"THE IMPACT OF ARTIFICIAL INTELLIGENCE ON HUMAN TALENT MANAGEMENT: ATTRACTION, RETENTION AND MOTIVATION".

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1. INTRODUCTION

Every organisation has to manage its resources in the most optimal way possible to achieve its objectives. Among all the means that companies have to be competitive, "human talent has become the most important resource for organisations in the knowledge economy" (Mondy, 2010).

Contemporary society is being shaped by the technological revolution and globalisation (Castells, 2005).According to the author, these forces are generating profound transformations in the labour market, with an emphasis on the creation of knowledge and information-based jobs. Furthermore, Castells argues that flexibility, adaptability, and continuous learning are fundamental requirements to thrive in this new and constantly changing work environment. These transformations are giving rise to new forms of work and employment, which require constant adaptation on the part of workers. "Increasing staff turnover, frequent job dissatisfaction and lack of work motivation are some of the symptoms of the burnout society, where work has become a source of stress and chronic fatigue. In this society, the worker is under constant pressure to perform better and better and is expected to take responsibility for his or her own success and failure at work, which can lead to a feeling of loneliness and helplessness" (Han, 2016).

The current technological revolution, driven by the disruptive development of artificial intelligence, is generating significant changes in the business environment. Particularly relevant is its impact on the human resources sphere, where transformations are being experienced in all areas of work. This is giving rise to the need for employees to be able to adapt to new ways of working, which will require different skills than today (Schwab, 2016).

In this complex context full of opportunities, one of the main challenges for companies, specifically for the human resources department, is to attract, retain and motivate human talent to adapt and protect themselves by benefiting from the competitive advantage and stability that comes from having employees aligned with the organisation's objectives.

Artificial Intelligence (AI) has opened a range of possibilities and new tools that have had an impact on the way talent is managed in organisations and that make it possible to solve the obstacles that Spanish organisations face today. The purpose of this paper is to study and analyse this impact and the changes that have been generated through these new instruments.

In this paper, in addition to studying the global impact generated by AI on talent attraction, retention and motivation practices, we will analyse some specific cases of significant

companies, such as "Pymetrics", "Peakon" and "Cobee"; their study will allow us to better understand how AI is changing the way talent is managed in companies.

2. ARTIFICIAL INTELLIGENCE: CONCEPTS AND ELEMENTS THAT CHARACTERISE IT

2.1 Data science: the backbone

When studying the impact of AIs in the field of talent management, we must pay attention to different key concepts to understand the tools that are being applied. As we can see in Figure 1, data science is at the core of many and varied fields ranging from simulation, econometrics, or knowledge engineering.

Figure 1: Data science.
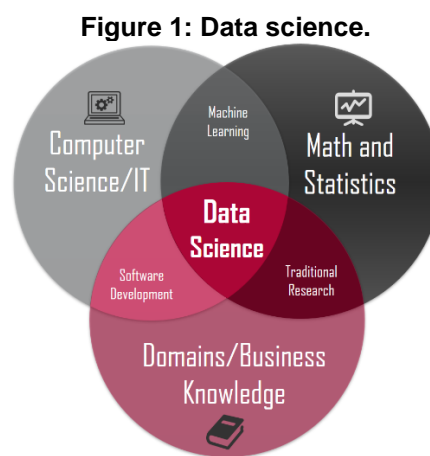
Source: (Datawow, 2020).

Data science is a discipline that focuses on the collection, processing and analysis of large data sets with the aim of discovering patterns and extracting useful knowledge from them. Data science "combines principles of statistics and computer science to extract knowledge from data" (Wickham & Grolemund, 2016). One of the most important applications of data science is in the field of big data. The term "big data" refers to extremely large and complex data sets that cannot be processed with traditional tools and techniques. Big data is a phenomenon that occurs when such a large amount of data accumulates that existing processing and analysis methods are unable to handle" (Mayer-Schnberger & Cukier, 2013). This discipline is essential for the analysis of large data sets and has become increasingly important in the era of big data. "Data science is the art of extracting valuable knowledge from massive data" (Donoho, 2017). To achieve this, data scientists use a variety of tools and techniques, including machine learning algorithms, statistical analysis, and data visualisation techniques.

Following Figure 1, knowledge management is one of the branches of data science that is closely related to big data and that both generate information systems for businesses

to make decisions. Knowledge management within the backbone of data science focuses on the effective management of an organisation's information and knowledge assets. Kimiz Dalkir's (2005), knowledge management seeks to "capture, store, retrieve, share and apply the organisation's knowledge and expertise in an effective way to achieve strategic objectives".

Knowledge management is closely related to the concept of big data, as the processing and analysis of large volumes of data are fundamental for informed decision-making in knowledge management. As Viktor Mayer-Schönberger and Kenneth Cukier (2013), point out in "big data allows knowledge to be revealed that otherwise remains hidden due to a lack of capacity to process and analyse large amounts of information". According to the authors, "knowledge management is about discovering, identifying, capturing and distributing information and knowledge within an organisation. Big data is about finding patterns and making predictions. In this sense, big data is a natural complement to knowledge management, as it can help to identify patterns and trends hidden in large amounts of data and thereby improve decision-making and organisational learning".

To finish defining concepts on Figure 1, we will try to address simulation, which is also intertwined with big data. It is also crucial for understanding machine learning, which we will define later when we talk about artificial intelligence as a concept. Simulation is a branch of data science that is used to model and analyse complex systems in a variety of disciplines, from engineering to economics to biology. According to Banks (2010), "simulation is a powerful tool for decision making, problem solving and system design, as it allows users to explore the behaviour of a system in a controlled and safe environment". Simulation involves the creation of a mathematical or computational model of a system, which is then used to conduct virtual experiments and analyse the results.

The authors W. David Kelton, Randall P. Sadowski, and Nancy B. Zupick (2014), describe simulation as a technique that uses large amounts of data to model complex systems. According to the authors: "in simulation, data are used to define the behaviour of the model, and new data are generated as the simulation runs". Data can be used to calibrate and validate simulation models, and to analyse simulation results and extract useful information.

Regarding the relationship between simulation and big data, the authors mention that "simulation is a useful tool for working with large datasets, as it allows the exploration and analysis of complex data in a controlled and secure environment". Furthermore, simulation can be used to generate large amounts of synthetic data that can be used for training machine learning algorithms in the context of big data. In summary, simulation

and big data are closely related, as simulation uses large amounts of data to model complex systems and can be used to generate synthetic data that can be used for big data analysis.

Machine learning is the result of combining big data and simulation, as it is based on mathematical models that are trained on large amounts of data to make predictions or decisions. According to Bishop (2006), "machine learning is an approach to artificial intelligence that is based on learning models from data". These models are built from data using statistical analysis and machine learning techniques and can be used to predict future outcomes or make decisions based on the data. This concept is also closely related to simulation, as simulation models are often used as part of the training process for machine learning models. As Kuhn and Johnson (2018) point out, "simulation models can provide a way to generate data to train machine learning models when real data are difficult to obtain". In addition, simulation models can be used to test and validate machine learning models before implementing them in the real world.

In short, machine learning is the result of combining big data and simulation and is based on mathematical models that are trained on large amounts of data. Simulation models are a valuable tool for generating training data and validating machine learning models.

2.2 Artificial Intelligence: Key concepts

Data science and artificial intelligence (AI) are closely related, as data science provides the theoretical and practical basis for the development of AI algorithms and the creation of predictive and analytical models. As Domingos states (2015), "data science is the discipline that deals with the extraction of knowledge from data, and AI is the discipline that deals with the creation of intelligent entities that can perceive, learn and act". Furthermore, data science provides the tools and techniques necessary for the exploration and analysis of large data sets, which is essential for the success of AI. As Foster Provost and Tom Fawcett (2013), states "data science provides the knowledge and skills to discover patterns, relationships, and trends in large data sets, which is fundamental to the creation of effective AI models".

Artificial intelligence (hereafter AI) is a branch of computer science that focuses on creating systems that can perform tasks that normally require human intelligence, such as learning, perception, reasoning and problem solving. According to Russell and Norving (2010), artificial intelligence is defined as "the discipline concerned with the creation of entities that perform tasks that require intelligence when these tasks are performed by humans".

To have a closer look at what AI is and how it works, it is necessary to consider some key concepts. Firstly, there is machine learning, which we have already discussed when we talked about the concept of data science. Machine learning is a technique that allows machines to learn from data without being explicitly programmed to do so (Alpaydin, 2010). Machine learning is divided into two main categories: supervised learning, where the model is trained on labelled data, and unsupervised learning, where the model is trained on unlabelled data. Another important concept in artificial intelligence is natural language processing (NLP), which refers to the ability of machines to understand and generate human language (Jurafsky & Martin, 2009). NLP is used in many AI applications, such as chatbots, virtual assistants and sentiment analysis. In addition, it also benefits from expert knowledge and knowledge representation, which are used to encode human knowledge in artificial intelligence systems (Norving & Russell, 2010). Finally, robotics and computer vision are also important areas of artificial intelligence, which focus on creating robots and systems that can 'see' and understand the world as humans do (Szeliski, 2010).

It should also be understood that AI as such is a broad concept and there are several types of artificial intelligence, each with its own characteristics and applications. We will try to explain some of the most common ones, such as rule-based AI, neural networks or AI based on natural language processing. Rule-based AI is one of the oldest and best-known approaches. This approach uses formal rules to represent knowledge and reasoning. According to Russell and Norving (2010), "production rules are a form of knowledge representation that specifies a relationship between conditions and actions". Rules are used to represent knowledge in terms of if-then statements, where a specific condition (the if) implies an action (the then). For example, in rule-based medical expert systems, rules are used to represent medical knowledge about symptoms and diagnoses. If a patient has specific symptoms, such as headache and fever, the system may infer that the patient has an infection.

The advantage of rule-based AI is that it is easy to understand and explain. Rules are explicit and transparent, allowing experts to understand how a conclusion has been reached. In addition, rules can be easily modified or added to, which allows for continuous updating of the system's knowledge. However, it has limitations. According to this approach is not suitable for problems where knowledge cannot be easily expressed in terms of formal rules. In addition, rule-based AI is susceptible to errors and ambiguities, as it depends on the accuracy and completeness of the rules set.

Another more complex and interesting type of artificial intelligence is artificial neural networks (ANNs), a type of machine learning algorithm that relies on the structure and functioning of the human brain to process information and perform tasks. According to (Goodfellow et al., 2016), an ANN consists of multiple layers of interconnected nodes that process and transfer data through weighted connections. At each layer, nodes receive information from the previous layer and perform mathematical operations to calculate the output. The output is sent to subsequent layers to perform further calculations and finally produce the final output. As the network processes more data and receives feedback on its performance, the connection weights are adjusted to improve the accuracy and efficiency of the network. ANNs are used in a wide variety of applications, such as speech recognition, image recognition, natural language processing and outcome prediction. Their ability to learn complex patterns and adapt to new data makes them especially useful in tasks where manual programming would be difficult or impossible. According to (Goodfellow et al., 2016), neural networks can learn to recognise patterns in large datasets and then apply that knowledge to classify new data inputs, some other examples of applications of this type of AI is prediction, such as stock price prediction or weather forecasting.

One of the main strengths of neural networks is their ability to learn and improve over time. As they process more data and receive feedback, neural networks can adjust their parameters to improve their performance on specific tasks. In addition, neural networks are highly adaptive and can operate in non-linear and dynamic environments (Goodfellow et al., 2016). This makes them useful in areas such as robotics and industrial process control.

There are many other applications of AI today, such as AI based on computer vision or AI based on machine learning, but to fully understand the scope of this technology, we will end by explaining the type of AI based on natural language processing. AI based on natural language processing (NLP) refers to the ability of machines to understand, interpret and generate human language. According to Jurafsky and Martin (2019), NLP is a branch of AI that focuses on the interaction between computers and natural human language, using machine learning and data processing techniques to analyse and generate text and speech. NLP has applications in a wide variety of fields, such as machine translation, sentiment analysis, text generation and chatbot-based customer service. For example, NLP is used in voice recognition systems, such as Siri and Alexa, to understand users' voice commands and provide useful responses. In addition, is also used in social network data analysis to extract useful information about public opinion and trends.

As mentioned above, NLP-based AI has many practical applications. One of the main advantages is its ability to analyse large amounts of text and understand the meaning behind natural language. This can be useful in areas such as customer service, where companies can use NLP-based chatbots to answer customer questions in real time and provide better service (Jurafsky & Martin, 2019).

Once this disruptive technology has been conceptualised, we must bear in mind that, apart from being of great help to many fields such as industry or medicine, it will also bring disadvantages and problems. We are talking about an unprecedented technology that changes the way we understand and manage data. The advantages of AI, as we have already mentioned, are obvious, as it can improve the efficiency and accuracy of many tasks, including decision-making, process automation and complex problem solving. According to Russell and Norving (2010), AI allows machines to learn autonomously and improve their performance on specific tasks as they process more data. Another advantage of AI is its ability to process large amounts of information at a much faster speed than humans. For example, AI is used in the medical field to analyse large patient datasets and help doctors make more informed treatment decisions (Topol, 2019). In addition, AI can also be useful in areas such as education and safety, improving people's quality of life.

However, there are also disadvantages to the use of AI that need to be considered. One of these is the risk of human jobs being replaced by intelligent machines. According to Brynjolfsson and McAfee (2014), AI and automation can affect a wide variety of jobs, from factory workers to office employees. While this can improve efficiency and reduce costs for companies, it can also have negative effects on the economy and employment in general. Another disadvantage of AI is the potential loss of privacy and security of personal data. According to Floridi (2019), AI can be used to collect and analyse large amounts of users' personal information, which can be exploited by companies or used for malicious purposes, such as mass surveillance or manipulation of public opinion. In addition, over-reliance on technology can also be a risk, especially in areas such as cyber security and critical decision-making.

Below in Table 1, we can find a table summarising the advantages and possible risks of artificial intelligence discussed in the previous section.

Table 1. Advantages and disadvantages of AI.

Advantages of AI	Disadvantages of AI
Increased efficiency and productivity in various sectors.	Risk of human jobs being replaced by intelligent machines
Improved decision-making and problem-solving skills.	Loss of privacy and security of personal data
Ability to process and analyse large amounts of data.	Over-reliance on technology
Potential for improving healthcare.	Risk of bias and discrimination in algorithms
Contributing to the quality of life in areas such as education and security	Malicious purposes, such as mass surveillance or manipulation of public opinion.

Resource: Own elaboration.

2.2.1. Artificial Intelligence and Human Resources

Several types of artificial intelligence (AI) models can be used in Human Resources (HR), each with specific applications and benefits. Some examples of AI models used in HR and their applications are described below.

Among the different types of models, we can apply, each has its different applications and specific benefits, including Machine Learning. This model is used to analyse large amounts of data and find patterns, which can help HR professionals make informed and accurate decisions. For example, machine learning can be used to analyse employee performance data and predict which employees are more likely to leave the company or be rewarded for good productivity. It can also be used to automate the process of screening resumes and interviews, saving HR professionals time, and improving selection accuracy. Ben Eubanks (2018) explains how machine learning can be used to

identify patterns in performance data, which can help HR professionals better understand the factors that influence employee performance.

Another very important example, also defined above, is Natural Language Processing, which in HR can be used to automate the answering of common employee questions, to improve internal and external communication, and to analyse employees' feelings about the company. For example, it can be used to analyse employee responses to satisfaction surveys to identify areas where the company can improve. Tom Taulli (2019) explains how natural language processing can be used to automate the answering of common employee questions, which can save HR professionals time. Finally, robotics. Robots can be used to perform administrative tasks, such as payroll management and employee record keeping. Robots can also be used to perform physical tasks, such as cleaning and safety in the workplace. In "Robotic Process Automation and Risk Mitigation: The Definitive Guide", Dr. Abhishek Kumar (2017) explains how robotics can be used to automate administrative tasks, which can increase efficiency and reduce time spent on tedious and repetitive tasks.

3. TALENT IN PEOPLE MANAGEMENT

To start dealing with this concept, we need to clearly define what we mean by talent.

The truth is that the concept of talent has been transformed throughout history, it is an abstract idea that has been approached in very different ways according to the different cultural filters that we want to apply. In European languages the word talent refers to an innate quality of the person, while in the Japanese language the same word refers to achievement and is considered the product of years of effort to achieve perfection (Tansley, 2011).

We can define talent from two different perspectives, individual talent and organisational talent. We have already defined individual talent in the previous lines, and it can be considered the main driver to achieve organisational talent. In other words, that which is formed through the synergy of different individual talents in teams. "... The main contribution of individual talent is to be the raw material of organisational talent, that which resides in work teams and organisations" (Pilar Jericó, 2001).

The definition of talent, according to the Royal Spanish Academy of Language (RAE), refers to the intelligent person or suitable for a certain occupation; intelligent, in the sense that he understands and understands, and that he has the ability to solve problems since he possesses the necessary skills, abilities and experience to do so; Suitable, in the

sense that it can operate competently in a certain activity due to its ability and disposition for the good performance of the occupation.

We can define talent from two different perspectives, individual talent and organizational talent. We have already defined individual talent in the previous lines, and it can be considered the main driver to achieve organizational talent. In other words, that which is formed through the synergy of different individual talents in teams. "... The main contribution of individual talent is to be the raw material of organizational talent, that which resides in work teams and organizations" (Pilar Jericó, 2001). Also, Luz M. Vallejo Chávez (2016) defines talent as "the set of knowledge and assets of individuals and work groups in organizations, but also their attitudes, skills, convictions, attitudes, values, motivations and expectations regarding the individual, organization, work and society system".

It can be understood that talent refers to the ability of people to solve problems intelligently, using all their skills, knowledge, skills, experiences and aptitudes, with the purpose of driving the progress of the organization and adding value to it. To achieve superior results, it is important that organizations allow people's talent to be expressed and released, so that they can provide the greatest possible value and collaborate in the creation of organizational talent.

3.1. Talent management (TM)

To achieve superior results, it is important that organisations allow people's talents to be expressed and released so that they can contribute the greatest possible value and help create organizational talent.

This requires an effort on the part of organizations and introduces us to another well-studied term: talent management.

The first to bring this issue and the interest in it to the table was McKinsey book *The War for Talent* (2001) and progressively many studies have been revealing that organisations are throwing more and more resources into this process of attracting, retaining, and motivating the human talent of their employees. The concept of talent management (TM) does not yet have a clear definition, there are many perspectives from which to approach the issue and many authors have dealt with it for years yielding different conclusions, (Lewis & Heckman, 2006) It is difficult to identify the precise meaning of "talent management" because of the confusion regarding definitions and terms and the many assumptions made by authors who write about TM. Some authors admit that "there isn't a single consistent or concise definition" (Ashton & Morton, 2005).

Although there is no agreement on the exact definition of the term, we can find reviewing the literature three different perspectives that different authors have worked on the definition of talent management (Lewis & Heckman, 2006).

The first perspective tries to define it as the normal set of practices of the human resources department that we already know such as recruitment, selection, career development... (Byham, 1990). The second stream of authors focuses on the concept of talent pools. This perspective takes talent pools as a mechanism to ensure a regular supply of able workers so that current and possible future requirements are met without any hindrance (Ansar & Baloch, 2018). This point of view can be considered incomplete because it only focuses on a part of Talent Management (TM). The third perspective may be further subdivided in two approaches: exclusive approach and inclusive approach (Ansar & Baloch, 2018). The exclusive approach is based on categorizing employees at different levels according to their talent, considering talent as an individual characteristic of workers that has nothing to do with their job or role in the company. Level "A" includes employees with a high level of talent and level "C" includes those who do not reach the standard level of talent determined by the company to be hired and rewarded. Whereas, even approach is about considering all people as talented, and being the company responsible for providing opportunities and scenarios to take advantage of the talent of all the employees in charge.

Recent studies express that talent management should focus more on the employee's perspective and needs, as well as on individual talent. In short, these latest studies highlight that to retain talent in the organization, it is very important to try to generate a balance between the objectives and expectations of the individuals and the needs of the company (Farndale et al., 2014). So, we can see that this concept revolves around certain activities that companies carry out on the management of their employees that facilitate the way in which they take advantage of their human capital, as well as the way to lead this towards scenarios that allow them to maximize all their talent and respond to changing environments. "In this way, we turn human capital into a strategic asset that is able to create value-creating strategies and thus achieve sustained competitive advantage" (Sparrow & Makram, 2015). To achieve superior results through human capital as a strategic asset that generates value, we need to create an internal organizational environment and have products that meet customer needs. The objective of talent management is, therefore, to attract, develop, motivate, or retain and disengage professionals to create value for the company or, in other words, to generate organizational talent to respond to changes in the environment (Jericó, 2000).

Figure 2: Talent management processes
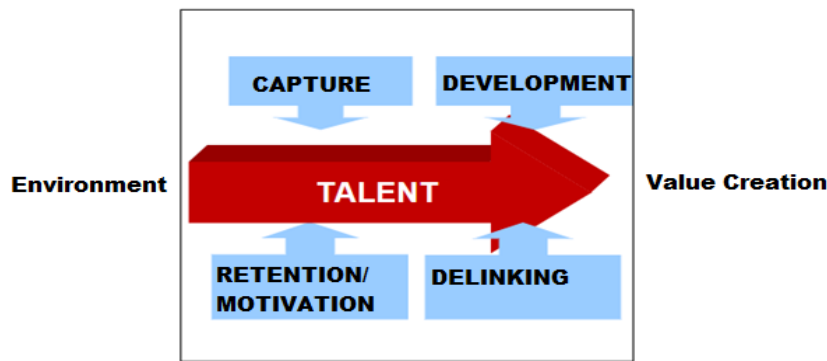
Source: (Pilar Jericó, 2001)

3.2. The attraction process: Key concepts

We have already defined what human talent is about in business and the importance of managing it to generate a sustained competitive advantage over your competitors. But for all this to be coherent, companies must first attract that talent.

When we think about the process of attracting talent, we can make the mistake of thinking that this is a process that is only carried out by the human resources department, because we only focus on the phase of selecting the best candidate for the position offered. But this term refers both to the recruitment process, making the company known to as many candidates as possible, and to the selection process, that is, selecting the most suitable candidate for the profile sought (Pilar Jericó, 2001).

To define a theoretical framework to explain the attraction of talent to a company, it is necessary to consider the following key concepts: selection processes (the procedures and techniques used to attract and select candidates with the right profile for the company), employee value proposition (EVP) and finally employer branding.

These concepts will be explained in order below:

First, we will explain the selection processes, to attract and select the right candidates for a company various procedures and techniques are used. Firstly, the job description is often used to attract candidates with the required profile. The job description is a document that details the responsibilities, requirements and skills needed to perform a certain position within the company (Cascio, 2018). In addition, recruitment media, such as social networks, job portals and professional contacts, are also used to attract candidates with the right profile (Breaugh & Starke, 2000).

Once applications have been received and a first selection has been made, assessment techniques such as interviews, psychological tests and skills assessments are used to determine whether the candidate has the right profile for the position (Gatewood et al.,

2016). The interview is one of the most used techniques for candidate selection, as it allows to meet the candidate in person and assess their social and communication skills (Cascio, 2018). Psychological tests and skills assessments are used to assess the abilities and competencies of candidates and determine whether they are suitable for the position (Breaugh & Starke, 2000).

Secondly, we will talk about the employee value proposition, Employer Branding and Employee Value Proposition are closely related, as both seek to create a positive image of the company and attract high quality human talent. Employer Branding focuses on building a strong and attractive employer brand that generates interest and desire in candidates, as well as reaching the largest number of people. While EVP focuses on defining and communicating the benefits and rewards that the company offers its employees in return for their performance and commitment. Both concepts work together to create a positive and motivating organisational culture, which in turn helps to retain talent and foster long-term productivity and business success.

The Employee Value Proposition (EVP) is a strategy that seeks to define and communicate the set of benefits and rewards that a company offers its employees in exchange for their performance and commitment. The EVP can include aspects such as opportunities for professional growth and development, a pleasant working environment, competitive salary, employment benefits, among others. According to (Backhaus & Tikoo, 2004), the process of designing and implementing a successful EVP involves a clear understanding of employees' needs and expectations, as well as a careful assessment of the company's resources and capabilities. An effective EVP must also be clearly and consistently communicated to employees, and continually evaluated and adjusted to ensure that it remains relevant and attractive to talent.

When we refer to making the company known to the greatest number of people, we are referring to a new concept that emerged in the 1980s in the USA: "Employer Branding", but which has become important in Spain in recent years, due to the country's socio-economic situation, as the need to attract young talent has increased. Whereas product branding considers how a product is represented to customers and corporate branding considers how an organisation is represented to a variety of external audiences, employer branding considers current and potential employees as branding targets (Edwards, 2009).

The Employer Branding has become increasingly important in recent years, as companies are becoming more and more conscious that it is a way of attracting and retaining the best employees, making known the company's philosophy and its way of

rewarding talent. In addition to distinguishing itself from the competition through a strong brand image, this activity arises as a new need detected by some entrepreneurs who want to see their company positioned among the top positions in different rankings and forums, and therefore should be used as a strategic tool that serves the company to achieve objectives by aligning the efforts and interests of all workers (Fernández Lores et al., 2014).

These three researchers in their article entitled: "Detection, Attraction, Selection and Retention of Talent in HR" (Fernández Lores et al., 2014), concluded the concept by envisioning three key elements: The first is the reflection of brand values to consumers through employee engagement. The second of the three is based on the realisation of the transmission of the brand promise to the company's internal and external audiences. And finally, the third key element is the importance of the multidirectionality, that is, the need to apply Employer Branding strategies at all levels of the organisation, to achieve alignment of the behaviours and values of management and staff. As we can see, this is an activity that affects the whole organisation and not only the HR department, but it is also the way in which the company generates added value in the way it shows itself to its partners and potential employees. This definition, rather than focussing on what rewards and experiences an organization provides for emphasizes managing aspects of the company's image (for example communicating corporate values and guiding principles) to help give the employment brand some additional substance (by reinforcing an identity and fostering a particular brand image) (Edwards, 2009). Therefore, this leads us to say that if an organisation wants to create a strong Employer Branding, it must work on making its employees feel identified with the culture and the project of the organisation, to turn them into emissaries of the message and the corporate culture that it wants to transmit.

This process is much more important than one might think at first glance, as it allows companies to identify and attract the best candidates who can contribute to their growth and achievement of goals. As (Cappelli, 2009) points out, attracting the right talent is essential to an organisation's success, and employers should focus on identifying the skills, experience and values that best align with their organisational culture and goals. In line with the above Laszlo Bock (2015), former senior vice president of people operations at Google, highlights that attracting talent is essential to achieve a successful company culture, where employees feel valued and are motivated to contribute to the achievement of the organisation's goals. All in all, attracting talent is critical for companies seeking growth, innovation, and long-term success. To attract the right talent, you must identify the skills and values that best fit your organisation's culture and goals

and create a fair and transparent selection process. Companies that invest in talent acquisition can enhance their reputation, attract more qualified talent, and create a successful corporate culture that contributes to the organisation's success.

3.3. Talent retention process: factors to consider

Once we have defined what is talent attraction in a company and its importance in the success of organisations, we must consider that the next step to be studied in the practice of human resources is the retention of this talent in the company. Therefore, we will now introduce the concept of talent retention, as well as other closely related concepts that will help us to understand what this topic is all about.

It is important to keep in mind that organisations need to retain these employees in their organisations to ensure that the efforts they have made in attracting talent and above all attracting the right talent are not wasted due to high turnover or that the job satisfaction of these employees is not the best. We will explain these concepts below, but first we will define talent retention as such. Talent retention refers to a set of methods and strategies that companies use to retain and motivate their most valuable employees and prevent them from leaving the organisation for other opportunities. According to (Thite et al., 2013), talent retention is "the ability of an organisation to retain valuable, high-performing employees over the long term". On the other hand, turnover refers to the movement of employees within the organisation and/or leaving the company. According to (Price, 2011), turnover "occurs when employees leave an organisation and are replaced by new ones". This concept can be voluntary or involuntary. Voluntary turnover occurs when an employee decides to leave the company to accept a better job offer, start his or her own business or retire. Involuntary turnover occurs when the company fires an employee for economic, performance or behavioural reasons.

When we talk about talent retention, we must take into account some factors and concepts that have a lot of relevance and impact on the ability of companies to retain talent.

The first of these concepts to be explained is organisational climate, which refers to the psychological and emotional environment perceived by employees in their workplace, which influences their behaviour, attitudes, and job satisfaction (Schneider, Gunnarson, & Wheeler, 2013). According to Kotter and Heskett (2008), organisational climate can be measured in terms of seven dimensions: "results orientation, customer orientation, people orientation, emphasis on processes, emphasis on long-term development, sense of community, and emphasis on innovation and change". The importance of organisational climate in talent retention is since a positive and healthy work environment

can improve employee satisfaction, decrease turnover and increase employee commitment to the company.

The second idea we are going to explain is that of organisational commitment, which refers to the emotional connection and identification of the employee with the organisation, in terms of its goals, values and missions. According (Meyer et al., 1993), organisational commitment is defined as "a psychological state that characterises the employee's relationship with his or her organisation and has implications for the decision whether or not to continue working in the organisation". The third important concept to define is job satisfaction, which refers to the degree of satisfaction or happiness that an employee experiences in his or her job. According to (Locke, 1976), job satisfaction is defined as "a positive or pleasant emotional state resulting from one's evaluation of one's work or work experiences". There is a strong positive relationship between organisational commitment and job satisfaction. Employees who are committed to the organisation are more likely to be satisfied with their job and have a positive attitude towards it. Similarly, employees who are satisfied with their jobs are more likely to be committed to the organisation and to stay with it in the long term.

To achieve job satisfaction, companies can use several tools and practices that focus on the needs and expectations of employees. Below we will name and explain some of the tools that organisations must achieve this:

The first of these is training and development programmes: Training and development programmes offered by companies can improve employees' job satisfaction by providing them with opportunities to learn and grow professionally. According to (Robbins & Judge, 2009), "training and development are important tools for improving job satisfaction and employee retention". Another tool that an organisation can use to achieve a high degree of job satisfaction among its employees is affective communication. This concept is: "the process of conveying information and understanding the meaning of that shared information, between two or more people in a work situation" (Colquitt et al., 2012). In other words, it can be said that affective communication is about making workers feel wanted, valued, and listened to in the organisation. The third and final tool we will discuss is work-life balance policies. A work-life balance policy is a measure taken by companies to help their employees effectively reconcile work and personal responsibilities. These measures include flexible working hours, teleworking, maternity and paternity leave and paid leave. The aim of these policies is to improve employees' quality of life and reduce the stress associated with the demands of work, which can have a positive impact on employees' job satisfaction and ultimately on their retention in the company. The

importance of these policies has been highlighted in several journals. For example, in a study published in the Journal of Applied Psychology, (Carlson et al., 2009) found that employees who had access to work-life balance policies reported higher levels of job satisfaction and lower emotional exhaustion. In addition, the authors noted that these policies were also related to a higher intention to stay with the organisation.

Once the tools for increasing job satisfaction have been explained, the company must follow up on the policies implemented to determine whether they have been successful. It is difficult to determine the most important tool for measuring employee job satisfaction. This is because each tool may have advantages and disadvantages depending on your company's situation and objectives. However, one of the most widely used and researched tools is the job satisfaction survey. According to Spector (1997), "job satisfaction surveys are the most widely used tool for measuring employee satisfaction". However, since an employee's response can be influenced by a variety of factors, such as confidentiality, age of the employee, or trust in the company, it is recommended that a variety of measurement tools be used to better understand job satisfaction.

This leads us to emphasise the fact that in today's labour market, several generations of workers with characteristics in terms of their work experiences, their needs and preferences, etc., are coexisting. For example, retention of more experienced employees can be difficult due to retirement and declining productivity, while retention of younger employees can be complicated due to differences in expectations and values regarding their work. (Espinoza et al., 2010) point out that millennials are looking for a job that allows them to have a work-life balance, as well as the opportunity to grow and develop in their career. Therefore, companies should offer a work environment that promotes work-life balance, as well as opportunities for professional growth and development.

So, as we have already said, talent retention is a major challenge for companies, and we have explained all the concepts to consider and possible tools to address the issue. But in addition, the differences in expectations and values of the different generations must be considered. Flexible working practices, the creation of an inclusive work environment that fosters collaboration and diversity, as well as the implementation of mentoring and transition programmes can be some of the solutions to retain the talent of workers of all ages. Flexible work practices, creating an inclusive work environment that fosters collaboration and diversity, and implementing mentoring and transition programmes can be some of the solutions to retaining talent in the workforce for workers of all ages.

3.4. Talent motivation process: key concepts

When employees are motivated, they feel more committed to their work, are willing to go the extra mile to achieve the company's goals and feel more satisfied with their work. All this contributes to employees being less willing to leave the organisation. Adams equity theory (1965) states that: "individuals compare their rewards and efforts with those of others in the same field of work and, if they perceive that they are treated fairly and equitably, their motivation and commitment increase". In other words, employees are more motivated when they perceive that the rewards and recognition, they receive for their work are fair and equitable compared to those of their peers in the same or similar jobs. Furthermore, theory suggests that when employees perceive a lack of equity in the distribution of rewards, they may experience feelings of unfairness and demotivation in their work. Thus, it is important that companies pay attention to employees' needs and expectations and provide opportunities for professional development and growth to keep employees motivated and committed to the organisation. Consequently, staff motivation is a key factor in talent retention, which in turn can have a significant impact on competitiveness and business success.

The concept of motivation as such refers to those factors that drive individuals to act and behave in a certain way in a work environment. According to Robbins and Judge (2009), motivation is defined as "the process that explains the direction, intensity and persistence of effort that a person devotes to achieving a goal". Herzberg (2002), highlights the importance of motivational and hygiene factors for employees' job satisfaction and motivation. Motivational factors, such as recognition and personal growth, are what generate employee satisfaction and motivation, while hygiene factors, such as pay and working conditions, prevent job dissatisfaction but do not necessarily increase motivation. Motivational factors are elements that influence employees' motivation at work and can be internal or external to the individual. According to (Herzberg, 2002), internal motivational factors, also known as intrinsic factors, are those related to job satisfaction, such as achievement, recognition, work for its own sake, responsibility, and personal growth. On the other hand, external motivational factors, also known as extrinsic factors, are related to conditions external to the job, such as salary, benefits, work environment and job security.

There are several important theories of personal motivation, but the most relevant is described below: the need theory, although there are also very important ones such as the expectancy theory, and the self-determination theory. The need theory, developed by Maslow (1943), argues that human needs are organised in a five-level hierarchy, ranging from basic survival needs to the highest self-fulfilment needs. According to this

theory, employees are motivated by the need to satisfy their needs at each level of the hierarchy. Only when needs at a lower level are satisfied, employees can progress to satisfying needs at the next higher level (Latham & Pinder, 2005).

It is also crucial to understand that the different generations of coexisting workers have very different needs and characteristics. If we want to motivate our workforce, we must take this into account. According to some authors, such as Ron Alsop (2008) and Bruce Tulgan (2009), four main generations can be identified in the labour market: the baby boomers, generation X, millennials, and generation Z. Each group has its own expectations, values, ways of working and aspirations, which implies the need to tailor the motivational approach to their needs. According to Robert G. DelCampo (2010), in his book "Managing the Multi-Generational Workforce", employees of different generations highly value flexibility at work, as it allows them to balance their personal and work responsibilities. This can be achieved through flexible working hours, teleworking, part-time work, etc. Meagan Johnson and Larry Johnson (2010). This can be achieved through collaborative projects, mentoring, training, among other initiatives.

The employee mental health is a major issue in today's workplace and is closely related to the concept of personal motivation. The World Health Organisation (WHO) defines mental health as a state of well-being in which a person can develop his or her abilities, manage the normal stresses of life, work productively and succeed publicly and contribute to his or her community. When employees are mentally healthy, they are better prepared to face work challenges and stay motivated, which can improve their performance and job satisfaction. As mentioned above, there is a direct relationship between employee motivation and mental health, and it has been shown that employees with good mental health are more likely to be motivated at work. According to Robbins and Judge (2009), "employees with positive mental health may be better able to cope with work challenges and stay motivated, which can improve their performance and job satisfaction". Moreover, the importance of mental health in the workplace has increased in recent years, as it has been shown that employees' mental health can directly affect their well-being, job satisfaction and productivity. According to Luthans and Youssef (2007), "employees' psychological well-being is positively associated with job satisfaction and job performance". Therefore, it is important that companies pay attention to the mental health of their employees and take measures to promote a healthy work environment.

4. IMPACT OF THE AI ON HUMAN TALENT MANAGEMENT

Artificial intelligence (AI) is rapidly transforming the way companies manage their human talent. AI solutions are enabling HR departments to perform tasks such as recruitment, skills development, and employee retention more efficiently and effectively. In addition, AI is providing HR managers with greater insight into data related to their workforce, enabling them to make more informed decisions about managing their workforce. The way organisations source, recruit, select and develop staff has changed because of AI. AI has become a valuable tool with a considerable impact that we will try to explain and develop.

Firstly, recruitment and selection are two processes that have been affected by the new tools offered by AI. Thanks to this technology, companies are now able to analyse large amounts of candidate data, including CVs, social media profiles and other data available online. This helps to make a more objective selection of candidates and helps to identify the most suitable skills and experience for the job. One of the most widely used applications is the automated evaluation of resumes, according to Ira Wolfe (2020), companies are using AI algorithms to analyse large quantities of resumes in search of suitable candidates. These algorithms can identify keywords, skills, work experience and other relevant information to determine a candidate's suitability for a given position. Another common use of AI in recruitment and selection is automated video interviewing. In this process, candidates record their answers to pre-set questions, and then these answers are analysed by AI algorithms that can evaluate tone of voice, body language and other important aspects of communication. Mark Murphy (2011) explains this approach, and it can be useful for identifying personality traits such as honesty, trustworthiness, and humility, which are important in business culture.

Another book that addresses the use of AI in these processes is "Artificial Intelligence for HR" by Ben Eubanks (2018), with a particular focus on psychological assessment during the recruitment process. According to this author, AI algorithms can analyse large amounts of data obtained from psychological tests to identify behavioural and personality patterns that may be relevant for a job. In addition, AI can help employers more objectively evaluate candidates and reduce human bias in hiring decisions. Eubanks is a recognised author in this field and points out that AI can be used to analyse the language used by candidates in interviews and other documents related to the selection process, with the aim of identifying patterns of communication that may be relevant to job performance. Overall, these books agree that AI is transforming the way the recruitment process is conducted, allowing for faster, more objective, and accurate assessment of candidates. The use of AI in talent management can significantly improve

the selection of candidates for a position. AI can help companies identify the best candidates more efficiently and effectively, as we have explained. "A study by data analytics expert John Elder and his team of data scientists found that the use of AI in candidate selection improved the accuracy of success predictions by 25% compared to traditional selection methods. In addition, AI can also reduce bias in candidate selection by focusing on relevant skills and experience, rather than subjective factors such as age, race, or gender".

Despite the potential benefits of AI, there are also important risks that must be considered. One of the most significant risks is the bias that may be embedded in the AI algorithms used in these processes. As we have discussed the fact of being able to monitor and evaluate employee performance on a constant basis, which could lead to a highly monitored and pressured work environment. According to Thomas Davenport (2019) this type of monitoring can be invasive and raise concerns in terms of employee privacy and trust. AI algorithms can perpetuate biases based on the training data used to develop them, which could result in unequal or even discriminatory training and development decisions. Cathy O'Neil (2016) argues that AI algorithms can be unfair if they are based on biased or incomplete data. For example, if a recruitment AI algorithm is trained on historical data that reflects a bias against certain demographic characteristics, the algorithm may perpetuate that bias in its selection of candidates. This can result in unfair discrimination and perpetuate inequality in the workplace.

All these new ways of working in talent management processes have also changed the way employees and employers relate to each other and naturally, this is also a relevant impact that AI has introduced in this field. Carl Benedikt Frey and Michael A. Osborne (2017) analyse how automation and AI are changing the labour market and which jobs are most susceptible to being replaced by machines. One of the most important impacts of AI on the relationship between employees and employers is the increasing automation of jobs that were previously performed by humans, as this may lead to a decrease in the demand for certain skills and, therefore, in the number of employees needed to perform certain tasks. According to this book, it is estimated that around 47% of jobs in the US are at risk of being automated due to AI. This has led to a growing need for specialised skills and competencies to work alongside AI and stay relevant in today's labour market. On the other hand, AI can also improve employee efficiency and productivity, which can lead to higher job satisfaction and a more positive relationship between employees and employers. Overall, it is important that employers adapt to the changes that AI brings and take steps to ensure that employees can adapt to this new working reality.

The implementation of AI in talent management may have important social and ethical consequences. Frey and Osborne (2017) argue that, AI has the potential to replace many jobs, especially those involving routine and repetitive tasks. As a result, AI is expected to have a significant impact on the labour economy, including the creation of new jobs and the elimination of others as discussed above. However, this may also have social consequences, as those workers whose jobs are replaced by AI may face financial and employment hardship. In addition, AI may perpetuate and widen existing inequalities in society, as those workers who do not have access to the training and education necessary to work in collaboration with AI may be left behind. In addition, this technology may increase the risk of bias and discrimination in the selection and assessment of candidates, which can undermine efforts to create more diverse and inclusive organisations. It can also pose challenges in terms of privacy, transparency, and accountability in decision-making. In this context, it is crucial to understand the potential social and ethical implications of AI in talent management and work to mitigate these risks.

The lack of transparency in AI decision-making is a worrying social and ethical consequence of talent management in companies. As Cathy O'Neil (2016) points out in her book "Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy", the algorithms used in AI are often complex and difficult to understand, even for technology experts. This lack of transparency can make hiring, promotion and firing decisions difficult to explain or justify, which can undermine trust in the company and in AI itself. For example, if a company uses an algorithm to select candidates for a job, but the algorithm is not transparent and cannot explain how decisions were made, candidates may feel that the selection process was unfair or discriminatory. In addition, if an employee is dismissed because of AI, but it cannot be explained how the decision was made, there may be a feeling of unfairness and inequity. It is important that companies are transparent about how AI algorithms are used in decision-making and that decisions made by AI are understandable and justifiable. This can be challenging, as AI algorithms are often based on machine learning models that can change and evolve over time. However, if companies want to gain the trust of employees and the public in the use of AI in talent management, transparency and explainability must be a priority.

Technology dependency is another potential negative consequence of AI in talent management. As technology continues to advance and companies increasingly adopt AI in their selection and assessment processes, there is a risk that key human skills, such as empathy and human judgement, become less valued and less utilised. As a result,

this can negatively affect company culture and the morale of employees, who may feel less valued and disconnected from the organisation. According to Amy Webb (2019), reliance on AI can also have unintended consequences, such as the elimination of certain jobs and the creation of new jobs that require different skills. In addition, Webb points out that reliance on AI in decision-making can lead to the exclusion of certain individuals and groups, especially those who do not have access to, or knowledge of the technologies needed to interact with AI. It is important to note that AI is not a magic bullet for all talent management problems and that a balance must be maintained between technology and human skills. Companies must ensure that their candidate selection and assessment processes do not rely solely on AI and that they continue to value critical human skills, such as empathy and human judgement. In this way, they can reap the benefits of AI without losing sight of the importance of the human factor in talent management.

Privacy and data security are critical issues in any organisation, and the use of AI in talent management can amplify these risks. In particular, the collection and analysis of large amounts of employees' personal data can raise concerns about privacy and misuse of information. In addition, there is the potential for data to be compromised or stolen, which could have serious consequences for the organisation and its employees. Stuart Russell (2020) warns about the risks of AI in terms of privacy and security. According to this author, the use of AI to collect and analyse employees' personal data can lead to invasion of privacy and the risk of discrimination. In addition, AI can be vulnerable to cyber-attacks and manipulation, which can compromise information security and employees' trust in the organisation. It is important that companies implement adequate measures to protect the privacy and security of employee data. This may include implementing clear data privacy policies, training employees on cybersecurity, and investing in advanced security technologies. It is also important that companies are transparent in their use of AI and that employees understand how their personal data is collected, used, and protected.

The following table summarises the advantages and disadvantages of implementing this technology in human talent management that we have explained in this section. The advantages are mainly to be found in the improved effectiveness of data-driven decision making and the efficiency that AI provides, while the disadvantages have to do with the social and ethical issues that arise when managing people in an organisation through a technology such as AI.

Table 2. Advantages and disadvantages of AI in talent management.

Advantages	Disadvantages
Automates repetitive processes and tasks, enables fast and accurate data analysis.	Displacement of certain workstations.
Aid in data-driven decision making and analysis.	Risk of bias and algorithmic discrimination in candidate selection and evaluation.
Improved employee satisfaction due to improved productivity through AI.	Possible lack of personalisation and empathy in interaction with employees.
Facilitates the search and selection of the most suitable candidates for jobs.	Need for human oversight to ensure ethics and transparency in the use of AI.
Enables predictive analytics and trend identification in talent management.	Reliance on AI for decision-making in talent management.

Resource: Own elaboration.

5. OBJECTIVES AND METHODOLOGY

5.1 Objectives

The main objective of this paper is to analyse the impact of artificial intelligence (AI) on the management of human talent in companies, focusing specifically on the aspects of attraction, retention, and motivation. To this end, a series of specific sub-objectives have been set out to address the main objective:

The first block is of a theoretical nature. Firstly, the aim is to investigate and analyse in depth the fundamental concepts of AI and data science to provide a solid foundation to help us better understand what kind of technology we are addressing and what magnitude this comprises. The second sub-objective is to describe, understand and provide the fundamental theoretical underpinnings of talent and its management, especially the processes of attracting, retaining and motivating employees.

The second block is more operational. And then, more specifically, the third sub-objective is to consider how AI is having an impact on the management of the human talent we defined in the second sub-objective. It looks at the different AI technologies and tools that are used in the process of recruiting and attracting talent, as well as in employee retention and motivation.

Fourthly, it aims to understand how companies are articulating the radical technological innovations we are experiencing and talent management. To this end, three significant company cases will be analysed: "Pymetrics" to study the transformation of the attraction and selection process, "Peakon" for the retention process and finally "Cobee" for the motivation process.

5.2 Methodology

To achieve the proposed objectives, the research methodology used was qualitative, using the case study technique. "The use of the case study strategy as a research methodology presents great possibilities in the explanation of contemporary phenomena located in their real environment" (Eisenhardt, 1989).

Case studies are research procedures used to analyse a topic, phenomenon or group of people in detail. They are conducted with the aim of explaining the causality of a phenomenon, comprehensively describing an event or topic, developing new theories or hypotheses, or providing solutions to specific problems. They are qualitative, as non-numerical data are collected to interpret and determine the qualities of the phenomenon under study (Yacuzzi, 2005).

5.2.1 Cases analysed

To support and illustrate in a practical way everything explained above, we have selected a series of companies that use artificial intelligence tools to transform the way in which talent is managed. We have chosen one company for each process we have focused on in the study, and for each of them, we will analyse the main conclusions and results that these companies have obtained after their use. To do this, we will analyse the tools offered by Pymetrics, Peakon and Cobee respectively, and then we will detail how they change the way of working in each of the processes they are aimed at, whether it is attracting, retaining, or motivating talent. As well as their real application in companies that have worked with the companies analysed and the results that have been obtained thanks to the incorporation of these tools, comparing them with the results prior to the transformation of the process in question that we are dealing with.

The collection of information for these case studies has been through secondary sources in its entirety, mostly information has been extracted from the official websites of the companies studied, as well as blogs about them, although to a lesser extent. Reports drawn up by companies that have used the services of the companies studied have also been consulted, as well as reports drawn up by the companies themselves.

The first case study we will look at focuses on providing innovative talent attraction management, "Pymetrics" is a platform dedicated to revolutionising recruitment and talent selection processes using neuroscience and artificial intelligence. Its approach is based on the evaluation of candidates through online games designed to measure cognitive, emotional, and social skills relevant to job performance. This company has been chosen because, through research and analysis of similar companies, "Pymetrics" is the option with the greatest impact on talent attraction where there is access to sufficient information to conduct a case study and draw meaningful conclusions and results.

We will then analyse the case of "Peakon", a company that focuses on the talent retention process through a survey process that is collected and analysed in real time through artificial intelligence tools and that provides employee segments according to their level of satisfaction and possible solutions for them. Peakon" has been chosen because of its accessibility to sufficient data to carry out a case study and because of its great impact on many large companies such as Santander or Vodafone.

The last case study is the Spanish company "Cobee", a startup that focuses on the process of motivating workers through flexible remuneration that adapts to the preferences of each employee using artificial intelligence techniques. It is based on

providing autonomy to employees and automating the remuneration process in companies, drastically changing the way of motivating, and improving the job satisfaction of people in organisations. This company has been chosen for its accessibility to information, and for the great positive and drastic impact it is having on companies such as Glovo or Línea Directa.

In the following section we will describe the main results obtained from the analysis of each of these cases, in relation to the object of our work.

6. CASE ANALYSIS: MAIN RESULTS

6.1 How "Pymetrics" is changing the way we attract and select talent

The purpose of Pymetrics is to transform the way companies attract and select talent as we have already explained, and the company has an objective to help companies identify the most suitable candidates for their jobs, improving the efficiency of the selection process and providing a more objective and unbiased assessment. Its system uses algorithms and scientific principles to measure and analyse candidate data, providing companies with valuable information to make informed talent recruitment decisions (CNBC, 2015)**.** The aim of the case study on Pymetrics is to analyse how this platform is transforming the way companies recruit and attract talent, it seeks to investigate the benefits that this company offers. It will analyse how companies have successfully used Pymetrics and provide concrete examples of its positive impact on talent recruitment.

Pymetrics is based on several fundamental principles to carry out its work, the first of these is the main one and is the neuroscientific and cognitive foundations, this company uses knowledge of neuroscience and cognitive psychology to understand how the skills and characteristics of individuals (Pymetrics, 2020). It is based on the idea that human behaviour and cognitive abilities can be assessed objectively by observing patterns and responses to specific tasks, and this principle is supported by the next principle of scientific validation. These methods and tools used by Pymetrics are backed by rigorous scientific validation, i.e., studies and tests have been conducted to demonstrate that Pymetrics assessments are reliable, valid, and predictive in terms of job performance. This is where AI comes into play for this company, as these first two principles are being realised through big data and predictive analytics. Pymetrics collects and analyses large volumes of data from the candidates who participate in its assessments and uses this data to use predictive analytics techniques to identify patterns and trends that help predict the success and adaptability of candidates in the workplace. The data-driven approach allows for more informed and objective decision-making in talent selection, as the ultimate principle of Pymetrics is the elimination of bias. This company strives to

provide assessments and selection processes free of bias and discrimination. It uses algorithms and techniques designed to minimise the influence of unconscious bias in the assessment process. The aim is to provide equal opportunities and promote diversity in the selection of talent.

Next, we will detail the tools and techniques that Pymetrics offers and that are changing the way of attracting talent, the first technique is based on introducing a new way of assessing candidates to a company. Traditionally, some applicant assessment techniques can be interviews, individual or group, and these serve to assess the skills, experience, motivation, and cultural fit of the candidate or, among many others, group decision making. In this, exercises are carried out in which several candidates work in teams to solve a problem or execute a task, evaluating their teamwork and decision-making skills (Alejandro Ruiz, 2017).

But as we have said, uses a new type of game-based assessments to measure the cognitive, emotional, and social skills of candidates in a more objective and data-driven way. These assessments are specifically designed to provide companies with a more complete picture of candidates' capabilities, beyond technical skills and work experience. Pymetrics' game-based assessments are an innovative alternative to traditional assessment methods. These assessments take the form of online games that are carefully designed to measure and evaluate characteristics and skills relevant to job performance. Each game has a specific purpose and is designed to assess a particular skill or competency, and is supported by research in neuroscience and psychology, allowing them to capture a wide range of characteristics relevant to job performance. Examples of games used in Pymetrics assessments include memory games, reaction games, decision-making games, and problem-solving games. The advantage of using game-based assessments is that they provide a more engaging and enjoyable experience for candidates, which can help reduce the anxiety and stress associated with traditional tests. In addition, games provide objective and measurable data on candidates' skills and competencies, allowing for a fairer and more accurate assessment.

The following tool uses advanced algorithms and data analytics (AI) to interpret candidate assessment results and provide valuable insights into their suitability for specific roles within an organisation.

Once candidates complete the games, Pymetrics collects and analyses the data generated by their performance. Using sophisticated algorithms supported by artificial intelligence, the platform extracts patterns and correlations between game results and desired characteristics for specific roles, allowing it to identify candidates' strengths and

weaknesses in relation to job requirements. These algorithms are trained with data from previous candidates and successful employees, allowing them to learn and improve over time as more information is gathered about employees' job performance and outcomes, the algorithms are adjusted and refined to improve their accuracy in predicting success in particular roles. These insights generated by Pymetrics help companies make more informed and objective hiring decisions by reducing the influence of subjective biases and prejudices in the selection process. This promotes greater fairness and diversity in recruitment, as candidates are assessed based on their demonstrated skills and capabilities rather than factors such as previous experience or irrelevant personal characteristics.

In addition, artificial intelligence algorithms are used to create detailed candidate profiles, based on the results obtained from the online game assessments discussed above, which provide valuable information about candidates' strengths, skills and characteristics, helping companies to make more informed hiring decisions. In addition, this organisation uses these profiles to match job requirements, streamlining the selection process by quickly identifying the most suitable candidates (Pymetrics, 2020).

Pymetrics offers significant benefits to companies in the talent attraction process. Firstly, its ability to conduct objective, data-driven assessments through artificial intelligence algorithms streamlines recruitment by eliminating the need for manual, subjective assessments. This saves valuable time and resources by allowing companies to quickly identify the most suitable candidates for each position. Another key benefit of Pymetrics is the elimination of bias and discrimination in the talent selection process. By relying on objective and measurable data, this company assessments minimise the impact of subjective factors such as race, gender or age. This promotes greater fairness in candidate selection and contributes to building more diverse and inclusive teams. Pymetrics also helps companies identify relevant skills and characteristics of candidates. The platform generates detailed profiles that provide valuable information about candidates' strengths, skills and personal characteristics, enabling companies to make more informed hiring decisions by assessing whether candidates possess the competencies needed to succeed in each role. In addition, the company can identify transferable skills and characteristics, which facilitates the internal mobility of talent within the organisation. The talent analytics offered by this company is another important advantage. Analytics tools allow companies to analyse and visualise data related to their recruitment and selection processes. This helps to identify patterns, trends and opportunities for improvement in talent attraction and selection. The data collected allows organisations to optimise their recruitment strategies, improve the efficiency of the

process and increase the quality of hires. Some of the companies that have used these Pymetrics tools are Unilever, Accenture, or Kraft Heinz.

Below, we can see a table summarising the most important aspects that we have discussed through four main categories that can serve as pillars to get a clear idea of Pymetris: the principles, the objective, the AI tools and techniques and the benefits that these tools bring.

Table 3. Key aspects of Pymetrics.

Category	Key aspects
Principles	1. Neuroscientific and cognitive foundations: based on neuroscience and cognitive research. 2. Scientific validation: assessments supported by scientific research. 3. Big data and predictive analytics: use of big data and predictive analytics. 4. Elimination of bias: focus on eliminating bias and promoting diversity in talent selection.
Objetives	Provide equal opportunities and promote diversity in the selection of talent.
Tools	1. Assessment-based games: online games to measure and assess cognitive, emotional and social skills. 2. Advanced algorithms and data analytics: use of sophisticated algorithms and data analytics supported by AI. 3. Detailed candidate profiles: creation of detailed profiles based on assessment results.

Benefits	1. Objective and data-driven evaluations: evaluations supported by AI, eliminating subjectivity. 2. Elimination of bias and discrimination: minimising the impact of subjective factors such as race, gender or age. 3. Identification of relevant skills and characteristics: helps identify important skills in candidates. 4. Identification of transferable skills: recognition of skills that can be applied in different contexts. 5. Talent analytics: tools for analysis and visualisation of data related to selection and recruitment processes.

Resource: Own elaboration.

We will focus on Unilever as an example of a company that has changed the way it works when it comes to recruiting and selecting talent, as this British company has in recent years transformed its talent attraction process into a fully digital experience. In the past, Unilever's candidate recruitment and selection processes were considerably outdated. The approach was limited to telephone tests and manual paper-based assessments, resulting in a lengthy and time-consuming process. Specifically, it took 4-6 months to screen approximately 250,000 applications and select only 800 people to hire (Unilever, 2017). This outdated and time-consuming methodology poses significant challenges in terms of efficiency and quality of recruitment for the company.

This transformation therefore aims to "attract young talent and encourage and recognise individual competencies over academic knowledge. The many benefits include streamlining the assessment process, saving costs and promoting workforce diversity (ORH, 2017).

The following table explains the steps of each of the phases of the selection process of this company, as we can see, it is not until the end of the process that the candidate has physical contact with the company.

Table 4. Description of Unilever's recruitment process.

Step	Description
1	Data form: Job applicants complete a form with their contact information, education, etc. It can be linked to LinkedIn to speed up the process.
2	Virtual games: Candidates spend 20 minutes playing 12 online games designed to assess their professional competencies. And the system chooses only those people with the results that are the best fit for Unilever.
3	Digital interview: Selected candidates undergo an online interview, which they can record anytime, anywhere. It is further evaluated by HireVue, another AI tool.
4	Final assessment: Candidates who have passed the fully virtual filter take a practical assessment at Unilever's offices, based on a real company case.

Source: Own elaboration based on (ORH, 2017).

Another artificial intelligence tool is also used in the third step, the company called "HireVue", which analyses facial gestures and voice tones among many other variables to choose the candidate most likely to fit in with the company. In this step, according to Melissa Gee Kee, up to 80% of the total number of candidates who send videocurriculums are filtered out (Gee Kee, 2017). It is worth noting that the fact that candidates do not have physical contact until the last step saves a lot of time for both the company and Unilever, as well as eliminating bias and discrimination.

The following table shows the results Unilever obtained by applying this new way of evaluating and selecting its candidates.

Table 5. Unilever's performance.

Results	Description
Annual cost savings more than £1 million	Unilever achieved cost savings of more than £1 million by implementing AI technology in its recruitment process.
90% reduction in recruitment time	The company was able to reduce the time needed to complete the recruitment process by 90%. The process went from taking 4 months to 4 weeks.
16% increase in diversity of new employees	Unilever experienced a 16% increase in the diversity of new employees hired, contributing to inclusion.
96% candidate completion rate	The completion rate of candidates in the selection process was 96%, compared to 50% previously.
Improving candidate experience	The implementation of this method resulted in a significant improvement in the candidate experience. It is estimated that candidates have saved between them a total of more than 50,000 hours.

Source: Own elaboration based on (Gee Kee, 2017).

As we can see from Table 5, there were benefits for the company as Unilever was able to save over £1 million and reduced the time taken to complete recruitment by 90%. But the candidates who were involved in this new way of recruiting also benefited significantly

through increased inclusion and improved candidate experience. We can also comment on an example of a "win-to-win" in terms of the efficiency of the selection process. For candidates, there was an increase from 50% to 96% in the completion rate of the recruitment process, due to Unilever's streamlining of the processes.

6.2 How "Peakon" is changing the way to retention of talent

Peakon is a company specialising in talent retention through artificial intelligence (AI). Its main purpose is to provide organisations with an intelligent listening platform that converts employee feedback into actionable information. Using machine learning technology, Peakon's objective is to collect and analyse confidential feedback from employees in real time, with the aim of understanding their concerns, feelings and needs more deeply. Peakon seeks to help all employees drive the changes they want to see in their organisations, creating a culture built on strong values and a common purpose. They believe that a great job is one that adds to the life experience and personal growth of each employee. To achieve this, Peakon allows people to have a say in how they are managed and how companies respond, encouraging a transparent dialogue.

One of Peakon's core principles is to allow people to have a say in how they are managed and how companies respond, and from this feedback, the company is on a mission to help all employees drive the changes they want to see. In addition, Peakon values a strong culture built on values and a common purpose. They seek to foster behaviours that truly serve customers and that employees care about the problems the company is trying to solve (Somers, 2021). Transparency is another key value at Peakon. Its products provide an objective view of the company's culture, management practices, strengths, and challenges. The platform provides insights and measures for continuous care and improvement based on the feedback and data collected. It looks for users to learn in the process, from feedback to insights and actions taken, they believe this combination of transparency and learning is something unique that only Peakon can offer.

In short, Peakon focuses on employee engagement and uses technology to address this problem. Its approach is based on enabling employee voice, driving change, building a strong culture, promoting transparency, facilitating learning and continuously improving the business. And this approach is fully supported by artificial intelligence through the tools we will explain below.

Below, we will explain and list the tools and techniques leveraged by this company that are revolutionising the way it retains employees. The first tool is a natural language processing AI that helps analyse and understand employee comments and responses in

engagement surveys. It also uses machine learning tools to analyse large volumes of employee engagement data and generate actionable insights. These two AI tools add up to collect and analyse all this information to understand the emotions and sentiments expressed by employees in the surveys and then provide personalised recommendations to both employees and organisational leaders. These recommendations are based on the data collected and analysed and help drive specific actions to improve engagement and satisfaction in the workplace. It also uses AI techniques to segment and analyse employee engagement data. This allows it to identify groups or segments of employees with similar needs or characteristics, helping the company to tailor its engagement strategies more effectively.

As for the benefits that these tools bring to the companies that apply them, we will explain them in more detail later through the case of TotallyMoney. But we can list them in such a way that they are: improved productivity and performance, reduced employee turnover, increased employee engagement and finally cost savings in recruitment and training.

The following table summarises the most important aspects just discussed, through the four pillars we use to get a clear picture of Peakon: the principles, the objective, the AI tools and techniques, and the benefits.

Table 6. Peakon key elements.

Category	Key elements
Principles	1. Allow people to have a say in how they are managed and how companies respond. 2.Value a strong culture built on values and a common purpose. Transparency in company culture. 3.Promote learning in the process, from feedback to insights and actions taken.
Objetives	Understand employees' concerns, feelings and needs more deeply.
Tools and techniques	1.Natural Language Processing (NLP) 2.Machine learning 3.Sentiment analysis 4.Personalised recommendations

	5.Data segmentation and analysis using AI.
Benefits	1. Improved productivity and performance 2. Reduced employee turnover 3. Increased employee engagement 4. Cost savings in recruitment and training.

Resource: Own elaboration

In the following table we can find the description of each AI technique at Peakon, and how they change the way we retain talent by actively listening to employees' opinions.

Table 7. Description of AI techniques in Peakon.

AI techniques in Peakon	Description
Natural Language Processing (NLP)	Used to analyse and understand employee comments and responses in engagement surveys.
Machine learning	Used to analyse large volumes of employee engagement data and generate actionable insights.
Sentiment analysis	AI applied to sentiment analysis helps to understand the emotions and feelings expressed by employees in surveys. This allows identifying areas for improvement and taking measures to increase employee engagement.

Personalised recommendations	Using AI techniques, Peakon provides personalised recommendations to employees and organisational leaders. These recommendations are based on collected and analysed data and help drive specific actions to improve engagement and satisfaction in the workplace.
Data segmentation and analysis using AI	This allows groups or segments of employees with similar needs or characteristics to be identified, making it easier to tailor engagement strategies more effectively.

Resource: Own elaboration.

This company uses these tools and techniques on the results of the surveys that are carried out on the employees, this company offers a service to the organisations of management and parameterisation of the surveys. The following table summarises the steps of the survey process in Peakon.

Table 8. Description of Peakon's survey process.

Step	Description
Survey configuration	Administrators can configure different types of surveys, such as automated surveys, ad hoc manual surveys or one-off surveys, using the Peakon platform. Data collection can also be enabled

	and the frequency for automatic survey recurrence can be selected.
Customisation of surveys	Employees have the option to submit their responses through various channels, such as email, SMS, Slack, Microsoft Teams or the mobile application.
Setting up survey schedules	There is a standard company schedule that includes all employees, but it is also possible to create specific schedules.
Question design and configuration	Peakon offers libraries of standard questions in different categories, and customised questions can also be created.

Resource: Own elaboration basen on (Kristiana, 2023)

One example of a company that has used Peakon and made great gains in retaining talent in their company, as well as changing the way in which this process has been carried out, is TotallyMoney. TotallyMoney is an organisation dedicated to providing financial tools and the consumer credit market. Among the main benefits this company achieved were a reduction in employee turnover, increased employee engagement, cost savings in recruitment and training, and improved productivity and performance.

In the following table we can see the results that Totally Money obtained when implementing the new way of managing talent thanks to Peakon.

Table 9. Totally Money Results

Results of TotallyMoney	Description
Improved productivity and performance	By providing an open channel for employees to express their ideas and concerns, the company has fostered a more collaborative and motivating work environment, leading to increased efficiency and business results.
Reduced employee turnover	Reduced employee turnover from 64% to 23%. Continuous collection of employee feedback and improved employee engagement enabled the company to identify the causes of high turnover and address long-term development issues.
Increased employee engagement	Collecting and analysing data on employee satisfaction and engagement has led to an increase in average employee tenure from less than two years to more than four years.

Cost savings in recruitment and training	By retaining existing employees and avoiding the need to constantly recruit and train new employees, the company has made significant savings in the costs associated with recruitment and training.

Resource: Own elaboration based on (Totally Money, 2022)

As can be seen in Table 9, this new way of retaining talent has generated significant benefits for the company, reducing the average length of service from two to more than four years and reducing employee turnover from 64% to 23%.

6.3 How "Cobee" is changing the way we motivate talent.

Cobee's purpose in motivational management through AI is to provide digital tools and solutions that help companies to effectively motivate and retain their employees. Cobee specialises in employee benefit plans and has developed a platform that allows companies to offer flexible compensation to their employees without incurring additional costs or increasing the administrative burden. One of the tools Cobee has developed is "Digital Advantage", which provides a virtual showcase of products and services in areas such as food delivery, physical and mental wellness, training, culture and family entertainment. This tool allows companies to offer exclusive promotions and direct financial benefits to their employees through personalised savings cards and promotions.

In short, Cobee focuses on motivation management through AI by providing digital solutions and AI tools such as so-called "Digital Perks" to help companies motivate their employees, improve their well-being, and create an attractive business climate (El Referente, 2019). The objective is to simplify and digitise the process of administering the benefits and fringe benefits that companies offer their employees, such as meal cards, childcare vouchers, health insurance, among others.

This Spanish startup is based on a series of principles to transform the way employees are motivated through artificial intelligence tools, the first of which is the main one and is the personalisation of benefits. The principle of benefits personalisation stems from the idea that each employee has different needs and preferences in terms of the benefits

they receive. Therefore, the company focuses on providing a platform that allows companies to customise benefits according to the individual needs of each employee. It is also based on principles such as employee experience in relation to their benefits, flexibility and autonomy over their benefits, automation of benefits management for both employees and the company and finally transparent communication between company and employee.

As for the tools that Cobee offers, we will detail them later, but we can name three main tools: the flexible remuneration platform, personalised recommendations and finally an AI-powered communication platform. We can also name the benefits that are obtained thanks to the application of these tools, which are also explained later: Gross salary earmarking, tax exemptions, personalisation of benefits, improved engagement and productivity and also tax benefits for the company.

In the table below, we find the most important aspects that we have just discussed, through the four pillars that we have used for the other two cases. These four categories help us to get a general idea of Cobee and are as follows: the principles, the objective, the AI tools and techniques, and the benefits.

Table 10. Cobee key elements.

Category	Description
Principles	1. Personalisation of benefits 2. Employee experience 3. Flexibility and autonomy 4. Simplification and automation 5. Transparent communication
Objetive	Simplify and digitise the process of administering the benefits and fringe benefits that companies offer to their employees.
Tools	1. Flexible remuneration platform 2. Personalised recommendations

	3.AI-driven communication platform
Benefits	1. Earmarking of gross salary. 2.Tax exemptions. 3.Personalisation of benefits. 4.Improving engagement and productivity. 5.Tax benefits for the company.

Resource: Own elaboration

In the following table, we can find the description of the principles in more detail to understand on which principles this Spanish company relies to change the way it motivates employees.

Table 11. Cobee Principles

Principle	Description
Customisation of benefits	Cobee recognises that each employee has different needs and preferences in terms of the benefits they receive. Therefore, the company focuses on providing a platform that allows companies to customise benefits to the individual needs of each employee.
Employee experience	The company offers a mobile app and VISA card that makes it easy for employees to access and use their benefits. This intuitive and convenient experience helps to improve employee satisfaction

	and motivation, as they can enjoy their benefits quickly and without hassle.
Flexibility and autonomy	Through the platform, employees can choose how and when to use their benefits, giving them greater flexibility and freedom to meet their individual needs. This flexibility boosts employee motivation by allowing them to tailor benefits to their lifestyle and personal circumstances.
Simplification and automation	Cobee simplifies and automates benefits management for both employers and employees. Cobee's digital platform centralises all benefits in one place, making them easy to administer and track. It also uses advanced technology to automate processes such as benefits assignment and reporting.
Transparent communication	The platform facilitates communication and dissemination of relevant benefits information, ensuring that employees are informed and can take full advantage of their benefits. This transparency promotes an environment of trust and enhances employees' perception of the value they receive from the company, which contributes to their motivation and engagement.

Resource: Own elaboration based on (Cobee, 2023)

Now, let's detail what artificial intelligence tools are used to realise these principles we have discussed above. Firstly, as we have already explained, Cobee offers employees using its services a flexible compensation platform through a personalised employee benefits system, where employees can choose from a variety of options according to their needs. Some of the benefits offered include meal tickets, childcare vouchers, transport cards, health insurance, pension plans, etc. (This flexible remuneration means that employees deduct from their salary the amount incurred for transport cards or health insurance, for example) (Cobee, 2023). Cobee's platform automates the administrative management of these benefits, which simplifies the process for companies and increases employee buy-in. Employees can access all benefits from a mobile application, allowing them to decide how, when and where to consume their benefits. They can also visualise all their movements and consumption in real time. Cobee's platform offers an all-in-one solution for flexible remuneration, with benefits centralised and always available. It provides automated processes and tasks by eliminating paperwork and manual management through artificial intelligence tools...

Figure 3. Cobee's flexible remuneration mobile application.
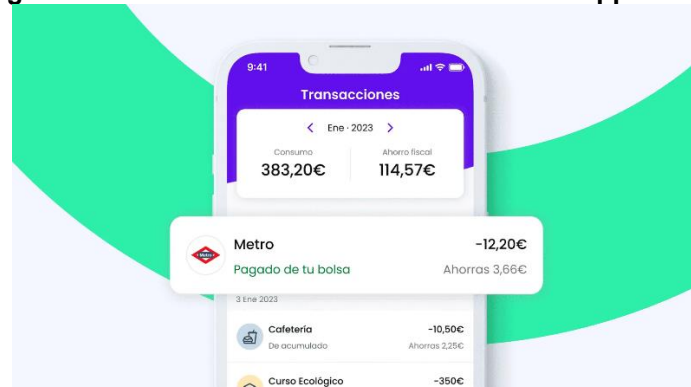
Resource: (Cobee, 2023)

In addition, the company uses AI to provide personalised recommendations to employees on benefits and flexible pay options, based on data such as employee preferences, needs and behavioural patterns, with the aim of maximising employee satisfaction and motivation. Finally, Cobee uses an AI-powered communication platform such as chatbots or virtual assistants to provide employees with instant feedback on benefits and flexible pay (Cobee Team, 2023). These tools could answer frequently asked questions and provide personalised guidance, thus enhancing the employee experience and facilitating their participation in the personalised compensation programme.

The following table gives an overview of the tools used in this company and a short description.

Table 12. Description of Cobee tools

Tool/Technique	Description
Flexible remuneration platform	Cobee offers a platform that allows companies to implement a flexible remuneration system for their employees.
Personalised recommendations	AI algorithms to provide personalised recommendations to employees on benefits and flexible remuneration options.
AI-powered communication platform	Answer frequently asked questions and provide personalised guidance.

Resource: Own elaboration based on (Cobee, 2023; Cobee Team, 2023)

The flexible remuneration offered by the startup "Cobee" provides several benefits to companies. These benefits include improvements in staff take-home pay, time savings and reduced administrative burden, increased employee motivation and well-being, and tax advantages for the company.

Flexible remuneration allows employees to spend up to 30% of their gross salary on the purchase of products or services at a below-market price. By paying from gross salary, employees get full or partial tax exemptions, resulting in significant monthly savings and a higher annual take-home pay, which can increase by up to 15%. In addition, Cobee enables companies to save time by having a single partner that drastically reduces the administrative burden associated with implementing and managing these programmes. Flexible remuneration contributes to improving employee motivation and well-being by giving employees the opportunity to customise their benefits to their individual needs. By

being able to choose how, when and where they consume their benefits, employees feel more valued and satisfied with their compensation, which can increase their engagement and productivity. In addition, this implementation of flexible remuneration programmes can provide tax benefits to the company. For every €1 invested in Cobee's flexible compensation plan, companies can get a return of up to €20 in terms of team payroll efficiency and reduced workload (Cobee, 2023).

Table 13 summarises the benefits provided by Cobee to the companies that use its tools and to their employees. Among the companies that have worked with Cobee are Ogilvy, Group M, Línea Directa, Glovo, Avis, Tripadvisor, N26 and Booking. For this case study we have not found specific results of a company that has used the tools of the company studied, but in the following table, we find general benefits of all the companies that have worked with Cobee.

Table 13. Results of companies that have used Cobee.

Benefits of Flexible Remuneration	Description
Earmarking of gross salary	Allows employees to use up to 30% of their gross salary to purchase products or services at below-market prices.
Tax exemptions	Employees get full or partial tax exemptions, resulting in significant monthly savings and a higher annual take-home pay, which can increase by up to 15%.

Customisation of benefits	Employees can choose how, when and where they consume their benefits, making them feel more valued and satisfied with their compensation.
Improved engagement and productivity	Flexible pay can increase employee engagement and productivity by giving employees greater satisfaction with their compensation.
Tax benefits for the company	For every €1 invested in Cobee's flexible compensation plan, companies can get a return of up to €20 in terms of team payroll efficiency and reduced workload.

Resource: Own elaboration

As we can analyse, this new way of motivating employees brings benefits and positive results in terms of economics and management of the employees and the motivation process. The economic benefits are bilateral, as we see that both the employees and the company receive these tax reductions. In addition, the reduction of paperwork through AI and the increased employee satisfaction brings benefits in terms of talent management.

7.CONLUSIONS AND LIMITATIONS

Throughout this study, we have explored how AI can transform the way companies manage their human talent. It has been observed that this technology enables a more objective selection of candidates and a deeper understanding of personnel-related data, such that it can identify hidden patterns and trends in employee data, allowing for more informed and evidence-based decision making in human talent management. In addition, AI can facilitate the customisation and tailoring of talent management practices to the

individual needs and preferences of employees, contributing to improved employee engagement and job satisfaction.

It has been concluded that AI presents significant opportunities for improving talent management, as its ability to collect real-time data and use it in automated or semi-automated decision making offers a great advantage in identifying candidates with the right profile, optimising motivation and retaining employees. However, significant limitations and risks associated with the implementation of AI in talent management have also been identified. One of the main risks is bias in AI algorithms, which can introduce discrimination and negatively affect fairness in the employee selection and evaluation process. In addition, there is a danger of over-reliance on technology, which can negatively impact company culture and employee morale. In addition to the above risks, critical issues related to privacy and data security have been identified. Improper handling of personal information can compromise employee confidentiality and generate distrust in the use of AI in talent management.

It has also been shown through this study that AI has the potential to transform the way companies manage their human talent. By harnessing the capabilities of AI, companies can improve the efficiency, accuracy and quality of their talent management processes as seen in the examples of Pymetrics, Peakon and Cobee, which illustrate this transformation in the way they attract, retain and motivate employees respectively. Pymetrics offers artificial intelligence tools based on neuroscience and cognition for talent selection, with the aim of eliminating bias and promoting diversity in hiring. Peakon provides a data analytics platform to measure employee satisfaction and engagement, enabling companies to take action to improve employee retention and performance. Cobee offers a flexible compensation platform that allows employees to customise their benefits, which increases employee satisfaction and motivation. In addition, the platform simplifies and automates benefits management for both employers and employees, improving efficiency and reducing bureaucracy in the process.

So, there are several challenges that AI brings to traditional human resource management that affect both current HR professionals and the training of future HR professionals. HR professionals need to keep abreast of developments in AI and understand how they can be applied in their field. This involves acquiring knowledge in areas such as data analytics, algorithm management and interpretation of results. The ability to understand and effectively use AI and data will enable HR professionals to make more informed and strategic decisions in talent management and people-related decision-making. Among the areas in which they should acquire skills, emphasis should

be placed on data analytics, as the use of data analytics in this new context becomes increasingly important in the HR field. Such professionals must develop skills to collect, organise and analyse large amounts of personnel-related data such as performance, skills and preferences in order to make more informed, data-driven decisions, such as identifying trends, predicting talent needs and assessing the impact of HR strategies. Algorithm management is another area they need to be aware of. This involves understanding how algorithms used in personnel-related decision-making are built and optimised, as well as their impact on outcomes. The ability to evaluate and improve algorithms ensures fairer, more transparent and more effective HR management.

Furthermore, ethics and privacy training is essential in the HR field, especially when it comes to the handling of sensitive personal data, HR professionals must be familiar with the ethical and legal principles related to data privacy and the protection of employees' personal information. In the context of AI, ethics and privacy training becomes even more important.

One of the critical issues is the bias inherent in AI algorithms, which can be affected by biases that reflect existing prejudices and stereotypes in the data used to train them. For example, if training data is biased towards certain demographic groups, AI systems could perpetuate that bias in making decisions related to hiring or evaluating employee performance. It is critical that HR professionals are trained in ethics and privacy to understand these biases and take steps to mitigate them. In addition, employee data privacy is another critical issue in the context of AI. AI systems in HR can collect and analyse a large amount of personal data, such as performance data, medical information, or demographic characteristics. Ethics and privacy training will enable them to understand the legal and ethical implications of collecting, storing and using sensitive personal data. It is also important to consider general ethical principles in the use of artificial intelligence. The ethics of AI encompass issues such as transparency in the algorithms used, accountability in automated decision-making, and fairness in access to and use of the technology. These ethical principles should be understood and applied in the implementation and management of AI systems in the workplace.

We have considered the impact on HR professionals, but we also need to discuss the challenges for employees themselves of incorporating AIs into the management of employee attraction, retention and motivation. The first of these challenges is the main one and it is about adapting to new technologies. With the implementation of these tools, employees will need to adapt and become familiar with new technology platforms that will be used in the attraction, retention and motivation process, and this may require a

period of learning and development of new skills. In addition, AI may automate certain tasks and processes, which could lead to changes in employee roles and responsibilities. Some routine tasks could be taken over by AI, allowing employees to focus on more strategic and creative activities. However, this may also lead to uncertainty and the need to acquire new skills for more complex roles. Just as we have said of HR professionals, employees may require complementary skills to work collaboratively with intelligent technologies. This includes skills such as data understanding, interpretation of AI-generated results, analytics-based decision-making, and social and emotional skills that are difficult to automate. Implementing AI can also generate resistance to change and fear among employees, so it is critical that organisations provide clear and transparent communication about the goals and benefits of AI, as well as provide adequate training and support to help employees adapt to new processes and tools. Finally, the use of AI in employee management raises ethical and privacy challenges which raises the importance of establishing clear policies and procedures to ensure the protection of employee data and to ensure that AI is used in an ethical and responsible manner as discussed above.

8.FUTURE LINES OF RESEARCH

AI is transforming human talent management in companies and opens up several areas of future research to better understand its impact and maximise its benefits. The following are some possible areas of research, the first of which seeks to investigate how AI can contribute to improving equality of opportunity in the workplace and reduce unconscious biases in human talent management. By implementing AI tools that help identify and eliminate biases in selection and promotion processes, a more equitable distribution of job opportunities can be achieved. One of the challenges of AI is that models can reflect biases in training data. However, techniques can be implemented to mitigate this problem, such as the use of balanced data representative of different demographic groups, as well as continuous monitoring and evaluation of models to detect unwanted biases (Caprino, 2022).

Another line of research could be to explore the impact of AI on team dynamics and employee collaboration. This technology can improve communication and collaboration within teams by providing tools and platforms that enable efficient information sharing and real-time collaboration. In addition, AI processing capabilities can analyse large volumes of data and provide relevant information for decision-making, which improves the effectiveness of teams in problem-solving and strategy implementation. It can also detect potential tensions or conflicts within teams by analysing data and behavioural patterns. By identifying these situations, measures can be implemented to proactively

address them and promote a more collaborative and healthier working environment. This contributes to strengthening relationships between team members and increasing job satisfaction, which in turn positively impacts productivity and overall team performance. However, it is important to take into account ethical challenges and considerations when implementing AI in team dynamics, as it is necessary to ensure transparency in the use of AI and address potential biases in algorithms that could influence interactions and decisions within the team. In addition, clear policies and protocols must be established for the responsible use of AI, protecting the privacy and security of employees (Deloitte, 2018).

These areas of future research offer promising scope for deepening the impact of AI on human talent management and for improving efficiency and equity in the workplace. Researching and understanding these aspects will help to maximise the benefits of AI and address potential ethical and social challenges associated with its implementation. With a focus on these areas, it will be possible to move towards more inclusive, collaborative and strategic talent management in organisations.

Although two limitations should be highlighted when carrying out the research, the first of these is at the theoretical level, and is to be found in having carried out a broader, more rigorous and systematic theoretical review of the aspects dealt with. The second is at the operational level, and is to be found in not having expanded the number of case studies and in having worked through primary sources to carry out the analysis.

9.BIBLIOGRAPHICAL REFERENCES

Abhishek Kumar. (2017). Robotic process automation and risk mitigation: the definitive guide. *Motivational Press*.

Adams, J. S. (1965). Inequity In Social Exchange. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 2, pp. 267–299). Academic Press. https://doi.org/https://doi.org/10.1016/S0065-2601(08)60108-2

Alejandro Ruiz. (2017). *6 Técnicas de Reclutamiento y Selección para Evaluar a un Candidato*. Reclutamiento de Personal, Evaluación de Candidatos, Reclutamiento y Seleccion. Retrieved on 17 May 2023 from https://www.ips.com.mx/blog/6-tecnicas-de-reclutamiento-y-seleccion-efectivas-para-evaluar-a-un-candidato

Alpaydin, E. (2010). *Introduction to Machine Learning*. The MIT Press.

Alsop, R. (2008). *The Trophy Kids Grow Up*. John Wiley & Sons.

Ansar, N., & Baloch, A. (2018). Talent and Talent Management: Definition and Issues. In *IBT Journal of Business Studies* (Vol. 14, Issue 2).

Ashton, C., & Morton, L. (2005). *Managing talent for competitive advantage*. Emerald Group Publishing Limited.

Backhaus, K., & Tikoo, S. (2004). Conceptualizing and researching employer branding. *Career Development International*, *9*(5), 501–517. https://doi.org/10.1108/13620430410550754

Banks, J. (2010). *Discrete-event System Simulation*. Prentice Hall.

Bishop, C. M. (2006). *Pattern Recognition and Machine Learning*. Springer Verlag.

Breaugh, J. A., & Starke, M. (2000). Research on Employee Recruitment: So Many Studies, So Many Remaining Questions. *Journal of Management*, *26*(3), 405–434. https://doi.org/10.1177/014920630002600303

Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W. W. Norton & Company.

Byham, W. C. (1990). *Zapp! The Lightning of Empowerment: How to Improve Quality, Productivity, and Employee Satisfaction*. Random House.

Cappelli, P. (2009). Talent on Demand – Managing Talent in an Age of Uncertainty. *Strategic Direction*, *25*(3), 16. https://doi.org/10.1108/sd.2009.05625cae.001

Caprino, K. (2022). Cómo la IA puede eliminar el sesgo en el proceso de contratación y promover la diversidad y la inclusión. *Triunfa Emprendiendo*.

Carlson, D. S., Grzywacz, J. G., & Zivnuska, S. (2009). Is work—family balance more than conflict and enrichment? *Human Relations*, *62*(10), 1459–1486. https://doi.org/10.1177/0018726709336500

Cascio, W. F. (2018). *Managing Human Resources Productivity, Quality of Work Life, Profits Eighth Edition McGraw-Hill Irwin*.

Castells, M. (2005). *La sociedad red*. Alianza Editorial Sa.

CNBC. (2015, June 1). *Tus habilidades para buscar trabajo, al descubierto con Pymetrics | Vídeos | EL PAÍS*. https://elpais.com/elpais/2015/06/01/videos/1433178234_100315.html

Cobee. (2023). *Cobee | Beneficios Flexibles y Retribución Flexible para Empresas*. Retrieved on 19 June 2023 from https://cobee.io/

Cobee Team. (2023). *Cinco herramientas de Inteligencia Artificial (IA) para RRHH*. Herramientas RRHH. Retrieved on 14 June 2023 from https://cobee.io/blog/herramientas-inteligencia-artificial-ia-rrhh/

Colquitt, J., LePine, J. A., & Wesson, M. J. (2012). *Organizational behavior: improving performance and commitment in the workplace*.

Dalkir, K. (2005). *Knowledge Management in Theory and Practice*. Elsevier Science. https://books.google.es/books?id=xtFLTymKV0QC

Datawow. (2020, June 15). *The Three Cores of Data Science*. AI Insights. Retrieved on 17 June 2023 from https://www.datawow.io/blogs/the-three-cores-of-data-science

Davenport, T. H. (2019). *The AI Advantage*. MIT Press.

DelCampo, R. G. (2010). *Managing the Multi-Generational Workforce: From the GI Generation to the Millennials*. O'Reilly learning platform.

Deloitte. (2018). *Impacto de IA en empresas a nivel mundial*. Deloitte. https://www2.deloitte.com/es/es/pages/strategy-operations/articles/impacto-ia-empresas-nivel-mundial.html

Domingos, P. (2015). *The Master Algorithm*. Penguin UK.

Donoho, D. (2017). 50 Years of Data Science. *Journal of Computational and Graphical Statistics*, *26*(4), 745–766. https://doi.org/10.1080/10618600.2017.1384734

Edwards, M. R. (2009). An integrative review of employer branding and OB theory. In *Personnel Review* (Vol. 39, Issue 1, pp. 5–23). https://doi.org/10.1108/00483481011012809

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, *14*(4), 532–550. https://doi.org/10.2307/258557

El Referente. (2019). *Cobee, la startup que gestiona los beneficios y retribuciones de los empleados - El Referente*. Retrieved on 9 June 2023 from https://elreferente.es/innovadores/cobee-la-startup-que-gestiona-los-beneficios-y-retribuciones-de-los-empleados/

Espinoza, C., Ukleja, M., & Rusch, C. (2010). *Managing the Millennials*. John Wiley and Sons.

Eubanks, B. (2018). *Artificial Intelligence for HR*. Kogan Page Publishers.

Farndale, E., E. Beijer, S., J.P.M. Van Veldhoven, M., Kelliher, C., & Hope-Hailey, V. (2014). Work and organisation engagement: aligning research and practice. *Journal of Organizational Effectiveness*, *1*(2), 157–176. https://doi.org/10.1108/JOEPP-03-2014-0015

Fernández Lores, S., Rodríguez Tarodo, A., & Blasco López, F. (2014). *Employer branding: a multinational research on the construction of employer brand*.

Floridi, L. (2019). *The Logic of Information*. Oxford University Press.

Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, *114*, 254–280. https://doi.org/10.1016/j.techfore.2016.08.019

Gatewood, R. D., Feild, H. S., Barrick, M. R., Brazil, A. •, Japan, •, Korea, •, & Mexico, •. (2016). *Human Resource Selection*. www.cengage.com/highered

Gee Kee, M. (2017). *UNILEVER FINDS TOP TALENT FASTER WITH HIREVUE ASSESSMENTS "We were hiring based solely on experience and we wanted to start screening for potential too."*

Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.

Han, B.-C. (2016). *La sociedad del cansancio*. Herder Editorial.

Herzberg, F. (2002). *One More Time How Do You Motivate Employees?*
www.hbrreprints.org

Jericó, P. (2000). *Gestión del talento* [Book]. Pearson Educación.

Johnson, M., & Johnson, L. (2010). *Generations, Inc.: From Boomers to
Linksters–Managing the Friction Between Generations at Work*.

Jurafsky, D., & Martin, J. H. (2009). *Speech and Language Processing*. Prentice
Hall.

Jurafsky, D., & Martin, J. H. (2019). *Speech and Language Processing*.

Kelton, W. D., Zupick, N. B., & Sadowski, R. P. (2014). *Simulation with Arena*.
McGraw-Hill Education. https://books.google.es/books?id=s14fnAEACAAJ

Kotter, J. P. (2008). *Corporate culture and performance*. Simon and Schuster.

Kristiana. (2023). *Workday Peakon surveys – Peakon Help Center*. Retrieved on 8
June 2023 from https://support.peakon.com/hc/en-
us/articles/360018855039-Workday-Peakon-surveys

Kuhn, M., & Johnson, K. (2018). *Applied Predictive Modeling*. Springer.

Laszlo Bock. (2015). *Work Rules*. Grand Central Publishing.

Latham, G. P., & Pinder, C. C. (2005). Work Motivation Theory and Research at
the Dawn of the Twenty-First Century. *Annual Review of Psychology*,
56(1), 485–516. https://doi.org/10.1146/annurev.psych.55.090902.142105

Lewis, R. E., & Heckman, R. J. (2006). Talent management: A critical review.
Human Resource Management Review, *16*(2), 139–154.
https://doi.org/10.1016/j.hrmr.2006.03.001

Locke, E. A. (1976). The nature and causes of job satisfaction. *Psychology*, *4*,
1297–1343.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, *50*(4),
370–396. https://doi.org/10.1037/h0054346

Mayer-Schnberger, V., & Cukier, K. N. (2013). Big data: a revolution that will
transform how we live, work, and think. *Choice Reviews Online*, *50*(12),
50–6804. https://doi.org/10.5860/choice.50-6804

Meyer, J. P., Allen, N. J., & Smith, C. A. (1993). Commitment to Organizations and
Occupations: Extension and Test of a Three-Component
Conceptualization. *Journal of Applied Psychology*, *78*(4), 538–551.
https://doi.org/10.1037/0021-9010.78.4.538

Mondy, R. W., & Mondy, J. Bandy. (2010). *Human resource management*.
Prentice Hall.

Murphy, M. (2011). *Hiring for Attitude: A Revolutionary Approach to Recruiting and
Selecting People with Both Tremendous Skills and Superb Attitude*.
McGraw Hill Professional.

Norving, P., & Russell, S. J. (2010). *Artificial Intelligence A Modern Approach: Vol. Third Edition*. Prentice Hall.

O'Neil, C. (2016). *Weapons of Math Destruction*. Penguin UK.

ORH. (2017). *Unilever presenta un nuevo sistema de reclutamiento completamente digital - ORH | Observatorio de Recursos Humanos*. Retrieved on 18 May 2023 from https://www.observatoriorh.com/seleccion/unilever.html

Pilar Jericó. (2001). *LA GESTIÓN DEL TALENTO: ENFOQUE CONCEPTUAL Y EMPÍRICO: Vol. BOLETIN DE ESTUDIOS*. BOLETIN DE ESTUDIOS ECONOMICOS.

Price, A. (2011). *Human Resource Management*. Cengage Learning.

Provost, F., & Fawcett, T. (2013). *Data Science for Business*. "O'Reilly Media, Inc."

Pymetrics. (2020). *Professional Hiring*. https://www.pymetrics.ai/professional-hiring

Robbins, S. P., & Judge, Tim. (2009). *Organizational behavior*. Pearson Prentice Hall.

Russell, S. (2020). *Human Compatible*. Penguin.

Somers, D. (2021, January 28). *Workday adquiere Peakon: la importancia de la implicación del empleado*. Noticias y Cultura de WORKDAY. Retrieved on 8 June 2023 from https://blog.workday.com/es-mx/2021/workday-acquire-peakon-employee-engagement.html

Sparrow, P. R., & Makram, H. (2015). What is the value of talent management? Building value-driven processes within a talent management architecture. *Human Resource Management Review*, *25*(3), 249–263. https://doi.org/10.1016/j.hrmr.2015.04.002

Spector, P. (1997). *Job Satisfaction: Application, Assessment, Causes, and Consequences*. SAGE Publications, Inc. https://doi.org/10.4135/9781452231549

Szeliski, R. (2010). *Computer Vision: Algorithms and Applications*. Springer . http://szeliski.org/Book/.

Tansley, C. (2011). What do we mean by the term "talent" in talent management? *Industrial and Commercial Training*, *43*(5), 266–274. https://doi.org/10.1108/00197851111145853

Taulli, Tom. (2019). *Artificial intelligence basics a non-technical introduction*. Apress.

Thite, M., Kramar, R., & Wilkinson, A. (2013). Human-Resource Management in a Global Context: a Critical Approach [Article]. *Human Resource Management International Digest.*, *21*(2). https://doi.org/10.1108/hrmid.2013.04421baa.011

Topol, E. (2019). *Deep Medicine*. Hachette UK.

Totally Money. (2022). *TotallyMoney reduced employee turnover from 64% to 23%.* Retrieved on 8 June 2023 from https://www.workday.com/en-hk/customer-stories/q-z/totallymoney-employee-voice-reduced-turnover.html

Tulgan, B. (2009). *Not Everyone Gets A Trophy: How to Manage the Millennials*. Jossey-Bass.

Vallejo Chávez, L. M. (2016). *Gestión del talento humano ESPOCH 2016*.

War for talent, part two. (2001). [Article]. *The McKinsey Quarterly.*, *2*, 9.

Webb, A. (2019). *The Big Nine*. Hachette UK.

Wickham, H., & Grolemund, G. (2016). *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. O'Reilly Media, Inc.

Wolfe, I. S. (2020). *Recruiting in the Age of Googlization Second Edition*. Motivational Press.

Yacuzzi, E. (2005). *EL ESTUDIO DE CASO COMO METODOLOGÍA DE INVESTIGACIÓN: TEORÍA, MECANISMOS CAUSALES, VALIDACIÓN 1*.

Youssef, C. M., & Luthans, F. (2007). Positive Organizational Behavior in the Workplace. *Journal of Management*, *33*(5), 774–800. https://doi.org/10.1177/0149206307305562