



“Master’s in business administration (MBA)”

Postgraduate Dissertation

**Contemporary Trends in Talent Acquisition: From
Traditional Recruitment to Data-Driven and
Predictive Hiring**

BOURLETOS IOANNIS

Supervisor: MAGOUTAS ANASTASIOS

Patras, Greece, September 2026

Abstract

The purpose of the thesis was to investigate the extent to which businesses and companies in Greece utilize digital technologies in the recruitment and selection processes, to highlight the extent of use of data and predictive analytics in staffing decisions, to record the main difficulties they face when adopting such practices and to capture the perceptions of professionals on the future course of innovative tools in the field of talent acquisition. To achieve this purpose, a quantitative survey was carried out using a structured questionnaire which was distributed to executives of businesses and companies using the Google Forms platform. The sample of the survey consisted of 60 executives of companies and businesses in Greece working in departments related to the recruitment, selection and recruitment of personnel. The results of the survey conducted showed that companies and businesses in Greece use more candidate tracking systems and social media in the context of attracting and hiring new employees. On the contrary, more innovative technologies such as predictive analysis, automated scoring and artificial intelligence systems are used to a significantly lesser extent. The findings of the survey showed that the most important challenges from the use of innovative digital tools in the process of attracting and selecting candidates are the over-reliance of the processes on automated assessments, legal restrictions, limited interpretability of the models and low data quality. In conclusion, businesses and companies in Greece seem to be in a transitional stage of digital transformation in selection and recruitment processes.

Keywords: Talent Acquisition, Employee Attraction, Recruitment, Innovative methods

Table of Contents

Abstract.....	i
Table of Contents	ii
Content of Tables	iv
Chapter 1. Introduction.....	1
Chapter 2. Literature review	4
2.1. Human Resource Management.....	4
2.2. Talent, talent acquisition and talent management.....	9
2.3. Modern recruitment an selection methods.....	13
Chapter 3. Methodology	22
3.1. Research design	22
3.2. Participants.....	23
3.3. Research tool.....	24
3.4. Research procedure.....	25
3.5. Data analysis	26
Chapter 4. Results	27
4.1. Introduction.....	27
4.2. Demographics	29
4.3. Reliability analysis.....	30
4.4. Technologies used in recruitment	35

4.5.	Data and predictive analytics	37
4.6.	Challenges.....	38
4.7.	Future outlook.....	40
4.8.	Differences regarding firm size	41
4.9.	Summary	47
Chapter 5. Conclusion		48
Chapter 6. Policy implication.....		51
References		53
Appendix A. Questionnaire.....		62

Content of Tables

Table 1. Guests demographics (N = 15).....	20
Table 2. Reliability analysis for "Technologies used in recruitment" dimension	22
Table 3. Reliability analysis for " Data and predictive analytics"	23
Table 4. Reliability analysis for "Challenges"	24
Table 5. Reliability analysis for "Future outlook"	25
Table 6. Descriptive statistics for "Technologies used in recruitment" dimension.....	26
Table 7. Descriptive statistics for "Data and predictive analytics" dimension.....	28
Table 8. Descriptive statistics for "Challenges" dimension	30
Table 9. Descriptive statistics for "Future outlook" dimension	31
Table 10. Kruskal Wallis test results for comparisons regarding firms size	33
Table 11. Kruskal Wallis test mean ranks for comparisons regarding firms size	35

Chapter 1. Introduction

Over the years, Human Resource Management (HRM) has transformed considerably in response to the changing demands of the business environment. In its traditional form, the HR function was mainly concerned with administrative responsibilities, including managing employee payroll, overseeing benefits programs, and maintaining personnel documentation. However, their role has now transformed into a strategic partner that is inextricably linked to driving organizational success. This transformation is due, in large part, to the integration of information technology (IT) into HRM practices (Vardarlier, 2019). Undoubtedly, in the constantly changing and evolving business environment, the effectiveness of a company's HRM constitutes the main source of its competitive advantage. The success of businesses is inextricably linked to the ability of HRM to attract, select, develop through development and training, implement reward programs and maintain strong professional ties with talented employees. The objectives of HRM must be consistent with the strategic goals and plans of the company (Dutta et al., 2025).

The internet and Artificial Intelligence has drastically changed the way people interact, communicate and look for work (Budhwar et al., 2023). The rapid penetration of artificial intelligence and the Internet of Things is pushing business employees and HR Leaders to acquire additional knowledge and skills, as well as to become familiar with the automation of their work, in order to enhance their competitiveness in the labor market. The need to gain a competitive advantage, a strong strategic role and reduce costs from the HRM perspective is increasingly intensifying the need to systematically measure the efficiency and contribution of human capital to the productivity and financial results of the company (Malik et al., 2022).

In the process of digital transition of most business processes and functions in which most organizations are currently engaged, a challenge is to study the effectiveness of digital applications and media used in candidate attraction and selection processes, in the context of the coexistence of the two forms (Rhemananda et al., 2020). In today's competitive business environment, among other things, businesses recognize that acquiring and retaining competent personnel is a cornerstone of their long-term success and survival. However, traditional recruitment methods, often bogged down by manual processes and outdated technologies, struggle to meet the demands of the modern labor market (Freire & De Castro, 2020). The advancement of technology, moreover, and the acceleration of digital transformation, have ushered in a new era of e-recruitment. In this context, the adoption of innovative e-recruitment strategies by businesses becomes imperative (Albert, 2019). The internet, social media, automation, artificial intelligence and other technologies have emerged as powerful tools for streamlining relevant processes and improving the operation and effectiveness of human resources departments (Gusain et al., 2023).

The aim of the thesis was to investigate and capture the extent to which businesses and companies in Greece make use of digital technologies in matters of attracting and selecting personnel. At the same time, the thesis aimed to explore the key challenges that businesses and companies in Greece face in their attempt to use such tools. Finally, the aim of the thesis was to highlight the perceptions of professionals regarding the future of innovative tools in talent acquisition.

The research questions of the thesis were defined as follows:

1. To what extent do businesses and companies in Greece use digital tools in the recruitment and selection processes?

2. To what extent do businesses and companies in Greece use data and predictive analytics in the assessment and decision-making processes when selecting or evaluating candidates?
3. What are the main challenges that businesses and companies in Greece face in the context of adopting modern innovative practices in the personnel selection process?
4. What are the perceptions of professionals regarding the future of modern selection practices in talent acquisition?

The thesis is divided into five chapters. The second chapter presents the theoretical framework of the thesis. This chapter provides information on the traditional and more modern forms of attracting and selecting employees and the role of talent acquisition in the performance and effective operation of businesses and companies. The third chapter of the thesis presents the methodological framework on which the research carried out in this thesis was based. In more detail, information is provided on the research design, the research sample, the data collection tool (questionnaire) and the data collection process. The fourth chapter presents the results of the research as derived from the responses of 60 employees/executives in HRM departments of businesses and companies in Greece. The fifth chapter presents the conclusions of the thesis, indicates the limitations of the research and provides some suggestions for future research.

Chapter 2. Literature review

2.1. Human Resource Management

Traditionally, Human Resource Management (HRM) is the organizational and strategic function dedicated to managing a company's human resources to achieve this success and gain a competitive advantage in recent years, globalization has increased, leading to stronger connections between national economies and greater international trade through advances in technology. As a result, competition among organizations has become more intense, making it important for companies to attract and keep skilled employees to gain and maintain a competitive advantage. (Storey et al., 2019). Therefore, they maintain strong ties with their human resources and invest in their management. HRM includes tasks such as human resource preparation, management, recruitment strategy, employee training, compensation policy, employee relations, healthcare, employee satisfaction, while also including policies and practices to improve organizational effectiveness, employee engagement and work quality (Armstrong & Taylor, 2023).

The aim of HRM is to manage human resources with an emphasis on expanding the customer base and, by extension, maximizing the profitability of businesses. Human resources management deals with personnel policies and management practices as well as the systems that affect the workforce. Human resources management specialists in the HRM department assist organizations with all activities related to staffing and maintaining an effective workforce (Armstrong & Taylor, 2023). The responsibilities of HRM include job design, job analysis, training, development, recruitment, compensation, building work teams, managing and evaluating performance, employee

health and safety issues, as well as identifying or developing valid methods for personnel selection (Armstrong & Taylor, 2023). HR Manager influences the management of human resources and the productivity of the company. Also, HR Manager plays a vital role in maintaining the professional life and career planning of employees. He contributes to the resolution of conflicts, motivates employees to achieve personal and organizational goals and contributes to the management of workforce diversity and the fulfillment of the demands of globalization (Ererdi et al., 2021).

The functions of HRM are complex and affect all sectors and all individual parts of a business or organization. In more detail, they are listed below.

Human resource planning refers to a strategic process through which an organization ensures that it has the appropriate number and type of employees required to accomplish its future objectives. This process involves estimating future workforce requirements across different areas of expertise, evaluating these projected needs against the organization's current human resources, and identifying any gaps that must be addressed through recruitment or other workforce strategies (Armstrong & Taylor, 2023). Furthermore, effective human resource planning requires an analysis of the organization's existing workforce position alongside its desired future state, followed by the development of strategies that facilitate the transition between the two. According to Anderson (2015) and Hecklau et al. (2016), this planning process typically consists of a series of interconnected steps. (Anderson, 2015; Hecklau et al., 2016):

1. Determining human resource objectives
2. Recording the existing human resources within the company
3. Estimating the need to meet human resource needs from external sources
4. Evaluating current organizational planning and work planning

5. Based on the above information, developing a labor demand forecast in terms of the number of people required, the qualifications needed and the time period that will be required

Job Analysis: With the term Job Analysis we describe the process of identifying and recording both the tasks and the knowledge and skills required for the effective execution of a specific job. It is the cornerstone and reference point of many HRM activities and functions in businesses and organizations (Ahmad & Alqaarni, 2023). Some of the activities that require the existence of effective and functional job analyses are the following (Brannick & Levine, 2002):

1. Job description
2. Job requirements
3. Decisions concerning staff recruitment
4. Decisions concerning staff promotions
5. Decisions concerning staff transfers
6. Decisions concerning staff dismissals
7. Staff salaries and remuneration
8. Employee performance evaluation

The attraction and selection function focuses on identifying suitable candidates both within the organization and in the external labor market, encouraging them to apply for available positions, and selecting the most qualified individuals through appropriate recruitment and assessment methods. Although many organizations do not systematically implement onboarding practices for newly recruited employees (Armstrong & Taylor, 2023), providing a structured introduction and orientation process is considered essential. Proper induction enables new employees to become

familiar with the organization's culture, policies, and job responsibilities, facilitating their successful integration and improving their overall performance (Ahammad, 2017). Since recruitment and selection constitute the central focus of this thesis, this function will be examined in greater detail in the following sections.

Human Resource Training:

Human resource training refers to a structured learning process designed to equip employees with the knowledge, skills, and competencies necessary for the effective execution of their job responsibilities (Edralin, 2004). It involves the transmission of knowledge from the trainer to the trainee through organized instructional activities. Training initiatives are not limited to newly hired personnel who require orientation and skill development but also extend to existing employees, supporting continuous learning, professional growth, and adaptation to organizational and technological changes (Otoo, 2019).

Human Resource Evaluation:

Human resource evaluation is the systematic assessment of employee performance against predetermined organizational objectives and performance standards. This process serves multiple purposes, including enhancing employee development, strengthening organizational effectiveness, and supporting career planning by identifying both employees' capabilities and their developmental needs (Armstrong & Taylor, 2023). Furthermore, performance evaluation provides valuable information for determining training requirements, establishing performance-based reward systems, and offering constructive feedback that contributes to employee motivation and continuous improvement (Ahammad, 2017).

Compensation Systems: As compensation, we consider any type of payment to the employee (also referred to as a "compensation package"), in exchange for his employment and contribution to the achievement of the company's goals (Kozioł et al., 2014). This compensation consists of:

1. The direct financial benefit, which is the salary, as well as the incentives-awards, i.e. the additional remuneration paid for the effort and results achieved by the employee.
2. The indirect financial benefit, which is the benefits related to the job, such as payments for leave, absences, holidays, life insurance, etc. (Armstrong & Taylor, 2023)

A compensation, system, which is easy to use and friendly to employees, can be used to offer incentives in order to make a greater effort on their part. Thus, it leads to an increase in performance without changes in the number of employees. Incentives for achieving goals are mainly variable remuneration systems (Mahato & Kaur, 2023)

Labor Relations: The term labor relations generally characterizes the relationships between employers and employees, either directly on a personal level, that is, between managers and the persons who provide their work, or collectively, between employers or employer organizations and labor unions or unions. Labor relations, although they are a subject of HRM, nevertheless constitute a field of study of labor employment such as political science, sociology, labor law, etc. Labor relations also deal with wages, salaries, employment and unemployment, collective bargaining, collective agreements, collective disputes and strikes. It is the part that is directly affected by the compensation systems that businesses implement (Kaufman, 2010).

Information technologies have significantly influenced human resource management practices in many areas. Developments in information technology have

created new tools and approaches that affect the way organizations manage, develop and retain their human resources (Roul et al., 2025). One of the ways in which it contributes to human resource management is through human resource management systems (HRMS) and management software applications. Such systems allow the automation of processes, such as employee registration, compensation management, performance evaluation and training, saving time and resources (). The development of business analytics and the emergence of Big Data is the new challenge of the times, as the existence of know-how around their analysis and utilization by human resource departments is what differentiates companies in terms of their effective staffing (Gravili et al., 2023).

The latest technological developments, such as artificial intelligence, have also entered the field of human resource management. This in turn can be used for data analysis, but also for forecasting workforce needs, evaluating performance and managing human resources in a more effective manner (Tinguely et al., 2023). Consequently, within the context of these developments, employee management and retention has now taken on new dimensions, which have now not only made their presence felt, but have already been consolidated by a multitude of companies - leaders in the human resources sector (Zhang & Chen, 2023)

2.2. Talent, talent acquisition and talent management

The term talent appears everywhere. The concept is frequently mentioned in the media, while the term is often associated with athletes (Olympic champions, skilled coaches, dynamic teams), musicians with high prospects, singers with beautiful vocal timbre and gifted children (Gallardo-Gallardo et al., 2013). The search for a clear definition encounters enormous difficulties according to Skuza et al. (2022). A possible

explanation for this conceptual ambiguity is the history of the word talent, taking into account the different meanings it has had at times.

Since 1998, when a group of McKinsey consultants coined the phrase ‘war for talent’ and argued that a fundamental belief in the importance of talent is required to achieve organizational excellence (Michaels et al., 2001), talent management has become a major issue (Chuai et al., 2008). Proper talent management is considered a critical and determining factor in organizational success (Beechler & Woodward, 2009), as well as an imperative for the survival and sustainability of organizations (Mujtaba & Mubarik, 2021). Despite the growing popularity of this topic and after years of debate, talent management suffers from a lack of clarity in terms of definition and overall objectives (Kwon & Jang, 2021).

The need for talent is imperative. However, to achieve this goal, it is necessary to have a systematic Talent Management and then to attract and retain existing or necessary people for the company (Srivastava & Bhatnagar, 2010). What we first need to understand is why a charismatic, ambitious and energetic person wants to join or stay in our company, what it is that will bring them and keep them with us. This is therefore an entire process that, in order to have the desired result for each company, must have set goals from the beginning and be properly organized (Kwon & Jang, 2021)

According to research conducted at the end of the 20th century (in America) (known as "War of Talent") large companies faced three main challenges (Michaels et al., 2001): first, the extremely complex economy required to an even greater extent people with a multicultural background, technological knowledge, innovators and the ability to manage divided companies or companies that have fallen behind in developments; secondly, the emergence of efficient capital markets in the US led to the creation of small and medium-sized businesses, which, by offering opportunities for

development and wealth, managed to attract many of the talents of the market and thirdly, the mobility of employees from one company to another, depending on the opportunities and advantages that each one presented, contributed to the already existing concern of large companies (Beechler & Woodward, 2009).

As a solution, therefore, to this problem, the continuous training and participation of the human resources management department in the empowerment of talents and in the creation of stronger “Talent pools” was proposed. Entering the process of thinking that an organization needs new talents or that it wants to retain the existing ones, it must first answer an extremely crucial question, “*Why would a talented person want to work here?*” (De La Calle-Duran et al., 2021). The human resources management department of each company must answer this question by using a value proposition that will manage to attract and retain talent. This process, of course, is not completed overnight. It is something that takes time and is built over time, requiring the cooperation of all members of the broader team of each organization (Jooss et al., 2019).

Without a doubt, attracting, developing and retaining talent has emerged as one of the most crucial issues facing businesses worldwide. Talent management can be described as a set of activities and processes that deal with the systematic attraction, development, engagement and retention of those talents that are of great value to an organization in creating successful strategies (Boudreau & Ramstad, 2005). Globalization, technology as well as broader socioeconomic, geopolitical and demographic changes, create unprecedented complexity in the business world. Talent is an important strategic resource for achieving and maintaining competitive advantage (Conte & Siano, 2023).

One of the basic and crucial strategies for achieving competitive advantage and sustainability of organizations is that of attracting talent. The goal of organizations is to

attract personnel who have the necessary skills, abilities and knowledge and can meet the current and future requirements of the positions they are called to fill (Pruis, 2011).

Albinger and Freeman (2000) supported investing in the organization's reputation as an important factor for attracting employees. In addition Menezes et al. (2025) added the employer brand, competitive remuneration and appropriate job promotion as important factors for attracting talent. Attraction can be achieved from two sources, either from the internal environment of the organization or from the outside. In the literature, the Talent attraction has been studied from various perspectives (talent as a "charisma", talent as a "ability", talent as an acquired "skill", etc.), but all have accepted two basic processes:

1. Audit process: a detailed recording of the jobs in an organization is made and the possible new ones that will arise are identified. Also, during the audit process, the personnel involved in HR gathers and records the abilities, skills and knowledge that the personnel who will fill the respective position must have.
2. Recruitment process: the recruitment process follows the audit process and is perhaps the most basic function of HR because it includes all the necessary actions required to select the appropriate candidate for the respective job position (Walford-Wright & Scott-Jackson, 2018).

Attracting from the internal environment: the internal environment of an organization is its human resources itself. Therefore, the source of attracting talent from within the organization can be the organization's own employees who will be promoted or transferred to new positions. Another source of internal attraction can be the acquaintances and family environment of the organization's employees. Another source is the organization's own former staff and "door candidates" (Mahan & Devi,

2012). "Door candidates" are people who apply or submit a resume with their qualifications to an organization with the aim of hiring them in the event that a similar position with their interests and qualifications-skills and knowledge is announced. If organizations have an updated and organized file of "door candidates" then this could be an important source of internal attraction (Masri & Suliman, 2019).

Attraction from the external environment: the external environment of an organization is any source of candidate workforce outside the organization. Some of the common sources of attraction are: the media, archives from organized associations, new technologies (internet, social media, etc.), career days, employee rental companies, university alumni offices, etc. (Alhaider et al., 2025). In addition, Joyce and Slocum (2012) argue that, for their part, organizations must first have created a suitably attractive climate (reputation, corporate responsibility, culture) for talents in order to attract them.

2.3. Modern recruitment and selection methods

Recruitment and selection of employees have been and continue to be some of the most important issues in human resource management for many years, and have always been a critical and costly function for any business. More recently, however, recruitment and selection of employees have been greatly influenced by the emergence of technology, affecting all its different aspects (Hunkenschroer & Luetge, 2022). Indeed, new and diverse forms of technological developments, not limited to the use of the internet or social media, have emerged, having a strong impact on the way job seekers are attracted and selected. Recruitment and selection have probably benefited the most from the emergence of technological solutions over the past decades (Conte & Siano, 2023). Technology, of course, has brought enormous progress to all aspects of social and

professional life. However, especially in recruitment and selection, technology has affected the entire life cycle of these processes (Nikolaou, 2021).

In this context, the term electronic human resources management (e-HRM) has also emerged, reflecting the impact of technology on the various functions of human resource management. Indeed, in recent years, modern technology has brought significant changes to the internal operations of businesses, including human resource management. New technologies therefore play an increasingly decisive role in the way in which businesses manage their human capital (Strohmeier, 2014). The global economy, moreover, is in a phase of profound transformation. These changes fundamentally affect the organization of work and corporate structures, also having significant impacts on human resource management. New technologies offer employees and businesses advanced solutions that facilitate work tasks, automate processes and enhance communication and connectivity. Technological progress acts as a catalytic factor for change, creating new opportunities, but at the same time making traditional models of organization and management obsolete (Cantoni & Mangia, 2018).

In this context, human resource management has adapted accordingly, increasingly integrating new technologies into its functions. Thus, various terms have been developed to describe this transition, such as electronic human resource management and more recently "smart" human resource management (Smart HRM). Among these terms, the first is the most widespread and mainly refers to the use of web applications for human resource management. It is a system that combines hardware, software and electronic networks, allowing better coordination, improved data collection and analysis at the individual and group level, and therefore automation and optimization of recruitment and selection practices (Thite, 2018).

As already stated, the era of digitalization and technology has brought a new dynamic to human resource management. The development of Human Resource Analytics (HR Analytics) in combination with Big Data has opened new horizons for understanding and optimizing employee management processes in businesses and organizations. Big data is high-volume, high-velocity and high-variation information that requires new forms of processing to enable enhanced decision-making, knowledge discovery and process optimization (Dahlbom et al., 2019).

Human Resource Analytics (HRA) is a relatively new term that first appeared in the scientific literature of the human resources sector in 2003-2004, (Marler & Boudreau, 2017). By mining employee data and identifying By identifying patterns related to skills, performance reviews, tenure, education, previous roles, etc., companies can reduce job-fill time, improve employee engagement and productivity, and minimize turnover. (Bahuguna et al., 2023)).

According to Bassi (2011) it is defined as a process that can be interpreted as both a “reporting system on a set of human resource metrics” and more advanced solutions, based on “predictive models” and “what if scenarios.” Beyond that, Bassi’s definition encompasses the concept of data-driven decision-making. Specifically, he summarizes Human Resource Analytics as “an evidence-based process for making better decisions in the human resources department of the enterprise, consisting of various tools and technologies, from simple human resource metrics reports to predictive models.” (Bassi, 2011).

Consequently, data and analytics play a dual role in modern human resources departments. They contribute, that is, both to predicting situations and to guiding important decisions. They form the basis for modern technological applications that executives use to complete important functions of the HR department, such as finding

suitable personnel, their continuous training and evaluating their performance. In fact, they have been characterized as a game-changer, that is, as a catalytic factor that shapes the future of human resources (Falletta & Combs, 2020).

Recruitment is a vital stage for any business that seeks its growth and success. Basic activities that are usually included in human resources business processes are the identification, description - analysis of jobs that require filling by new personnel and their approval, their publication and posting, the finding and hiring of candidates from the pool of "talent" available in the labor market and their placement in the jobs (Kavanagh & Johnson, 2017).

Finding and selecting suitable employees for staffing companies is currently a process of major importance. "Talent hunting" as it is called, is what ends up giving a competitive advantage to businesses that implement it effectively.

Traditional recruitment processes: By researching traditional recruitment processes and presenting the methods and practices that have been applied over time, the aim is to highlight new trends, as they have been shaped by the emergence and integration of new technologies. Going back in time, we find that Taylor (1911) is the one who introduced the concept of selecting candidates based on criteria of their abilities. Until recently, the process of selecting employees was carried out in order of priority and based on acquaintances. He is the one who formulated the necessity of prior testing of the individual's skills before their final selection. In the context of analyzing the recruitment cycle of a new employee, a preparatory, but very necessary, stage of the process is the job analysis, in order to determine the specific characteristics of the position and the requirements that the candidate employees must meet (Armstrong & Taylor, 2023). Then, it is particularly important to determine whether the recruitment will be done from an internal source of the company or an external one. In cases where

external recruitment is involved, traditionally the publication of the open job position was posted in local newspapers, or was assigned to employment agencies. After the screening of resumes, followed by the in-person completion of candidate tests by HR executives, usually through the interview process. The process of evaluating and selecting suitable employees is the one that presents the greatest difficulty, as the results obtained are not always trustworthy (Armstrong & Taylor, 2023).

Recruitment using technology: The entry of technology into the time-consuming and costly process of recruiting new human resources is a factor in its modernization. Big data and artificial intelligence are capable of ensuring to a considerable extent that the right employee is hired. They help automate the matching of resumes with the job description of the candidates, and consequently only profiles that have a high probability of meeting the requirements based on the job requirements are selected for interviews, (Sivathanu & Pillai, 2018). For example, according to Malik et al. (2022), artificial intelligence can be used to get rid of gender bias in the selection process and select the best possible candidate for the job based on his or her abilities. Based on these assumptions, it is found that the overall search and selection cycle is transformed and simplified, while at the same time the process becomes more impartial as it is based on objective criteria without being influenced by the human factor.

Artificial Intelligence: The concept of artificial intelligence (AI) has its roots in the mid-20th century. However, the foundations of this concept were laid earlier, mainly through the work of the famous English mathematician Alan Turing. Turing posed the fundamental question: "Can machines think?", which has since become the subject of extensive research in many academic and scientific disciplines. Artificial intelligence has gradually progressed as part of humanity's broader effort to develop intelligent machines, that is, systems capable of acquiring cognitive abilities similar to

human intelligence, including perception, learning, reasoning, judgment, understanding and problem solving. Artificial intelligence can, therefore, be defined as a field in computer science that focuses on the design of intelligent computing systems that exhibit human cognitive characteristics, which are closely related to rational thinking, logical analysis and the ability to draw conclusions (Haenlein & Kaplan, 2019)

A key characteristic of human intelligence is its dependence on inductive reasoning for decision-making. People interpret stimuli from their environment using their knowledge, senses and experience, and construct a mental framework that allows them to analyze a given situation. This ability is directly related to decision-making and actions intended to achieve desired goals. The success or failure of these actions ultimately determines the validity of the initial decision (Budhwar et al., 2023). Artificial intelligence seeks to reproduce this cognitive process by designing "smart" programs and machines that have the ability to think, learn and adapt. Artificial intelligence consists of software & hardware elements that work together on the basis of algorithms and mainly machine learning, to perform mental operations with speed and accuracy. that exceed human capabilities. By leveraging these technological developments, artificial intelligence is revolutionizing various sectors (Basu et al., 2022).

In the recruitment and selection process, artificial intelligence has brought about significant changes. The traditional recruitment process was based on methods that often resulted in inefficient recruitment, especially for specialized executives. In contrast, electronic recruitment systems based on artificial intelligence improve efficiency by automating candidate searches and evaluating a wider range of qualifications. One of the key contributions of AI to the recruitment process is its ability to analyze large data sets quickly and accurately (Marinakou et al., 2024). Platforms

that leverage artificial intelligence can scan resumes, assess candidates' skills, and match job descriptions with greater accuracy than human resource managers. This automation reduces errors and increases the likelihood of selecting candidates who align with a company's goals. Despite its advantages, the AI-based hiring process is not without challenges. Reliance on algorithms requires careful monitoring to avoid biased results that can result from incorrect data entries. Furthermore, while AI can streamline processes, human judgment remains important in making final hiring decisions (Anghel, 2023; Ligeiro et al., 2024).

Social Media: In this context, social media has significantly influenced recruitment processes by transforming the way companies identify and attract staff. Platforms such as LinkedIn, Facebook and Twitter have become indispensable tools for recruiters, enabling them to access a huge pool of potential candidates. These networks provide direct communication channels, facilitating communication with both active job seekers and passive candidates who may not be actively looking for work but are open to new opportunities. One of the main advantages of using social media in online recruitment is its ability to provide deeper insights into candidates beyond their CVs (Landers & Schmidt, 2016). Recruiters can evaluate an individual's online activity, professional connections and other parameters. However, despite its advantages, Social media-based online recruiting presents challenges. The sheer volume of information available requires recruiters to develop methods to filter relevant data. Furthermore, reliance on social media can bias some, as not all potential candidates actively maintain online professional profiles. Companies must also be mindful of privacy and ethical issues when evaluating a candidate's online presence. However, as social media continues to evolve, it will remain a critical element of online recruiting, shaping the way businesses connect with talent and build their workforce (Rahman et al., 2020).

Big Data: The concept of big data has emerged in the IT world to describe the large-scale increase in data production. This increase comes from a vast range of sources, mainly linked to the internet. The importance of big data lies in the fact that, in the digital age where the internet dominates, the huge volume of data produced has escalated at an unprecedented rate (Elmenzhi et al., 2025). The enormous scale of the accumulated information exceeds the capabilities of conventional relational databases, making them inefficient for efficient processing. However, for those who own and manage this information, it has enormous value. Consequently, big data has caused a significant change in data management practices. In essence, big data represents extremely large and complex data sets that exceed the processing capabilities of traditional data management techniques (Fauzi et al., 2022). It is not only the amount of data that defines big data, but also its diversity and the speed with which it is processed. are produced and processed. The importance of big data lies, therefore, in the exploration of huge amounts of raw data to uncover valuable insights, identify patterns and draw meaningful conclusions through various analytical techniques and methodologies . (Mateen et al., 2024)

In this context, big data has significantly transformed recruitment and selection process, improving the way companies select and evaluate candidates. The integration of data analytics into recruitment processes allows companies to access and analyze a large volume of information from online sources, such as social networks, etc. This enables recruiters to create a more comprehensive and detailed profile of candidates, going beyond traditional CVs and cover letters. However, this also raises concerns about privacy, data protection and other issues in the recruitment process. One of the key advantages of The advantage of big data in online recruitment is its ability to improve the efficiency of the entire process (Elmenzhi et al., 2025).

By using big data technologies, companies can filter and analyze huge amounts of applicant data, identifying the most suitable candidates in a fraction of the time it would take through conventional methods. Despite these advantages, the use of big data in online recruitment poses ethical and legal challenges. Companies may collect data that is irrelevant to a candidate's professional skills, such as personal opinions or social interactions, which may lead to biased hiring decisions. The use of these tools can also create bias if the algorithms are not properly designed to avoid unfair exclusions based on, for example, gender, ethnicity, or other personal characteristics (Conte & Siano, 2023).

Chapter 3. Methodology

3.1. Research design

In this study, in order to answer the research questions posed and fulfill its purpose, it was decided to conduct quantitative research using a questionnaire. Quantitative research is a form of research based on the methods of natural sciences, which produces numerical data. It aims to establish a cause and effect relationship between two variables using mathematical, computational and statistical methods. Quantitative research is also known as empirical research as it can be measured with accuracy and validity. The data collected by the researcher can be divided into categories or ranked or can be measured based on the units of measurement. Graphs and tables of raw data can be constructed with the help of quantitative research, making it easier for the researcher to analyze the results (Bell et al., 2023).

The use of quantitative research methodology for the thesis presents some important advantages (Bell et al., 2023; Creswell & Creswell, 2022):

- **Reliability:** Quantitative research provides reliable data, which is measurable and verifiable. This is important when examining the effectiveness of artificial intelligence applications in human resource management.
- **Generalizability of Results:** The results of quantitative research can be generalized to larger samples or populations, thus making the findings more applicable on a wider scale.
- **Objectivity:** Quantitative research allows for data collection in a more objective manner, minimizing personal interference and biases that may affect the research.

- **Statistical Analysis:** It allows the use of statistical tools to analyze data, providing a deeper understanding of trends, correlations, and predictions related to artificial intelligence in human resource management.
- **Accuracy in Measurement:** Quantitative variables can be measured accurately, which is important for understanding the impact of artificial intelligence on human resource management.

Overall, the use of quantitative methodology enhances the quality of research on the use of artificial intelligence in human resource management, providing reliable, objective, and actionable data and results (Saunders et al., 2023).

3.2. Participants

The research population was defined as the total number of companies and enterprises operating in Greece. Convenience sampling was used as a method to select a sample from the total population, resulting in a non-probability sample. A sample is called a non-probability sample when the method of selecting each sample unit is not governed by the laws of probability, but is based on criteria such as convenience, easy access, availability, time of data collection, and others. These criteria do not ensure a positive and predetermined probability of selecting all members of the population. On the contrary, the selection or non-selection of members is done with certainty (Saunders et al., 2023). The participants were approached by the researcher's friendly and working environment. In total, 60 executives from businesses and companies in Greece who work in departments related to the attraction, selection and recruitment of employees responded to the invitation to participate in the survey.

3.3. Research tool

After collecting secondary data through a research search in academic articles and books, the primary quantitative research follows. Based on the findings of the literature review, a questionnaire was created in order to examine (1) the extent to which companies and enterprises operating in Greece use technologies in their recruitment process, (2) the impact of data-driven and predictive approaches in the hiring process, (3) the challenges they face when adopting such methods, as well as (4) their intention to continue using similar methods (for example machine learning) in the future.

The questionnaire used in this study consisted of closed-ended questions, which were formulated to capture the perceptions and practices of professionals working in HRM departments regarding selection and recruitment regarding the utilization of new technologies (such as artificial intelligence, machine learning, etc.) in talent acquisition. The survey questionnaire includes a total of five sections of questions and is given in Appendix A.

The first section of the questionnaire contained questions regarding the demographic and professional characteristics of the participants (such as age, gender, level of education, professional role, years of experience in recruitment and the size of the company they work for).

The next four sections of the questionnaire contained statements that each participant could indicate their degree of agreement based on a Likert scale from 1 (“strongly disagree”) to 5 (“strongly agree”). The second section of the questionnaire aimed to assess the extent to which companies and businesses in Greece use various new technologies in the recruitment and selection process (e.g. Applicant Tracking Systems, artificial intelligence tools, Candidate Relationship Management (CRM)

systems, social-media sourcing tools, chatbots, video interview platforms and people analytics dashboards). In total, the second section of questions contained 8 statements.

The third section of the questionnaire aimed to capture the perceptions of the professions regarding the use of data and predictive analytics in hiring decision-making processes. These statements captured issues such as the use of predictive models to identify and prioritize candidates, automated scoring, the use of analytics, as well as the investigation of the accuracy and impartiality of these technologies. In total, the third section of questions contained 8 statements.

The fourth section of the questionnaire aimed to capture the perceptions of the professions regarding the challenges that businesses and companies face in the process of using new technologies in personnel selection processes (such as algorithmic bias, personal data protection, legal restrictions, data quality, lack of skills, organizational resistance, and financial constraints). In total, the fourth section of questions contained 11 statements.

Finally, the fifth section of the questionnaire aimed to record the intention of businesses and companies to use new technologies in the future in personnel selection. In total, the fifth section of questions contained 5 statements.

3.4. Research procedure

Initially, the questionnaire was compiled via Google Forms and promoted electronically via email and social media. The choice of the electronic questionnaire as a data collection tool was based on the possibility of gathering a large number of respondents in a short period of time. Furthermore, through this specific tool and the anonymity it ensures due to the absence of personal contact with the researcher, the sincerity of the responses is achieved to the greatest extent (Creswell & Creswell, 2022).

At the beginning of the questionnaire there is an introductory paragraph with the aim of informing the respondents about it. More specifically, the respondents are informed that this questionnaire has been prepared for academic purposes, and they are briefly informed about the subject of the study. Then, the anonymity and confidentiality of their responses are ensured, so that they can answer honestly (Saunders et al., 2023). Each participant could then answer the electronic questionnaire. The average time to complete the questionnaire was 10-12 minutes. The research data collection period ranges from 28 November 2025 to 11 January 2026.

3.5. Data analysis

The statistical analysis of the data was performed using SPSS version 29 software. The data analysis was mainly based on descriptive statistics indicators such as the mean (M), the standard deviation (SD) the minimum and maximum value. Accordingly, an analysis was performed to investigate whether there are statistically significant differences in the use of data-driven and predictive hiring tools in talent acquisition processes in terms of the size of the businesses and companies. For this purpose, the non-parametric Kruskal Wallis test was applied to the data, setting a significance level of 5%.

Chapter 4. Results

4.1. Introduction

The existence of talent acquisition in businesses is a topic that, especially in recent years, has particularly concerned both researchers and professionals in the business field. This fact exists given the increase in competition between candidates and existing professionals (Dutta et al., 2025). The market is constantly evolving, creating new needs, with which professionals must synchronize, if they do not want to risk their position as members of the wider professional community (Abraham et al., 2023).

The literature in the field of talent acquisition shows that traditional recruitment processes have gradually moved towards more digital, innovative and modern approaches (Albert, 2019). Despite the great development in this field and the interest of researchers worldwide, there are still gaps that deserve further investigation. Most research in the international literature examines specific tools or specific recruitment applications (Conte & Siano, 2023) without providing evidence for the general transition from traditional recruitment to data-driven and predictive hiring (Socoliuc et al., 2025). Furthermore, in Greece, relevant research is limited and often concerns specific sectors, such as the hotel industry (Marinakou et al., 2024), which shows that to date it has not yet been sufficiently investigated whether businesses and companies in Greece use innovative tools (e.g. AI) in the recruitment and talent acquisition process.

The research motivation for this thesis arose from the fact that with the continuous development of technology, recruitment and selection practices are changing faster than ever. Also, the use of digital technologies (e.g. analytical tools and predictive systems) in personnel selection and recruitment processes is becoming

increasingly important, as it has been proven that these technologies improve the speed of decision-making, improve the organization of data and processes and contribute to making better and more documented (data-based) decisions.

Within this general digital transition in personnel selection and recruitment processes, artificial intelligence has been integrated in recent years, which further contributes to the process of automation of processes, data analysis and forecasting. The importance of the issue is understood if we consider that in the European Union the use of artificial intelligence increased from 13.5% in 2024 to 20.0% in 2025, for enterprises with 10 or more employees (Eurostat, 2025).

Based on all of the above, it is important to study the extent to which these new technologies have been integrated into recruitment processes and talent acquisition in Greece. For this reason, subchapters 4.4 to 4.8 are of particular importance for the interpretation of the results of the research. Subchapter 4.4, which concerns the technologies used in recruitment, is important because it shows to what extent businesses have moved from conventional practices to more modern tools and systems. Subchapter 4.5, which examines data and predictive analytics, is also essential, as it highlights whether personnel selection decisions are still based mainly on experience and personal judgment, or whether they are starting to rely more on data, analysis and predictive mechanisms. At the same time, subchapter 4.6 is necessary, because the use of new technologies is accompanied by significant challenges. The existence of technological tools does not necessarily mean their effective implementation, as there may be obstacles related to the lack of know-how, organizational readiness, trust in digital systems and the adaptation of companies to new ways of working. Accordingly, subchapter 4.7 is important because it captures the future perspective of recruitment and shows how companies perceive the evolution of these practices in the coming years.

Finally, subchapter 4.8, which examines differences depending on the size of the company, is particularly important, as it allows us to see whether the adoption of technologies, data and innovative practices is a common trend for all companies or whether it differs between smaller and larger companies. Thus, these specific subchapters do not function simply as a presentation of individual results, but as key axes for understanding the real degree of transformation of recruitment and talent acquisition in the Greek business reality.

4.2. Demographics

A total of 60 executives/employees working in human resources management departments in businesses and organizations in Greece participated in the survey. 73.3% (n = 11) were male and 26.7% (n = 4) were female. The data regarding the age group showed that 46.7% (n = 7) of the sample were aged 30 to 39 years. A smaller percentage of the sample was aged under 30 years (n = 2, 13.3%), 40 to 49 years (n = 2, 13.3%), 50 to 59 years (n = 3, 20%) and over 60 years (n = 1, 6.7%). In addition, Table 1 shows that 60% (n = 9) of the participants had a bachelor's degree and 33.3% (n = 5) had postgraduate studies. Findings regarding the job title of the sample showed that 20% (n = 3) were talent acquisition / recruitment managers, 26.7% (n = 4) were heads of Recruitment Departments, 13.3% (n = 2) were senior recruiters / lead recruiters, 13.3% (n = 2) were people analytics / HR analytics lead and 6.7% (n = 1) were HR business partners. The majority of the sample had less than 5 years of work experience in the recruitment sector (n = 7, 46.7%), while a smaller percentage of the sample reported work experience of 5 to 10 years (n = 4, 26.7%) or more than 10 years (n = 4, 26.7%). Finally, 60% (n = 9) of the participants worked in a company employing more than 250

employees and 20% (n = 12) worked in a company employing between 51 and 250 employees (Table 1).

Table 1. Guests demographics (N = 15)

		n	%
Age	Under 30	8	13.3%
	30-39	28	46.7%
	40-49	8	13.3%
	50-59	12	20.0%
	60 and above	4	6.7%
Gender	Male	44	73.3%
	Female	16	26.7%
Educational background	Up to High School	4	6.7%
	Bachelor's Degree	36	60.0%
	Master's Degree	20	33.3%
Job position	Talent Acquisition / Recruitment Manager	12	20.0%
	Head of Recruitment Department	16	26.7%
	Senior Recruiter / Lead Recruiter	8	13.3%
	People Analytics / HR Analytics Lead	8	13.3%
	HR Business Partner	4	6.7%
	Other	12	20.0%
Recruiter experience (years):	<5 years	28	46.7%
	5-10 years	16	26.7%
	>10 years	16	26.7%
Firm size	<10	4	6.7%
	11-50	8	13.3%
	51-250	12	20.0%
	>250	36	60.0%

4.3. Reliability analysis

An analysis was then performed to examine the reliability of the questionnaire used in the study. To assess the reliability of the questionnaire, Cronbach's α reliability coefficient was calculated and an additional Cronbach's Alpha if Item Deleted analysis

was also implemented. In Table 2 are presented the results of the reliability analysis for the "Technologies used in recruitment" dimension. The analysis showed that this particular dimension of the questionnaire has a reliability $\alpha = 0.71$ (above the limit of 0.6). In addition, the Cronbach's Alpha if Item Deleted analysis showed that the exclusion of the question "Social-media sourcing tools (e.g., LinkedIn Recruiter) are central to our candidate identification efforts" would increase the reliability level to 0.74 (from 0.71). However, because this improvement was considered negligible, it was decided not to exclude this question from the survey questionnaire.

Table 2. Reliability analysis for "Technologies used in recruitment" dimension

Cronbach's				
Alpha	N of Items			
.71	8			

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Our recruitment process relies on an Applicant Tracking System (ATS) for candidate tracking and workflow	22.53	27.84	.36	.69
We integrate AI-enhanced resume parsing or automated ranking into our screening process.	23.33	25.24	.47	.66
We use a Candidate Relationship Management (CRM) or recruitment marketing platform to nurture talent and manage pipelines	23.00	22.86	.59	.63
Programmatic job advertising or programmatic sourcing is part of our regular attraction strategy.	22.67	28.24	.34	.69
Social-media sourcing tools (e.g., LinkedIn Recruiter) are central to our candidate identification efforts	22.67	29.38	.12	.74

We employ chatbots or conversational assistants to handle candidate engagement or initial screening	23.93	25.92	.38	.68
We use video interviewing platforms (live or asynchronous) as a standard part of selection	23.20	24.31	.37	.69
People analytics dashboards are integrated into recruitment reporting and decision-making	23.00	24.71	.66	.63

In Table 3 are presented the results of the reliability analysis for the "Data and predictive analytics" dimension. The analysis showed that this particular dimension of the questionnaire has a reliability $\alpha = 0.95$ (high reliability). In addition, the Cronbach's Alpha if Item Deleted analysis showed that all questions were significant, as the removal of any question would reduce the reliability coefficient.

Table 3. Reliability analysis for " Data and predictive analytics"

Cronbach's Alpha	N of Items
.94	8

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Predictive models are used to identify and prioritize potential candidates in our sourcing activities.	21.33	61.95	.78	.93
Predictive or automated scoring is used to shortlist candidates for interviews	21.13	66.98	.60	.94
We use analytics to inform offer decisions, including recommended compensation ranges.	20.73	60.21	.80	.93
Predictive analytics are applied to forecast early-stage retention or attrition risk for new hires.	21.00	61.86	.82	.93
Data and analytics have measurably reduced our time-to-hire.	20.67	62.81	.76	.93

Data and analytics have measurably improved the quality-of-hire (performance, manager satisfaction).	20.27	67.50	.68	.94
Our predictive models are validated periodically for accuracy and performance.	21.00	60.14	.88	.92
We audit models regularly to assess and mitigate bias.	20.93	60.78	.90	.92

In Table 4 are presented the results of the reliability analysis for the "Challenges" dimension. The analysis showed that this particular dimension of the questionnaire has a reliability $\alpha = 0.89$ (high reliability). In addition, the Cronbach's Alpha if Item Deleted analysis showed that all questions were significant, as the removal of any question would reduce the reliability coefficient.

Table 4. Reliability analysis for "Challenges"

	Cronbach's		Corrected Item- Total Correlation	Cronbach 's Alpha if Item Deleted
	Alpha	N of Items		
	.89	10		
	Scale Mean if Item Deleted	Scale Variance if Item Deleted		
Algorithmic bias in automated screening or ranking is a significant concern for our recruitment practice	28.87	59.55	.66	.88
Candidate privacy and obtaining informed consent for recruitment data use are challenging for us	28.73	60.35	.73	.87
Lack of explain ability from models causes operational problems or resistance among hiring managers.	28.53	60.70	.65	.88
Legal and compliance risks (e.g., GDPR, anti-discrimination law) limit how we deploy predictive tools.	28.60	58.97	.81	.87
Poor data quality and fragmented HR systems prevent effective analytics in our hiring process.	28.67	57.24	.78	.87

Our HR/TA team lacks sufficient data literacy or analytics skills to make full use of predictive tools.	29.27	62.50	.53	.89
Hiring managers and recruiters resist relying on analytics-driven recommendations.	29.00	63.57	.45	.89
Over-reliance on automated scores risks deskilling our recruiting teams.	28.33	59.24	.54	.89
Budget constraints hinder our ability to implement and sustain analytics and AI systems for hiring	29.07	57.50	.80	.87
Our organizational culture does not fully support using analytics outputs in hiring decisions.	29.53	61.84	.43	.89

Finally, in Table 5 are presented the results of the reliability analysis for the "Future outlook" dimension. The analysis showed that this particular dimension of the questionnaire has a reliability $\alpha = 0.85$ (high reliability). In addition, the Cronbach's Alpha if Item Deleted analysis showed that all questions were significant, as the removal of any question would reduce the reliability coefficient.

Table 5. Reliability analysis for "Future outlook"

Cronbach's Alpha		N of Items		
.85		5		

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach 's Alpha if Item Deleted
We find it difficult to measure long-term outcomes (quality of hire, retention) from predictive models.	13.27	12.78	.56	.85
We will use machine learning more often to match candidates to open jobs.	13.33	12.10	.74	.80
We will connect new hire performance data back to hiring decisions to see which hiring methods work	13.33	12.10	.74	.80

Employers will require clear explanations for automated hiring decisions (e.g., why a candidate was scored).	12.67	13.24	.57	.85
We will connect new hire performance data back to hiring decisions to see which hiring methods work 2	13.00	12.71	.75	.80

4.4. Technologies used in recruitment

The next section of the chapter presents the results of the statistical analysis regarding the perceptions of employees in human resources management departments regarding the extent to which they use new technologies (AI, CRM etc) during the recruitment and selection process. The results showed that the participants agree that the recruitment process relies on an Applicant Tracking System (ATS) for candidate tracking and workflow ($M = 3.8$, $SD = 1.0$), that programmatic job advertising or programmatic sourcing is part of their regular attraction strategy ($M = 3.7$, $SD = 1.0$) and that social-media sourcing tools (e.g., LinkedIn Recruiter) are central to their candidate identification efforts ($M = 3.7$, $SD = 1.3$).

In contrast, participants expressed a neutral attitude on whether they use a Candidate Relationship Management (CRM) or recruitment marketing platform to nurture talent and manage pipelines ($M = 3.3$, $SD = 1.4$), whether people analytics dashboards are integrated into recruitment reporting and decision-making ($M = 3.3$, $SD = 1.0$), whether they use video interviewing platforms (live or asynchronous) as a standard part of selection ($M = 3.1$, $SD = 1.6$), and whether they integrate AI-enhanced resume parsing or automated ranking into their screening process ($M = 3.0$, $SD = 1.3$). Finally, the results show that participants disagree that they employ chatbots or

conversational assistants to handle candidate engagement or initial screening (M = 2.4, SD = 1.3) (Table 6).

Table 6. Descriptive statistics for "Technologies used in recruitment" dimension

	M	SD	Min	Max
Our recruitment process relies on an Applicant Tracking System (ATS) for candidate tracking and workflow	3.8	1.0	2	5
We integrate AI-enhanced resume parsing or automated ranking into our screening process.	3.0	1.3	1	5
We use a Candidate Relationship Management (CRM) or recruitment marketing platform to nurture talent and manage pipelines	3.3	1.4	1	5
Programmatic job advertising or programmatic sourcing is part of our regular attraction strategy.	3.7	1.0	2	5
Social-media sourcing tools (e.g., LinkedIn Recruiter) are central to our candidate identification efforts	3.7	1.3	1	5
We employ chatbots or conversational assistants to handle candidate engagement or initial screening	2.4	1.3	1	5
We use video interviewing platforms (live or asynchronous) as a standard part of selection	3.1	1.6	1	5
People analytics dashboards are integrated into recruitment reporting and decision-making	3.3	1.0	2	5

4.5. Data and predictive analytics

In Table 7 are presented the perceptions of employees in human resources management departments regarding the extent to which they use data analytics and predictive analytics during the recruitment and selection process and the extent to which they have benefits. The results showed that the participants agree that data and analytics have measurably improved the quality-of-hire (performance, manager satisfaction) ($M = 3.6$, $SD = 1.1$). Conversely, they neither agree nor disagree that they use analytics to inform offer decisions, including recommended compensation ranges ($M = 3.1$, $SD = 1.5$) and that data and analytics have measurably reduced our time-to-hire ($M = 3.2$, $SD = 1.4$). Similarly, employees in human resources management departments neither agree nor disagree that predictive analytics are applied to forecast early-stage retention or attrition risk for new hires ($M = 2.9$, $SD = 1.4$), that their predictive models are validated periodically for accuracy and performance ($M = 2.9$, $SD = 1.4$), and that they audit models regularly to assess and mitigate bias ($M = 2.9$, $SD = 1.3$). Finally, Table 7 shows that employees in human resources management departments disagree that predictive models are used to identify and prioritize potential candidates in our sourcing activities ($M = 2.5$, $SD = 1.4$) and that predictive or automated scoring is used to shortlist candidates for interviews ($M = 2.7$, $SD = 1.3$).

Table 7. Descriptive statistics for "Data and predictive analytics" dimension

	M	SD	Min	Max
Predictive models are used to identify and prioritize potential candidates in our sourcing activities.	2.5	1.4	1	5

Predictive or automated scoring is used to shortlist candidates for interviews	2.7	1.3	1	5
We use analytics to inform offer decisions, including recommended compensation ranges.	3.1	1.5	1	5
Predictive analytics are applied to forecast early-stage retention or attrition risk for new hires.	2.9	1.4	1	5
Data and analytics have measurably reduced our time-to-hire.	3.2	1.4	1	5
Data and analytics have measurably improved the quality-of-hire (performance, manager satisfaction).	3.6	1.1	1	5
Our predictive models are validated periodically for accuracy and performance.	2.9	1.4	1	5
We audit models regularly to assess and mitigate bias.	2.9	1.3	1	5

4.6. Challenges

The next section of questions aimed to capture the perceptions of employees in human resources management departments regarding the challenges of using data-driven and predictive tools in the requirement process. The results are presented in detail in Table 8 in the form of mean (M) and standard deviation (SD).

The results showed that the most significant challenge identified by participants is the over-reliance on automated scores, which have the risk of underperforming (deskilling) hiring teams (M = 3.7, SD= 1.4). Participants then identified significant challenges as legal and compliance risks (e.g., GDPR, anti-discrimination law) limit how they deploy predictive tools (M = 3.5, SD = 1.1), lack of explain ability from

models causes operational problems or resistance among hiring managers ($M = 3.5$, $SD = 1.1$) and poor data quality and fragmented HR systems prevent effective analytics in the hiring process ($M = 3.4$, $SD = 1.2$).

Employees in human resources management departments neither agreed nor disagreed that algorithmic bias in automated screening or ranking is a significant concern for their recruitment practice ($M = 3.2$, $SD = 1.2$), that candidate privacy and obtaining informed consent for recruitment data use are challenging ($M = 3.3$, $SD = 1.0$), that hiring managers and recruiters resist relying on analytics-driven recommendations ($M = 3.1$, $SD = 1.2$) and that budget constraints hinder their ability to implement and sustain analytics and AI systems for hiring ($M = 3.0$, $SD = 1.2$).

Finally, employees in human resources management departments disagreed that organizational culture does not fully support using analytics outputs in hiring decisions ($M = 2.5$, $SD = 1.2$) and that HR team lacks sufficient data literacy or analytics skills to make full use of predictive tools. ($M = 2.8$, $SD = 1.1$) (Table 8).

Table 8. Descriptive statistics for "Challenges" dimension

	M	SD	Min	Max
Algorithmic bias in automated screening or ranking is a significant concern for our recruitment practice	3.2	1.2	1	5
Candidate privacy and obtaining informed consent for recruitment data use are challenging for us	3.3	1.0	1	5
Lack of explain ability from models causes operational problems or resistance among hiring managers.	3.5	1.1	1	5
Legal and compliance risks (e.g., GDPR, anti-discrimination law) limit how we deploy predictive tools.	3.5	1.1	1	5

Poor data quality and fragmented HR systems prevent effective analytics in our hiring process.	3.4	1.2	1	5
Our HR team lacks sufficient data literacy or analytics skills to make full use of predictive tools.	2.8	1.1	1	5
Hiring managers and recruiters resist relying on analytics-driven recommendations.	3.1	1.2	1	5
Over-reliance on automated scores risks deskilling our recruiting teams.	3.7	1.4	1	5
Budget constraints hinder our ability to implement and sustain analytics and AI systems for hiring	3.0	1.2	1	5
Our organizational culture does not fully support using analytics outputs in hiring decisions.	2.5	1.4	1	5
We find it difficult to measure long-term outcomes (quality of hire, retention) from predictive models.	3.1	1.2	1	5

4.7. Future outlook

The last section of questions aimed to capture the views of employees in human resources management departments on how they see the future use of data-driven and predictive tools for the recruitment and hiring process. Table 9 shows that participants tend to agree that employers will require clear explanations for automated hiring decisions ($M = 3.7$, $SD = 1.1$) and that retention-prediction tools will be more common in talent acquisition ($M = 3.5$, $SD = 1.2$). Accordingly, employees in human resources management departments reported that they neither agree nor disagree with the fact that they will use machine learning more often to match candidates to open jobs ($M = 3.1$,

SD = 1.1) and with the fact that they will connect new hire performance data back to hiring decisions to see which hiring methods work (M = 3.1, SD = 1.1).

Table 9. Descriptive statistics for "Future outlook" dimension

	M	SD	Min	Max
We will use machine learning more often to match candidates to open jobs.	3.1	1.1	1	5
We will connect new hire performance data back to hiring decisions to see which hiring methods work	3.1	1.1	1	5
Employers will require clear explanations for automated hiring decisions (e.g., why a candidate was scored).	3.7	1.1	1	5
Retention-prediction tools will be more common in talent acquisition	3.5	1.2	1	5

4.8. Differences regarding firm size

An analysis was then conducted to investigate the impact of company size on the use of data analytics and predictive analytics during the recruitment and selection process and the challenges they face when using data-driven and predictive tools in the recruitment process. For the comparison, companies were grouped into three groups: companies with up to 50 employees, companies with 51-250 employees and companies with more than 250 employees. For this purpose, the non-parametric Kruskal Wallis test (Mean Rank comparison) was applied to the data and the statistically significant findings are given in detail in Table 10.

The findings show that companies with up to 50 employees (mean rank = 42.5) use Candidate Relationship Management (CRM) or recruitment marketing platform to nurture talent and manage pipelines to a greater extent compared to companies with 51-250 employees (mean rank = 35.17) or over 250 employees (mean rank = 24.94) ($H = 11.078$, $p = 0.004$). Additionally, the analysis revealed that companies with up to 50 employees (mean rank = 41.5) or 51-250 employees (mean rank = 41.5) use social-media sourcing tools (e.g., LinkedIn Recruiter) for candidate identification to a greater extent compared to companies with over 250 employees (mean rank = 23.17) ($H = 18.212$, $p < 0.001$).

The non-parametric Kruskal Wallis test revealed that companies with up to 50 employees (mean rank = 41.5) use people analytics in recruitment reporting and decision-making to a greater extent compared to companies with 51-250 employees (mean rank = 30.17) or over 250 employees (mean rank = 26.94) ($H = 6.780$, $p = 0.034$). Similarly, companies with up to 50 employees (mean rank = 42.83) are more likely to recognize that data and analytics have reduced time-to-hire compared to companies with 51-250 employees (mean rank = 31.50) or over 250 employees (mean rank = 26.06) ($H = 9.106$, $p = 0.011$). Additionally, companies with up to 50 employees (mean rank = 45.17) are more likely to recognize that algorithmic bias in automated screening or ranking is a significant concern for recruitment practice compared to companies with 51-250 employees (mean rank = 38.50) or more than 250 employees (mean rank = 22.94) ($H = 19.424$, $p < 0.001$).

Table 10. Kruskal Wallis test results for comparisons regarding firms size

	Kruskal- Wallis H	df	p
We use a Candidate Relationship Management (CRM) or recruitment marketing platform to nurture talent and manage pipelines	11.078	2	.004
Social-media sourcing tools (e.g., LinkedIn Recruiter) are central to our candidate identification efforts	18.212	2	<.001
People analytics dashboards are integrated into recruitment reporting and decision-making	6.780	2	.034
Data and analytics have measurably reduced our time-to-hire.	9.106	2	.011
Algorithmic bias in automated screening or ranking is a significant concern for our recruitment practice	19.424	2	<.001
Candidate privacy and obtaining informed consent for recruitment data use are challenging for us	18.590	2	<.001
Lack of explain ability from models causes operational problems or resistance among hiring managers.	8.029	2	.018
Legal and compliance risks (e.g., GDPR, anti-discrimination law) limit how we deploy predictive tools.	21.908	2	<.001
Poor data quality and fragmented HR systems prevent effective analytics in our hiring process.	10.491	2	.005
Our HR team lacks sufficient data literacy or analytics skills to make full use of predictive tools.	12.984	2	.002
Over-reliance on automated scores risks deskilling our recruiting teams.	8.690	2	.013

Budget constraints hinder our ability to implement and sustain analytics and AI systems for hiring	12.696	2	.002
We will use machine learning more often to match candidates to open jobs.	12.414	2	.002
We will connect new hire performance data back to hiring decisions to see which hiring methods work	13.208	2	.001
Retention-prediction tools will be more common in talent acquisition	17.872	2	<.001

Table 11. Kruskal Wallis test mean ranks for comparisons regarding firms size

	Firm size	Mean Rank
We use a Candidate Relationship Management (CRM) or recruitment marketing platform to nurture talent and manage pipelines	<50	42.50
	51-250	35.17
	>250	24.94
Social-media sourcing tools (e.g., LinkedIn Recruiter) are central to our candidate identification efforts	<50	41.50
	51-250	41.50
	>250	23.17
People analytics dashboards are integrated into recruitment reporting and decision-making	<50	41.50
	51-250	30.17
	>250	26.94
Data and analytics have measurably reduced our time-to-hire.	<50	42.83
	51-250	31.50
	>250	26.06
Algorithmic bias in automated screening or ranking is a significant concern for our recruitment practice	<50	45.17
	51-250	38.50
	>250	22.94
Candidate privacy and obtaining informed consent for recruitment data use are challenging for us	<50	43.83
	51-250	39.17
	>250	23.17
Lack of explain ability from models causes operational problems or resistance among hiring managers.	<50	39.83
	51-250	35.83
	>250	25.61
	<50	40.17

Legal and compliance risks (e.g., GDPR, anti-discrimination law) limit how we deploy predictive tools.	51-250	43.50
	>250	22.94
Poor data quality and fragmented HR systems prevent effective analytics in our hiring process.	<50	39.17
	51-250	39.17
	>250	24.72
Our HR/TA team lacks sufficient data literacy or analytics skills to make full use of predictive tools.	<50	31.33
	51-250	45.00
	>250	25.39
Over-reliance on automated scores risks deskilling our recruiting teams.	<50	41.17
	51-250	34.50
	>250	25.61
Budget constraints hinder our ability to implement and sustain analytics and AI systems for hiring	<50	37.50
	51-250	42.17
	>250	24.28
We will use machine learning more often to match candidates to open jobs.	<50	39.00
	51-250	40.67
	>250	24.28
We will connect new hire performance data back to hiring decisions to see which hiring methods work	<50	43.00
	51-250	36.67
	>250	24.28
Retention-prediction tools will be more common in talent acquisition	<50	45.50
	51-250	36.83
	>250	23.39

The findings showed that companies with up to 50 employees (mean rank = 43.83) recognize to a greater extent that candidate privacy and obtaining informed consent for recruitment data are challenging for reporting and decision-making compared to companies with 51-250 employees (mean rank = 39.17) or over 250 employees (mean rank = 23.17) ($H = 18.590$, $p < 0.001$). Similarly, companies with up to 50 employees (mean rank = 42.83) are more likely to recognize that lack of explainability from models causes operational problems or resistance among hiring managers compared to companies with 51-250 employees (mean rank = 35.83) or more than 250 employees (mean rank = 25.61) ($H = 8.029$, $p = 0.018$). Additionally, companies with up to 50 employees (mean rank = 40.17) and companies with 51-250 employees (mean

rank = 43.50) are more likely to recognize that legal and compliance risks (e.g., GDPR, anti-discrimination law) limit how they deploy predictive tools compared to companies with over 250 employees (mean rank = 22.94) ($H = 21.908, p < 0.001$).

Table 10 and 11 show that companies with up to 50 employees (mean rank = 39.17) or 51-250 employees (mean rank = 39.17) recognize to a greater extent that poor data quality and fragmented HR systems prevent effective analytics in their hiring process compared to companies with over 250 employees (mean rank = 24.72) ($H = 10.491, p = 0.005$). Similarly, companies with 51 to 250 employees (mean rank = 45.00) are more likely to recognize that their HR/TA team lacks sufficient data literacy or analytics skills to make full use of predictive tools compared to companies with up to 50 employees (mean rank = 31.33) or over 250 employees (mean rank = 25.39) ($H = 12.894, p = 0.002$). Accordingly, companies with up to 50 employees (mean rank = 41.17) recognize to a greater extent that over-reliance on automated scores risks deskilling their recruiting teams compared to companies with 51-250 employees (mean rank = 34.5) or over 250 employees (mean rank = 25.61) ($H = 8.690, p = 0.013$).

Finally, the results showed that companies with up to 50 employees are more likely to recognize that they will connect new hire performance data back to hiring decisions to see which hiring methods work ($H = 13.208, p = 0.001$) and are more likely to recognize that retention-prediction tools will be more common in talent acquisition ($H = 17.872, p < 0.001$). Conversely, companies with 51 to 250 employees are more likely to recognize that budget constraints hinder their ability to implement and sustain analytics and AI systems for hiring ($H = 12.696, p = 0.002$) and are more likely to use machine learning more often to match candidates to open jobs ($H = 12.414, p = 0.002$).

4.9. Summary

Overall, the findings show that the use of technologies and data in recruitment is in a phase of gradual integration, but has not yet become fully systematic and mature. Companies seem to make more use of basic digital tools, such as ATS and social-media sourcing tools, while the use of more complex applications, such as predictive analytics, automated scoring and chatbots, remains more limited. At the same time, the challenges that emerged show that the technological transformation of recruitment depends not only on the availability of tools, but also on issues of trust, skills, compliance, data quality and organizational readiness. It is also particularly important that the size of the company seems to differentiate the way in which companies adopt, perceive and evaluate these practices.

Chapter 5. Conclusion

The findings of this thesis showed that businesses and companies in Greece have partially, but not fully, integrated new digital technologies into the recruitment and selection processes. In particular, the data analysis revealed that the most popular technology used by businesses and companies in Greece is Applicant Tracking Systems and social media advertising and candidate search tools. These results show that businesses and companies in Greece use the most common technologies that are mainly useful in the initial stages of recruitment.

However, the results showed a neutral attitude of the participants towards the use of more complex tools, such as candidate relationship management platforms, HR data analytics dashboards, digital interviews and artificial intelligence for automatic processing and ranking of CVs. This finding indicates that the digital maturity of businesses and companies in Greece remains limited.

Similarly, the results showed limited use of data and predictive analytics. The executives who participated in the survey mainly recognized the contribution of data to improving the quality of hiring, while expressing a neutral view on the contribution of data and predictive analytics to reducing time, predicting early departures, and validating or testing models. These findings highlight that data and predictive analytics are used more as a support rather than a core strategy for forecasting and decision-making.

An important finding of the thesis is the challenges that companies and businesses face in the context of the digital transformation of staffing processes. The executives who participated in the research identified as the most important challenges the overreliance on automated scores, the legal and regulatory restrictions on the use of

these technologies, the low interpretability of models and the poor quality or fragmentation of data and systems. These findings are directly linked to the contemporary debate on the limitations of new technologies such as artificial intelligence (Conte & Siano, 2023; Anghel, 2023; Ligeiro et al., 2024).

Finally, the findings of the thesis showed that companies and businesses in Greece see the future of new technologies in staffing processes positively. The executives who participated in the survey reported that they have a positive intention to use such technologies in the future.

Overall, the study shows that companies and businesses in Greece have substantially progressed towards the digital transformation of the recruitment and selection process. However, the data recorded show that companies and businesses in Greece have not made the transition to a fully digital recruitment and selection process. The findings showed that currently companies and businesses in Greece make use of simpler technologies (Applicant Tracking System, social-media sourcing tools (e.g., LinkedIn Recruiter) while the use of more complex data analysis and forecasting systems remains limited. Similarly, companies and businesses in Greece have reservations about these more modern and innovative technologies. Therefore, the transition from traditional recruitment to data-driven and predictive hiring is ongoing, but cannot yet be considered complete.

The thesis is characterized by certain limitations that must be taken into account when interpreting the results. First, the convenience sampling methodology was applied to select the research sample and a sample of 60 executives resulted. Based on this limitation, the findings of the thesis cannot be safely generalized to all businesses in Greece as the sample cannot be considered representative of the business population in Greece (Saunders et al., 2023). A second important limitation of the thesis is that the

data were collected based on the self-reports of the executives and therefore reflect perceptions and not objective data on the use of new technologies. Also, the recording of the perceptions of the executives cannot reflect the effectiveness of the use of innovative methods (for example AI systems) in attracting talent.

In the future, it would be useful to conduct research on larger and more representative samples of businesses and companies in Greece. It would also be important to conduct research with distinction according to the sector and size of businesses and companies, so that the degree of adoption of modern digital staffing and recruitment practices in Greece can be recorded with more reliability. Accordingly, a future study would be interesting to use a mixed-type study (a combination of quantitative and qualitative research), in order to record in more detail the reasons why certain tools, such as predictive assessment, are not yet widely applied in Greece. Finally, it is necessary for future studies to investigate the actual degree of use of new technologies in the selection and recruitment process and to examine their correlation with real indicators of recruitment effectiveness (in addition to the perceptions of business and company executives).

Chapter 6. Policy implication

The findings of the thesis show that companies in Greece are in a transition stage in terms of the use of technologies in recruitment and talent acquisition. On the one hand, it seems that more basic digital tools are already being utilized, such as Applicant Tracking Systems, social-media sourcing tools and programmatic job advertising practices, which shows that the processes of attracting and selecting personnel have started to move away from traditional methods. On the other hand, the use of more complex technologies, such as predictive analytics, automated candidate ranking, chatbots and algorithmic bias control mechanisms, remains more limited. This means that companies do not just invest in new tools, but need to develop more comprehensive policies for the use of data, the protection of candidate privacy, the transparency of algorithmic decisions and the strengthening of the digital skills of HR executives. It is also particularly important that the challenges recorded, such as over-reliance on automated scores, legal and regulatory risks, lack of explainability of models and data quality, show that the digital transformation of recruitment must be accompanied by rules, controls and clear implementation procedures.

The findings of the thesis mainly concern business administrations, human resources departments, recruitment and talent acquisition executives, but also policymakers, HR technology solution providers and vocational training institutions. For businesses and HR departments, the results show the need for more systematic integration of technological tools, without, however, neglecting human judgment in the personnel selection process. For policymakers and regulators, the findings highlight the need for clearer guidelines on the use of artificial intelligence, data and predictive analytics in recruitment, in order to ensure fairness, transparency and protection of

candidates. At the same time, the differences identified depending on the size of the company show that support policies cannot be the same for all companies, as smaller, medium and larger companies seem to face different needs, capabilities and constraints. Therefore, targeted interventions are required, such as training of HR executives, support in the adoption of reliable technological tools and development of control practices for algorithmic systems, so that the use of technology in recruitment works to the benefit of both businesses and candidates.

References

- Abraham, M., Kaliannan, M., Avvari, M. V., & Thomas, S. (2023). Reframing talent acquisition, retention practices for organisational commitment in Malaysian SMEs: A managerial perspective. *Journal of General Management*, 51(2), 183–195. <https://doi.org/10.1177/03063070231184336>
- Ahammad, T. (2017). Personnel Management to Human Resource Management (HRM): How HRM functions? *Journal of Modern Accounting and Auditing*, 13(9). <https://doi.org/10.17265/1548-6583/2017.09.004>
- Ahmad, S., & Alqaarni, S. (2023). Job analysis in Organizations: Transition from traditional to strategic. *International Journal of Professional Business Review*, 8(5), e01424. <https://doi.org/10.26668/businessreview/2023.v8i5.1424>
- Albert, E. T. (2019). AI in talent acquisition: a review of AI-applications used in recruitment and selection. *Strategic HR Review*, 18(5), 215–221. <https://doi.org/10.1108/shr-04-2019-0024>
- Albinger, H. S., & Freeman, S. J. (2000). Corporate social performance and attractiveness as an employer to different job seeking populations. *Journal of Business Ethics*, 28(3), 243–253. <https://doi.org/10.1023/a:1006289817941>
- Alhaider, M., Ali, S., & Abushaikha, I. (2025). Navigating talent scarcity: talent attraction and selection practices among domestic firms and multinational corporations in Saudi Arabia. *International Journal of Manpower*. <https://doi.org/10.1108/ijm-03-2024-0190>
- Anderson, V. (2015). Research methods in Human Resource Management - Investigating a business issue. *NHRD Network Journal*, 8(2), 135–137. <https://doi.org/10.1177/0974173920150224>
- Anghel, D. (2023). New perspectives for human and artificial intelligence interactions for leadership e-Recruitment. *Societies*, 13(3), 55. <https://doi.org/10.3390/soc13030055>

- Armstrong, M., & Taylor, S. (2023). *Armstrong's Handbook of Human Resource Management Practice: A Guide to the Theory and Practice of People Management*. Kogan Page Publishers
- Bahuguna, P. C., Srivastava, R., & Tiwari, S. (2023). Human resources analytics: where do we go from here? *Benchmarking an International Journal*, 31(2), 640–668. <https://doi.org/10.1108/bij-06-2022-0401>
- Bassi, L. (2011). Raging Debates in HR Analytics. *People and Strategy*, 34, 14-18.
- Basu, S., Majumdar, B., Mukherjee, K., Munjal, S., & Palaksha, C. (2022). Artificial Intelligence–HRM Interactions and Outcomes: A Systematic Review and Causal Configurational explanation. *Human Resource Management Review*, 33(1), 100893. <https://doi.org/10.1016/j.hrmr.2022.100893>
- Beechler, S., & Woodward, I. C. (2009). The global “war for talent.” *Journal of International Management*, 15(3), 273–285. <https://doi.org/10.1016/j.intman.2009.01.002>
- Bell, E., Bryman, A. and Harley, B. (2023) *Business research methods*. Oxford: Oxford University Press.
- Boudreau, J. W., & Ramstad, P. M. (2005). Talentship, talent segmentation, and sustainability: A new HR decision science paradigm for a new strategy definition. *Human Resource Management*, 44(2), 129–136. <https://doi.org/10.1002/hrm.20054>
- Brannick, M. T., & Levine, E. L. (2002). *Job analysis: Methods, Research, and Applications for Human Resource Management in the New Millennium*. SAGE Publications, Incorporated.
- Budhwar, P., Chowdhury, S., Wood, G., Aguinis, H., Bamber, G. J., Beltran, J. R., Boselie, P., Cooke, F. L., Decker, S., DeNisi, A., Dey, P. K., Guest, D., Knoblich, A. J., Malik, A., Paauwe, J., Papagiannidis, S., Patel, C., Pereira, V., Ren, S., . . . Varma, A. (2023). Human resource management in the age of generative artificial intelligence: Perspectives and research directions on

- ChatGPT. *Human Resource Management Journal*, 33(3), 606–659. <https://doi.org/10.1111/1748-8583.12524>
- Cantoni, F., & Mangia, G. (2018). *Human resource management and digitalization*. Routledge.
- Chuai, X., Preece, D., & Iles, P. (2008). Is talent management just “old wine in new bottles”? *Management Research News*, 31(12), 901–911. <https://doi.org/10.1108/01409170810920611>
- Conte, F., & Siano, A. (2023). Data-driven human resource and data-driven talent management in internal and recruitment communication strategies: an empirical survey on Italian firms and insights for European context. *Corporate Communications an International Journal*, 28(4), 618–637. <https://doi.org/10.1108/ccij-02-2022-0012>
- Creswell, J.W. and Creswell, J.D. (2022) *Research Design - International Student Edition: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks: SAGE Publications Ltd.
- Dahlbom, P., Siikanen, N., Sajasalo, P., & Jarvenpää, M. (2019). Big data and HR analytics in the digital era. *Baltic Journal of Management*, 15(1), 120–138. <https://doi.org/10.1108/bjm-11-2018-0393>
- De La Calle-Duran, M. C., De La Luz Fernandez-Alles, M., & Valle-Cabrera, R. (2021). Talent identification and location: A configurational approach to talent pools. *Intangible Capital*, 17(1), 17. <https://doi.org/10.3926/ic.1440>
- Dutta, D., Althaf, A., & Topno, J. S. (2025). Transforming talent acquisition for sustainable HRM: a structuration perspective. *Journal of Organizational Effectiveness People and Performance*, 13(2), 297–322. <https://doi.org/10.1108/joepp-08-2024-0401>
- Edralin, D. M. (2004). Training: A strategic HRM function. *International Letters of Social and Humanistic Sciences*, 11, 84–

90. http://www.dlsu.edu.ph/research/centers/cberd/pdf/business/vol7/vol7_no4.pdf
- Elmenzhi, Z., Alji, S., Maghni, A., & Belamhitou, M. (2025). Exploring the impact of big data analytics on recruitment practices. In *Lecture notes in networks and systems* (pp. 882–898). https://doi.org/10.1007/978-3-031-91337-2_78
- Ererdi, C., Nurgabdeshev, A., Kozhakhmet, S., Rofcanin, Y., & Demirbag, M. (2021). International HRM in the context of uncertainty and crisis: a systematic review of literature (2000–2018). *The International Journal of Human Resource Management*, 33(12), 2503–2540. <https://doi.org/10.1080/09585192.2020.1863247>
- Eurostat (2025). 20% of EU enterprises use AI technologies. Available at: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2>
- Falletta, S. V., & Combs, W. L. (2020). The HR analytics cycle: a seven-step process for building evidence-based and ethical HR analytics capabilities. *Journal of Work-Applied Management*, 13(1), 51–68. <https://doi.org/10.1108/jwam-03-2020-0020>
- Fauzi, M. A., Kamaruzzaman, Z. A., & Rahman, H. A. (2022). Bibliometric review on human resources management and big data analytics. *International Journal of Manpower*, 44(7), 1307–1327. <https://doi.org/10.1108/ijm-05-2022-0247>
- Freire, M. N., & De Castro, L. N. (2020). e-Recruitment recommender systems: a systematic review. *Knowledge and Information Systems*, 63(1), 1–20. <https://doi.org/10.1007/s10115-020-01522-8>
- Gallardo-Gallardo, E., Dries, N., & González-Cruz, T. F. (2013). What is the meaning of ‘talent’ in the world of work? *Human Resource Management Review*, 23(4), 290–300. <https://doi.org/10.1016/j.hrmr.2013.05.002>
- Gravili, G., Hassan, R., Avram, A., & Schiavone, F. (2023). Big data and human resource management: paving the way toward sustainability. *European Journal*

- of Innovation Management*, 26(7), 552–590. <https://doi.org/10.1108/ejim-01-2023-0048>
- Haenlein, M., & Kaplan, A. (2019). A Brief History of artificial intelligence: on the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5–14. <https://doi.org/10.1177/0008125619864925>
- Hecklau, F., Galeitzke, M., Flachs, S., & Kohl, H. (2016). Holistic approach for human resource management in industry 4.0. *Procedia CIRP*, 54, 1–6. <https://doi.org/10.1016/j.procir.2016.05.102>
- Hunkenschroer, A. L., & Luetge, C. (2022). Ethics of AI-Enabled Recruiting and Selection: A Review and Research agenda. *Journal of Business Ethics*, 178(4), 977–1007. <https://doi.org/10.1007/s10551-022-05049-6>
- Jooss, S., Burbach, R., & Ruël, H. (2019). Examining talent pools as a core talent management practice in multinational corporations. *The International Journal of Human Resource Management*, 32(11), 2321–2352. <https://doi.org/10.1080/09585192.2019.1579748>
- Joyce, W. F., & Slocum, J. W. (2012). Top management talent, strategic capabilities, and firm performance. *Organizational Dynamics*, 41(3), 183–193. <https://doi.org/10.1016/j.orgdyn.2012.03.001>
- Kaufman, B. E. (2010). The Theoretical Foundation of Industrial Relations and its Implications for Labor Economics and Human Resource Management. *Industrial and Labor Relations Review*, 64(1), 74–108. <https://doi.org/10.1177/001979391006400104>
- Kavanagh, M. J., & Johnson, R. D. (Eds.). (2017). Human resource information systems: Basics, applications, and future directions. Sage Publications.
- Kozioł, L., Kozioł, W., Wojtowicz, A., & Pyrek, R. (2014). An outline of a compensation system based on human capital theory. *Procedia - Social and Behavioral Sciences*, 148, 551–558. <https://doi.org/10.1016/j.sbspro.2014.07.078>

- Kwon, K., & Jang, S. (2021). There is no good war for talent: a critical review of the literature on talent management. *Employee Relations*, 44(1), 94–120. <https://doi.org/10.1108/er-08-2020-0374>
- Landers, R. N., & Schmidt, G. B. (2016). Social Media in Employee Selection and Recruitment: An Overview. In *Social Media in Employee Selection and Recruitment* (pp. 3–11). https://doi.org/10.1007/978-3-319-29989-1_1
- Ligeiro, N., Dias, I., & Moreira, A. (2024). Recruitment and selection process using artificial intelligence: How do candidates react? *Administrative Sciences*, 14(7), 155. <https://doi.org/10.3390/admsci14070155>
- Mahan, P. & Devi, S.I. (2012). Determinants of Successful Talent Management in MNCs in Malaysia. *Journal of Basic and Applied Scientific Research*, 2(12), 12524-12533.
- Mahato, S., & Kaur, J. (2023). The impact of compensation and reward system on the performance of employees. *Shanlax International Journal of Management*, 10(4), 10–16. <https://doi.org/10.34293/management.v10i4.6177>
- Malik, A., Budhwar, P., & Kazmi, B. A. (2022). Artificial intelligence (AI)-assisted HRM: Towards an extended strategic framework. *Human Resource Management Review*, 33(1), 100940. <https://doi.org/10.1016/j.hrmr.2022.100940>
- Marinakou, E., Giousmpasoglou, C., & Papavasileiou, E. F. (2024). The use of artificial intelligence (AI) in talent acquisition: the case of Greek luxury hotels. *Strategic Change*, 34(4), 533–543. <https://doi.org/10.1002/jsc.2632>
- Marler, J. H., & Boudreau, J. W. (2016). An evidence-based review of HR Analytics. *The International Journal of Human Resource Management*, 28(1), 3–26. <https://doi.org/10.1080/09585192.2016.1244699>
- Masri, N. E., & Suliman, A. (2019). Talent management, employee recognition and performance in the research institutions. *Studies in Business and Economics*, 14(1), 127–140. <https://doi.org/10.2478/sbe-2019-0010>

- Mateen, A. U., Nisar, Q. A., Jamshed, S., Rehman, S., & Ali, M. (2024). HRM Effectiveness as an outcome of Big Data: The role of Big Data–Driven HR Practices and Electronic HRM. *Journal of the Knowledge Economy*, 16(3), 11339–11373. <https://doi.org/10.1007/s13132-024-02216-0>
- Menezes, D. B. S., Gumashivili, M., & Kanokon, K. (2025). The role of talent management in enhancing employee retention: Mediating the influence of psychological empowerment. *Sustainability*, 17(7), 3277. <https://doi.org/10.3390/su17073277>
- Michaels, E., Handfield-Jones, H., & Axelrod, B. (2001). *The War for talent*. Harvard Business Press.
- Mujtaba, M., & Mubarik, M. S. (2021). Talent management and organizational sustainability: role of sustainable behaviour. *International Journal of Organizational Analysis*, 30(2), 389–407. <https://doi.org/10.1108/ijoa-06-2020-2253>
- Nikolaou, I. (2021). What is the Role of Technology in Recruitment and Selection? *The Spanish Journal of Psychology*, 24, e2. <https://doi.org/10.1017/sjp.2021.6>
- Otoo, F. N. K. (2019). Human resource management (HRM) practices and organizational performance. *Employee Relations*, 41(5), 949–970. <https://doi.org/10.1108/er-02-2018-0053>
- Pruis, E. (2011). The five key principles for talent development. *Industrial and Commercial Training*, 43(4), 206–216. <https://doi.org/10.1108/00197851111137825>
- Rahman, M., Aydin, E., Haffar, M., & Nwagbara, U. (2020). The role of social media in e-recruitment process: empirical evidence from developing countries in social network theory. *Journal of Enterprise Information Management*, 35(6), 1697–1718. <https://doi.org/10.1108/jeim-12-2019-0382>
- Rhemananda, H., Simbolon, D. R., & Fachrunnisa, O. (2020). Blockchain technology to support employee recruitment and selection in Industrial Revolution 4.0.

- In *Lecture notes in networks and systems* (pp. 305–311). https://doi.org/10.1007/978-981-15-7990-5_30
- Roul, J., Mohapatra, L. M., Pradhan, A. K., & Kamesh, A. (2024). Analysing the role of modern information technologies in HRM: management perspective and future agenda. *Kybernetes*, 54(14), 7409–7434. <https://doi.org/10.1108/k-11-2023-2512>
- Saunders, M., Lewis, P. & Thornhill, A. (2023). *Research Methods for Business Students*. 9th ed. Harlow: Pearson.
- Sivathanu, B., & Pillai, R. (2018). Smart HR 4.0 – how industry 4.0 is disrupting HR. *Human Resource Management International Digest*, 26(4), 7–11. <https://doi.org/10.1108/hrmid-04-2018-0059>
- Skuz, A., Woldu, H. G., & Alborz, S. (2022). Who is talent? Implications of talent definitions for talent management practice. *Economics and Business Review/the Poznań University of Economics Review*, 8 (22)(4), 136–162. <https://doi.org/10.18559/ebr.2022.4.7>
- Socoliuc, B. F., Suci, A. A., Popescu, M. E., Plesea, D. A., & Nicolae, F. (2025). Shipyard Manpower Digital Recruitment: A Data-Driven approach for Norwegian Stakeholders. *Economies*, 13(1), 16. <https://doi.org/10.3390/economies13010016>
- Srivastava, P., & Bhatnagar, J. (2010). Employer Brand for Talent Acquisition: An Exploration towards its Measurement. *Vision the Journal of Business Perspective*, 14(1–2), 25–34. <https://doi.org/10.1177/097226291001400103>
- Storey, J., Wright, P. M., & Ulrich, D. (2019). Strategic Human Resource Management. In *Routledge eBooks*. <https://doi.org/10.4324/9780429490217>
- Strohmeier, E. P. a. P. S. (2014). HRM in the digital age – digital changes and challenges of the HR profession. *Employee Relations*, 36(4). <https://doi.org/10.1108/er-03-2014-0032>

- Taylor, F. W. (1911). *The principles of scientific management*. NuVision Publications, LLC.
- Thite, M. (2018). Electronic/digital HRM: a primer. In *e-HRM* (pp. 1-21). Routledge.
- Tinguely, P. N., Lee, J., & He, V. F. (2023). Designing human resource management systems in the age of AI. *Journal of Organization Design*, 12(4), 263–269. <https://doi.org/10.1007/s41469-023-00153-x>
- Vardarlier, P. (2019). Digital Transformation of Human Resource Management: Digital applications and Strategic tools in HRM. In *Contributions to management science* (pp. 239–264). https://doi.org/10.1007/978-3-030-29739-8_11
- Walford-Wright, G., & Scott-Jackson, W. (2018). Talent Rising; people analytics and technology driving talent acquisition strategy. *Strategic HR Review*, 17(5), 226–233. <https://doi.org/10.1108/shr-08-2018-0071>
- Zhang, J., & Chen, Z. (2023). Exploring Human Resource Management Digital Transformation in the digital Age. *Journal of the Knowledge Economy*, 15(1), 1482–1498. <https://doi.org/10.1007/s13132-023-01214-y>

Appendix A. Questionnaire

A. Demographics

1. Age:

- ☐ Under 30
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60 and above

2. Gender

- ☐ Male
- ☐ Female
- ☐ Other
- ☐ Prefer not to say

3. Educational background:

- ☐ Up to High School
- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctorate Degree

4. Which best describes your role?

- ☐ Talent Acquisition / Recruitment Manager
- ☐ Head of Recruitment Department
- ☐ Senior Recruiter / Lead Recruiter
- ☐ People Analytics / HR Analytics Lead

- ☐ HR Business Partner
- ☐ Other (please specify) _____

4. Recruiter experience (years):

- ☐ <5 years
- ☐ 5-10 years
- ☐ >10 years

5. Firm size (number of employees)

- ☐ <10
- ☐ 11-50
- ☐ 51-250
- ☐ >250

B. Technologies used in recruitment

For each statement, indicate your agreement regarding the role, integration, or strategic importance of the listed technologies in your recruitment process.

Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

1. Our recruitment process relies on an Applicant Tracking System (ATS) for candidate tracking and workflow	1	2	3	4	5
---	---	---	---	---	---

2. We integrate AI-enhanced resume parsing or automated ranking into our screening process.	1	2	3	4	5
3. We use a Candidate Relationship Management (CRM) or recruitment marketing platform to nurture talent and manage pipelines	1	2	3	4	5
4. Programmatic job advertising or programmatic sourcing is part of our regular attraction strategy.	1	2	3	4	5
5. Social-media sourcing tools (e.g., LinkedIn Recruiter) are central to our candidate identification efforts	1	2	3	4	5
6. We employ chatbots or conversational assistants to handle candidate engagement or initial screening	1	2	3	4	5
7. We use video interviewing platforms (live or asynchronous) as a standard part of selection	1	2	3	4	5
8. People analytics dashboards are integrated into recruitment reporting and decision-making	1	2	3	4	5

C. Data and predictive analytics

For each statement, indicate your agreement about the use, validation, and impact of data-driven and predictive approaches in hiring.

Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

1. Predictive models are used to identify and prioritize potential candidates in our sourcing activities.	1	2	3	4	5
2. Predictive or automated scoring is used to shortlist candidates for interviews	1	2	3	4	5
3. We use analytics to inform offer decisions, including recommended compensation ranges.	1	2	3	4	5
4. Predictive analytics are applied to forecast early-stage retention or attrition risk for new hires.	1	2	3	4	5
5. Data and analytics have measurably reduced our time-to-hire.	1	2	3	4	5
6. Data and analytics have measurably improved the quality-of-hire (performance, manager satisfaction).	1	2	3	4	5
7. Our predictive models are validated periodically for accuracy and performance.	1	2	3	4	5
8. We audit models regularly to assess and mitigate bias.	1	2	3	4	5

D. Challenges

For each statement, indicate your agreement about the primary ethical, organizational, and skills-related challenges your team faces when adopting data-driven hiring..

Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

1. Algorithmic bias in automated screening or ranking is a significant concern for our recruitment practice	1	2	3	4	5
2. Candidate privacy and obtaining informed consent for recruitment data use are challenging for us	1	2	3	4	5
3. Lack of explainability from models causes operational problems or resistance among hiring managers.	1	2	3	4	5
4. Legal and compliance risks (e.g., GDPR, anti-discrimination law) limit how we deploy predictive tools.	1	2	3	4	5
5. Poor data quality and fragmented HR systems prevent effective analytics in our hiring process.	1	2	3	4	5

6. Our HR/TA team lacks sufficient data literacy or analytics skills to make full use of predictive tools.	1	2	3	4	5
7. Hiring managers and recruiters resist relying on analytics-driven recommendations.	1	2	3	4	5
8. Over-reliance on automated scores risks deskilling our recruiting teams.	1	2	3	4	5
9. Budget constraints hinder our ability to implement and sustain analytics and AI systems for hiring	1	2	3	4	5
10. Our organizational culture does not fully support using analytics outputs in hiring decisions.	1	2	3	4	5
11. We find it difficult to measure long-term outcomes (quality of hire, retention) from predictive models.	1	2	3	4	5

E. Future outlook

For each statement, indicate your agreement about likely priorities and developments in talent acquisition over the next 2–3 years..

Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

1. We will use machine learning more often to match candidates to open jobs.	1	2	3	4	5
2. We will connect new hire performance data back to hiring decisions to see which hiring methods work	1	2	3	4	5
3. Employers will require clear explanations for automated hiring decisions (e.g., why a candidate was scored).	1	2	3	4	5
4. We will connect new hire performance data back to hiring decisions to see which hiring methods work	1	2	3	4	5
5. Retention-prediction tools will be more common in talent acquisition	1	2	3	4	5