect hiring decisions. By implementing AI-driven tools, organizations can leverage data analytics to better understand employee performance and engagement, which can inform strategic decisions related to personnel development. Such innovations not only improve the systematic evaluation of employee contributions but also foster a culture of meritocracy, as they enable more objective assessments

Other emerging trends such as remote work or hybrid work environments in the Greek Public Sector which are selectively implemented, can be facilitated through AI. Remote work has been underutilized in the Greek public sector due to lack of contemporary equipment and cultural resistance. For the sake of the same cultural resistance, Supervisors lack responsible leadership characteristics, a weakness in which AI can contribute monitoring productivity and collaboration in remote teams, ensuring accountability without micromanagement.

Collaborative tools in the Greek Public Administration like virtual meeting facilitators, AI-powered scheduling, and automated workflow management can ensure smooth operations in hybrid work settings.

Threats

Regarding the future of work in the Greek Public Service, the already competitive climate due to few opportunities of career development and poor wages could worsen. The need for expertise in data management for AI, resulting in higher salaries offered to top AI talents exacerbates the difficulty for sectors with constrained recruitment budgets, such as the public sector, to secure highly qualified candidates. Organizational theory highlights that the success of AI strategies depends on embedding AI expertise within public organizations—a capability that is frequently absent. At the same time, the majority of public servants are not "technically proficient" to AI deployment. (Alhosani, 2024)

The Greek public sector has historically faced challenges in attracting and retaining skilled technology professionals due to rigid hiring processes and non-competitive salaries. A shortage of in-house expertise in AI and data analytics could hinder the effective deployment, customization, and maintenance of AI systems. Outsourcing these services could also introduce dependency on external vendors and reduce organizational control over sensitive systems.

What the Greek Public Sector also faces is budgetary constraints. This is the very reason why the substantial upfront costs associated with AI integration may deter full-scale implementation in the resource-constrained Greek public sector. Budgetary restrictions could lead to incomplete or uneven adoption across departments, limiting the potential benefits of AI. Ongoing costs for system maintenance, updates, and training may strain financial resources over time. Moreover, the inability to secure sustainable funding for AI projects may result in incomplete implementations or underperforming systems. Competing priorities within public sector modernization initiatives could also deprioritize AI integration in HR.

Another very common threat, resistance to change from public servants′ unions can pose a serious threat, regardless of the quality of their argumentation. Public servants may perceive AI as intrusive or a threat to jobs, leading to resistance against its adoption. It is true that AI's role in monitoring employee productivity or automating tasks might create mistrust among employees. Unions and advocacy groups as representatives of the workforce interests, may

object to the implementation of AI, citing risks of workforce downsizing or diminished job quality. A lack of digital literacy among staff could further complicate the transition, requiring extensive training and support. Proper communication of the measure should be a necessary prerequisite so that public backlash be avoided.

Technological dependency alone can prove to be a threat. Relying on external vendors or proprietary AI solutions could create long-term dependencies, limiting flexibility and control. (Συμβουλευτική Επιτροπή για την Τεχνητή Νοημοσύνη, 2024)
Over-dependence on technology may reduce the role of human judgment in HR decisions, leading to potential oversights or misaligned outcomes. On top of that, disparities can occur from differences of digital infrastructure and technological capabilities across public sector organizations hindering consistent AI adoption. Smaller or less-funded departments may lag behind in adopting AI, creating unequal access to its benefits within the public sector. This uneven implementation could undermine the goal of a unified, efficient HRM system.

5.Conclusion

The main aim of this thesis was to answer the research question on the possibility of AI promoting efficiency, fairness and being effectively integrated in HRM in the Greek Public Sector. From our literature review, it was found that AI can provide viable pathways to alleviate the longstanding inefficiencies plaguing the Greek public sector's HRM. For example, automating the recruitment process can address delays caused by manual workflows and understaffing, while predictive analytics can forecast future workforce needs, helping to bridge skill gaps and reduce turnover. Additionally, AI-enabled tools can support transparent decision-making in promotions, ensuring meritocracy and reducing political influence.

One of the most pressing needs of the Greek public sector is to address inefficiencies stemming from outdated recruitment processes, insufficient training programs, and limited career progression opportunities. AI can streamline operations by automating repetitive administrative tasks, enabling public servants to focus on strategic functions. For example, automated systems can manage application reviews, perform initial screenings, and match candidate profiles with job requirements, thereby significantly reducing recruitment timelines and increasing transparency. Furthermore, AI-driven insights into workforce data can enhance strategic HR planning by identifying skill gaps, forecasting workforce needs, and promoting evidence-based policy-making.

The challenges facing HRM in the Greek public sector are deeply rooted in systemic issues, including political interference, a lack of digital infrastructure, and cultural resistance to change. AI has the potential to overcome these barriers by introducing objective, data-driven decision-making processes that reduce human bias and foster meritocracy. However, it is critical to ensure that these systems are designed and implemented with sensitivity to the unique cultural and administrative context of Greece. As demonstrated in other public sectors worldwide, the adoption of AI must be accompanied by strong safeguards to protect data privacy, mitigate algorithmic bias, and ensure explainability.

Ethical considerations stand at the forefront of AI adoption in HRM. The Greek public sector, bound by its obligation to protect citizens' rights, must navigate the delicate balance between leveraging technology for efficiency and upholding democratic values. Transparency and human oversight are non-negotiable elements of any AI application in HRM. Moreover, public trust must be cultivated through clear communication about AI's role, capabilities, and

limitations. By engaging stakeholders—including employees, unions, and policymakers—in meaningful dialogue, the public sector can build consensus and mitigate resistance to change.

Despite its challenges, AI holds transformative potential for the Greek public sector. The SWOT analysis presented in this thesis highlights that Greece stands to gain from increased efficiency, improved service delivery, and greater employee engagement through the thoughtful application of AI. However, realizing this potential requires addressing weaknesses such as fragmented data systems, outdated infrastructure, and a lack of technical expertise among public servants. Strategic investment in training programs, pilot projects, and collaborative partnerships with academic and private sectors can accelerate AI adoption while minimizing risks.

The thesis also emphasizes the importance of a robust regulatory framework. Greek legislation, such as Law 4961/2022 and the EU's AI Act, provides a foundation for integrating AI into public administration. These frameworks mandate transparency, accountability, and ethical use, which are vital for ensuring that AI-driven decisions are fair and equitable. However, the success of these regulations depends on their consistent implementation and enforcement, supported by institutions like the proposed National Supervisory Authority for AI.

Looking forward, the Greek public sector must view AI not merely as a technological tool but as a catalyst for cultural and organizational transformation. To this end, public administration should embrace a mindset of continuous learning and adaptation, fostering a culture of innovation that aligns with societal values. The development of a comprehensive National AI Strategy, informed by international best practices and tailored to Greece's unique needs, can provide a roadmap for this journey.

In a nutshell, the integration of AI into HRM in the Greek public sector is both a challenge and an opportunity. By embracing this technological evolution with strategic planning, ethical foresight, and a commitment to public interest, Greece can set an example of how modern technology can enhance the efficiency, equity, and responsiveness of public administration. This thesis underscores that while AI is not a panacea, its thoughtful application has the potential to significantly modernize HR practices, strengthen democratic governance, and improve the lives of citizens across the nation.

Nevertheless, further research is essential to explore AI's long-term impact on workforce dynamics and organizational culture. International case studies and cross-sector collaborations can offer valuable insights, helping the Greek public sector adapt AI solutions to its unique administrative landscape.

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Annex

ChatGPT was used in order to answer the following questions:

1. Describe the potential role of AI into addressing to the problems of human resources management in the Greek public sector and find bibliography
2. Provide some challenges for Greek human resources management
3. What does the AI act regulate?
4. Can AI be implemented in the public sector?
5. What is the legal basis of implementing AI in the HRM in the Greek Public Sector?
6. Analyze the legal aspect of AI implementation in HRM in the Greek public sector and find bibliography
7. What does the Greek law 4961/2022 regulate?
8. Civil Service Code in Greece
9. Evaluation in the Greek public sector and find bibliography
10. Present rotation in the Greek public sector
11. AI in the public sector and ethical considerations and find bibliography
12. What are the guidelines on implementing AI in the public sector?
13. What are the benefits of applying AI in the public sector?
14. How can AI be applied to HRM? and find bibliography
15. How can AI be applied to HRM? What changes might it bring to the labor market?
16. Has anywhere been applied AI in HRM in the Public Sector?
17. Was the implementation of AI in HRM in South Africa's Public Sector successful? and why?
18. What are the possible challenges in applying AI in the selection process of executive positions in the Greek Public Sector?
19. Provide a SWOT analysis for AI in HRM in the Greek Public Sector
20. Could you provide bibliography for them?

Moreover, it was used for bibliography proposition, as well as for resuming and rephrasing some parts of academic papers. The text produced was only consulted or paraphrased and accompanied by analysis coming from personal beliefs, working experience and bibliography.