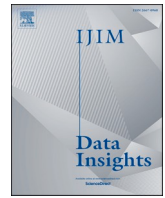


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Analysis of the potential of artificial intelligence for professional development and talent management: A systematic literature review

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ABSTRACT

The aim of this paper was to analyse the current applications of Artificial Intelligence in professional development and talent management within the corporate world with a focus on corporate training. By means of a Systematic Literature Review based on the PRISMA 2020 reporting criteria this paper highlights the current applications of AI along with the main benefits and drawbacks associated with its implementation. The findings show that AI is being used to enhance recruitment processes, to identify individual training and development skills and needs, to develop personalised training paths, to retain talent and predict attrition, and to detect future workforce skills development needs. It has been outlined that there is a need for automated talent management processes within companies and that talent intelligence should be implemented along with facing the challenges this will entail, such as minimising the risk of bias and hiring high-skilled qualified personnel.

1. Introduction

Artificial Intelligence (AI) is transforming the landscape of corporations and enterprises. The profound influence of AI extends notably to Human Resources (HR) talent management and professional development (Perifanis & Kitsios, 2023), representing a change in how companies select, train and retain their most valuable asset – their human capital.

Talent is considered an attribute of those prospective or current workers who can contribute to improve the company's performance by means of their potential (Ford et al., 2010). Talent management involves systematically attracting, identifying, developing, engaging, retaining, and deploying talent which is crucial to an organisation's success (Gallardo-Gallardo et al., 2020).

Professional development is described as the process by which professionals upgrade their knowledge and skills or acquire new ones by undertaking different learning and training activities with the main goal of advancing in their careers and therefore becoming more talented professionals (Beddoe, 2015).

Learning and development (L&D) in companies is focused on providing training opportunities aligned with organisational goals to keep and develop "quality knowledgeable employees" by identifying skill gaps and creating learning paths to enhance their professional

growth. Apart from improving the workers' performance, L&D also leads to a higher rate of talent attraction and retention, which is directly linked to talent management (Vnoučková, 2013).

The term corporate education, also referred to as corporate training and workplace learning, refers to formalised learning initiatives designed to enhance the skills and knowledge of staff members within an organisation (Ryan, 2010). HR departments are key in designing corporate education programs which might include among others, "career development systems, coaching and performance management, management development solutions, organisational development interventions, and job enrichment programs" (Wash, 2023).

These terms are interlinked and overlap and complement each other. Talent management leads the strategic direction for talent identification, attraction, retention and development (Berger & Berger, 2010), L&D offers training and development opportunities to the workforce aligned with the companies' objectives and strategy (Garavan et al., 2024) while professional development aims at developing skills focused on individual growth (Collin et al., 2012), L&D normally entails professional development initiatives as well (Sadler-Smith, 2009) and corporate education focuses on formalised educational programs (Nixon & Helms, 2002). In summary, they all contribute to improving the employees' knowledge and skills leading to a more high-performing talented workforce contributing to the companies' success.

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On the other hand, given the need for adaptability, digitization and automation within HR departments, the necessity of implementing AI tools in order to streamline and speed-up processes which were in the past time-consuming and a bureaucratic burden, has grown in recent years. Therefore, companies have started to integrate them into HR functions enabling HR professionals to concentrate more on strategic initiatives that enhance the companies' value. Talent management, in particular, has emerged as a key point of this AI-driven revolution, redefining how companies attract, develop, train and retain their workforce (Yawalkar, 2019). As stated by Wiblen and Marler (2021), implementing new technologies enhances HR managers' ability to make talent management decisions.

Professional development has become core to enhancing the workers' experience within companies, to upgrade their skills and to retain talent, leading into a more high-skilled workforce and, as a consequence, in more successful and competitive companies (Keep & Storey, 2014). The introduction of AI in talent development and training represents a holistic reimagining of learning ecosystems providing workers with enhanced learning experiences that can foster their knowledge, skills and engagement (Lytovchenko et al., 2022; Rozman, Oreski & Tominc, 2022).

Since the term AI was first coined in 1955: "making a machine behave in ways that would be called intelligent if a human were so behaving" (McCarthy et al., 1995), the concept has greatly evolved at the same pace as technology has. With the introduction of artificial neural networks, a machine learning (ML) method inspired by how biological neural networks work which provide the computational framework for deep learning (DL), natural language processing and other AI-based technologies (Mijwel, 2021; Zou et al., 2008), the scope of its uses has broadened. However, AI applications are still in a development phase with great room for improvement and innovativeness (Charlwood & Guenole, 2022). Companies have just begun to explore its uses and applications, which are currently limited by the existing technology.

In the last few years, the way in which companies work has experienced a significant transformation with the implementation of such tools within HR departments. However, despite the increasing availability of AI tools there is a general unawareness of which ones are currently available and which applications they have. Moreover, there is a lot of potential in their use and applications, such as the automation and optimisation of processes and the creation of personalised training, however, it can be a challenge for companies to identify appropriate tools to optimise these processes.

The implementation of such tools can offer many benefits but also some disadvantages. In this paper we aim to analyse if the benefits outnumber the disadvantages and, ultimately, if it will be worth the effort for companies to move forward with these tools. By offering them a general overview through a comprehensive Systematic Literature Review (SLR), this paper aims to shed light into the current landscape of AI applications used in the corporate world.

We have conceived this paper as a tool for stakeholders who are planning to implement AI-powered software in their companies to improve professional development and talent management procedures. This could serve as a guide to get to know the current applications, their advantages and disadvantages, as well as the challenges and barriers they might encounter. Ultimately, this study seeks to contribute to and assist in the decision-making process that companies undertake when deciding to use AI in corporate training.

Accordingly, the general objective of this study is to analyse the potential of AI for professional development and talent management. In particular, the specific objectives to be addressed are to analyse the applications of artificial AI in professional development and talent management within companies; to identify the benefits and drawbacks of implementing AI-based solutions in the field of corporate education; to identify the key challenges and barriers faced by HR departments when implementing such technologies for the purpose of enhancing

learning and development; and to explore and analyse the current trends, advancements, and potential developments in the application of AI technologies in corporate education, with the aim of providing insights into the future direction of AI integration in this domain.

Therefore, through this research we intend to provide an answer to the following research questions:

- RQ.1 What are the current applications of artificial intelligence (AI) in professional development and talent management within companies?
- RQ.2 What are the benefits and drawbacks associated with the implementation of AI-based solutions in the field of corporate education?
- RQ.3 What are the challenges of implementing AI technologies in HR departments to enhance their performance in learning and development?
- RQ.4 What is the future of the use of AI in corporate education?

By offering an in-depth exploration of this subject, we seek to make a meaningful contribution to the existing literature and to contribute to the advancement of knowledge in the field, providing valuable insights to help companies in their decision-making processes to adopt AI-based technologies in professional development and talent management.

2. Method

This research is based on the qualitative methodology as it is believed to be the most suitable approach to address the research questions given the main purpose of qualitative research is to describe, verify and interpret, and more specifically to in-depth synthesise and analyse a specific phenomenon or topic (Durdella, 2018).

Within this methodology, the qualitative research approach used in this study is the systematic approach which its main characteristic is to systematically describe the methods of data collection and analysis to ensure the validity and reliability of the research and whose main representatives are Miles and Huberman (1984) and Goetz and Lecompte (1988).

On the other hand, the research method used to conduct this research is a Systematic Literature Review (SLR) based on the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement in its updated version from 2020 (Page et al., 2021). SLRs can synthesise the state of the art of a specific area and answer explicit research questions that would otherwise remain unanswered, by compiling and analysing the evidence found on primary studies in a precise and transparent way.

We opted to adhere to the PRISMA protocol, among other methods, given its prevalence in SLR articles, with over 60,000 citations in Scopus. Furthermore, the incorporation of this protocol is linked to more complete publications in the context of SLR (Page et al., 2021).

3. Systematic literature review

In order to conduct the SLR, two scientific databases that incorporate open access high impact peer reviewed articles were selected, namely Scopus and Web of Science (WoS). The first step to search and select the studies was to generate the search query. After working on the state of the art and analysing the keywords used by the reference authors (Beddoe, 2015; Berger & Berger, 2010; Collin et al., 2012; Gallardo-Gallardo et al., 2020; Garavan et al., 2024; Nixon & Helms, 2002; Ryan, 2010; Sadler-Smith, 2009; Wash, 2023), and in a second phase, reviewing and testing their dimension in the databases (having each of the keywords more than 18.000 entries each in Scopus and WOS), the following were finally decided: "artificial intelligence" as the main goal of the study is to look for AI applications used in the following areas: "talent management", "professional development" and "corporate education" also referred to as "corporate training" or "workplace learning".

With these keywords, we tried to cover a wide scope in order to get as many results as possible relevant to the study. In order to do that, we employed Boolean operators "AND" and "OR," which led to the formulation of the search string detailed in Table 1.

Upon employing the search string as the primary search method, articles were subsequently filtered for inclusion or exclusion in accordance with the eligibility criteria outlined in Table 2.

The first selected exclusion criteria refers to "research topic not addressed", which means that papers were not related to the use of AI in professional development, talent management or corporate education, but to other fields, whereas the second one "research focused on other type of education", means that papers excluded in this category analysed the use of AI tools in education but not specifically in corporate education, however, they explore other levels such as higher or secondary education. We decided to make this difference as the results excluded in the second criteria might be relevant for other future research focused on general education.

Due to the significant progress made in AI since 2020, the search was confined to results within the timeframe of 2020 to 2023. The search was conducted in English and Spanish languages between the 3rd and 10th November 2023.

Following the eligibility criteria and in order to identify the studies the PRISMA 2020 flow diagram (Fig. 1) was used. It consists of a graphic representation of the selection and inclusion phases of the SLR for it to be systematically reproduced.

After implementing the planned search strategy on Scopus and WOS, there were 1113 registers identified and 398 duplicates removed, leaving a total of 715 articles to be screened. Article metadata, titles, abstracts and keywords were imported into an Excel Worksheet.

In total 715 papers were assessed for eligibility from which 502 were removed in the first screening by reading the abstract, the title and the key words, as they were not addressing the research topic and 62 were focused on other types of education. Afterwards, the resulting selection composed of 151 reports was downloaded in the form of full-text, all papers were accessible and retrieved.

Eventually, after a second screening phase in which full-text records were analysed, 131 records were excluded as 112 were addressing a different research topic and 19 were focused on other types of education. After conducting the paper selection, 20 studies were included in the review.

All the papers incorporated in the final selection were stored on a cloud file as well as in a local computer file in order to grant and facilitate online and offline access to the documents during the research.

4. Results

4.1. Current applications of artificial intelligence (AI) in professional development and talent management

Upon reviewing the final corpus, it has been acknowledged that AI tools are currently being applied both in talent management and professional development.

4.1.1. Talent management

Talent management encompasses employee attraction, recruitment, development and retention. Regarding talent attraction, as part of talent management, recruitment and skills assessment play a crucial role, given

Table 1
Search location and search string.

Search Location	Search String
Scopus & WoS	artificial AND intelligence* AND (corporate AND (training OR education) OR (workplace AND learning) OR (talent AND management) OR (professional AND development))

Table 2
Inclusion and exclusion criteria.

Inclusion	Exclusion
Papers must be relevant to the research topic	Research topic not addressed
The context of the research is focused on corporate education	Research focused on other type of education
Academic articles	Books, chapters of books, presentations, news, conference proceedings, presentations, reports
All open access	Restricted access
Full text studies	Non-full text studies
Studies published in English or Spanish	Papers are not written in English or Spanish

that skills assessment is key to determine the candidates' suitability to the job position which is part of the recruitment process. In this section we will highlight the applications found in the articles that contribute to the improvement and that help to automate these processes.

To detect talent, AI has got multiple applications that help to automate and improve this process, our findings show that by using Deep Reinforcement Learning (DLR) on a Multi State-Actor a career agent can be built to suggest the best and most suitable jobs for each candidate along with the skill gaps they might present and it can even be used for career planning for actual employees (Boudi et al., 2023). In the same lines, the Kruskal algorithm used along with a psychological test can also be integrated to identify candidate's skills as well as to guarantee unbiased selection to enhance candidate's development and growth and assist companies in preparing for the future needs of their workforce (Kaushik et al., 2023). Integrating e-selection in HR can not only attract talented employees, but also motivate and retain them over time (Johnson et al., 2021).

The recruitment process, as the first contact of the candidates with the company, can benefit from the use of Machine Learning (ML) models to recruit candidates and identify weaknesses and strengths they might have along with training and development needs (Ammer et al., 2023). They are also used to forecast the acceptance, conditional acceptance or candidate's rejection by implementing mathematical programming to decide upon the competence elements that applicants should possess (França et al., 2023). Similarly, through the implementation of a personnel competency model built on a BP neural network they can be used not only for assessing employees' performance but also for identifying individuals with potential for internal promotion (Zhang & Yuan, 2022). Moreover, ML can also be complemented with natural language processing and classification analysis to boost productivity. AI will analyse the candidates' skills and communicate the ones that they are lacking, following that, online courses can be provided for them to learn those skills in a personalised studying environment. Once those skills have been gained, the software will then provide a test to evaluate the new skillset and propose available jobs accordingly (Yadav et al., 2023).

On the other hand, with the increase in technology advancements that lead to changes in company practices, an upgrade of the workforce skills is needed. Natural language processing, in combination with data clustering techniques and generative AI algorithms, can be employed to assess the skills required by staff members. It is also utilised for generating automated job profiles that enable real-time evaluation of the demand for job skills. Therefore, it enhances the staff members development strategies and helps in the decision-making process for training in companies (Lukauskas et al., 2023).

After training employees upon arrival and during their careers, another important step in talent management is employee retention, it is key for a company to retain existing talent and to reduce the attrition rate. ML and deep learning (DL) techniques are used not only to boost retention but also for employee development; chatbots, natural language processing and predictive analytics are used for this purpose. Such tools are implemented to personalise learning and development programs and can also predict how likely is employee attrition to happen

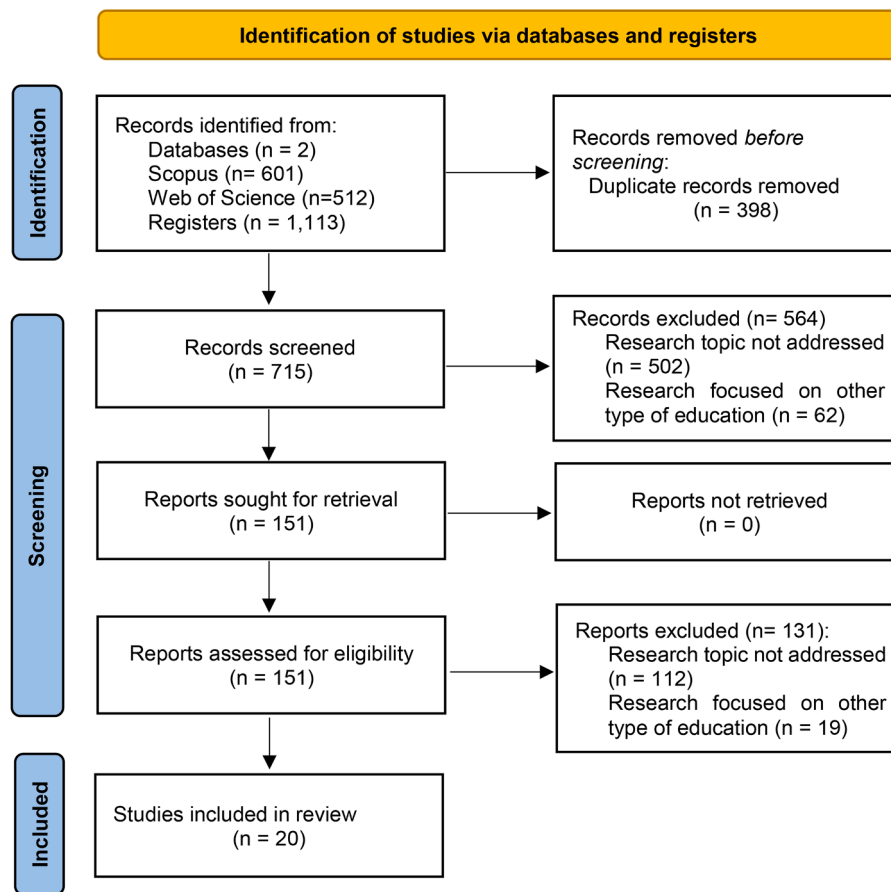


Fig. 1. PRISMA 2020 flow diagram for new systematic reviews which include searches of databases and registers only. Note. Adapted from Page et al. (2021).

before training. This capability is crucial for improving the decision-making process and ultimately contributes to talent retention (Paigude et al., 2023).

4.1.2. Professional development & training

Training and professional development contribute to improving the employees' skills and knowledge, both at strategic and individual level. Resulting into a more skilled workforce that contributes to achieve the companies' goals and success. In this section we will analyse how AI tools can help in this purpose.

After finalising the recruitment process, another milestone is the onboarding of new employees, once the training needs have been identified it is essential to provide workers with effective training in order for them to enhance their current skills and expertise for a better performance.

In order to do that, AI-powered software is used to monitor workers' performance while timely feedback is given. Specifically, in talent development it can help employees in their career paths by making them aware of their skill levels (Faqihi & Miah, 2023). Adding AI components to e-learning and m-learning is also being put into place in companies, it has been shown that AI plays a key role in improving employee training and development by providing tailored learning experiences, immediate feedback, and virtual coaching. It facilitates access to on-request exercises, aiding employees in acquiring new skills. The automated assessments from AI tools help individuals recognize strengths and areas for improvement, thereby guiding their learning efforts more effectively. Integrating AI into training processes holds the potential to significantly enhance the efficiency and effectiveness of skill development within organisations (Lytochenko et al., 2022; Morandini et al., 2023). On the other hand, in order to overcome the limitations of training systems in

education and corporate training, the possibility of incorporating Digital Twins technology into the metaverse is being explored with an AI component. It proposes a blended teaching and learning platform that is able to connect several workspaces, development centres and online users with in-house participants (Mitra, 2023).

In this regard, smart technologies, encompassing AI, virtual reality (VR), blockchain, etc., are implemented to improve learning performance. Employees' training needs are assessed through tests and document analysis, delivering suitable training accordingly. Additionally, skills aligned with their job description are identified and honed to foster their development, ultimately boosting efficiency. AI further analyses team members' data, informing the company about the required training (Jiang et al., 2022). Following that, an AI-powered multidimensional talent management model can also be developed to focus on the stages of recruiting and retaining skilled personnel, as well as in providing suitable training and development programs, fostering a positive organisational culture, effective leadership, and helping in managing employee workloads which directly affect both employee engagement and overall enterprise performance (Rožman et al., 2022).

Similarly, to create training paths, ML and matrix factorization-based software can act as an intelligent guide for employees that will follow their organisational journey and create personalised training on the basis of a personal profile and employees' reactions to teaching and learning material. Moreover, it will train them in both soft and hard skills following the company's values. The developed intelligent guide model, integrated into an enterprise management system, incorporates psychodiagnostic modules, organisational management, training, and recommendations. The system's intelligence enables the formation of a personalised learning path, engaging employees in both personal development and the achievement of organisational objectives

(Morozevich et al., 2022).

Another key point in professional development is the skills development for future employees. Identifying the future skills workers should have to face future industry challenges is key to L&D strategies, professional development and corporate education. At the height of the industry 4.0 revolution AI plays an important role and directly affects companies and workers leading to a need for a highly skilled workforce. Within the corporate world this translates into training and retraining staff members in order to minimise skill differences among them (Sima et al., 2020). To be able to keep up with this new digital enhanced era in constant evolution, companies should start to identify which new skills will be required in the future to guarantee their workforce is able to not only use AI tools but also to understand how this technology works and to interpret the sometimes-complex information that can be extracted from it.

With that purpose, the skills that will be needed for future employees with a focus on AI and automation are being analysed to help companies attract and hire the most suitable talent. It is predicted that lifelong learning will become essential in employees' careers and that transferable and soft skills are to be emphasised along with hard skills such as ICT skills, AI, IoT, Blockchain, etc. Companies should start to encourage lifelong learning as they will benefit in the future from their workforce skillset (Bukartaite & Hooper, 2023).

Additionally, the assessment of professional skills across diverse industries that urgently require applied talent is relevant to the integration of industry and education. This is particularly applicable to sectors with high demands for the technical proficiency and innovation awareness of their workforce. A vocational ability evaluation system based on AI is being explored to consider the integration of production and education which will be able to assess the vocational abilities of applied talent in various industrial sectors in the future (Bian et al., 2022).

4.2. Benefits and drawbacks associated with the implementation of AI-based solutions in corporate education

After analysing the current applications of AI, we have identified the following benefits associated with the implementation of AI-powered software solutions in the field of corporate education:

Talent management encompasses employee acquisition, development and retention, the use of AI can make such processes in less time and in a more effective way (Johnson et al., 2021). In the first place, solutions dedicated to candidates' recruitment bring many benefits for talent management such as improving the decision-making process, reducing the time spent in candidate selection as well as, looking for more suited candidates that are more aligned with the companies' cultures, it also results in a less biased selection process that is not subject to human limitations. Additionally, it also enhances employees' performance, satisfaction and engagement. (Ammer et al., 2023; Boudi et al., 2023; Faqihi & Miah, 2023; Johnson et al., 2021; Kaushik et al., 2023; Lukauskas et al., 2023; Mijwel, 2021; Yadav et al., 2023; Zhang & Yuan, 2022). However, how does this relate to corporate education?

Through the use of AI, including ML, DL, DRL, natural language processing, and other technologies, coupled with personality tests, the skills of prospective candidates are evaluated, and their areas of improvement are identified. Assessing the workforce skills is one of the first steps to identify their training needs which will allow to plan for the specific training to be fulfilled once they are in the company, as well as to create appropriate and accurate personalised training paths (Ammer et al., 2023; Boudi et al., 2023; Faqihi & Miah, 2023; Johnson et al., 2021; Kaushik et al., 2023; Lukauskas et al., 2023; Mijwel, 2021; Zhang & Yuan, 2022). Similarly, using tools that offer personalised feedback to staff members that are already in the company which also highlight the skills to be improved, will lead to higher employee performance (Yadav et al., 2023).

Once the training needs have been assessed, AI-tools can be used to automate training and development and to build learning paths. AI aids

in identifying growth opportunities for staff members, recognizing training needs, and facilitating further advancement. By establishing connections between employee development opportunities and the onboarding of new personnel, AI fosters higher levels of employee engagement. Addressing the lack of career advancement opportunities is crucial for sustaining employee engagement and reducing turnover (Rožman et al., 2022).

AI has the potential to enhance training accessibility, reduce costs, and improve adaptability and flexibility in learning programs consequently meeting the demand for qualified employees. E-learning in companies offers several key advantages, including the ability to provide consistent training globally, minimise training time, create comfortable and personalised learning conditions, prevent information overload for students, and it facilitates access to learning regardless of where they are located. Additionally, it enables timely learning, allowing students to acquire relevant skills when needed, and expands resource access through online platforms which enable standardised educational programs across international company branches (Lytovchenko et al., 2022).

Similarly, by providing personalised training and timely feedback, AI can enhance training and development experiences within the corporate world. Workers can develop their skills by receiving feedback on the skills to be improved and by being able to select the exercises they need. Therefore, learning and upgrading current skills becomes more effective and efficient (Morandini et al., 2023). Automating these processes within the company will not only save time but provide quality training and help the taskforce to achieve the companies' goals, thus getting them more involved in the process (Morozevich et al., 2022).

In the same line, the use of smart technologies can, apart from providing the workforce with personalised training, promote development by analysing their job descriptions. One of the biggest benefits it offers companies is to analyse and inform them of the required skills within a team and plan training accordingly, at the same time, workers will benefit from more accurate and better learning experiences (Jiang et al., 2022).

Similarly, integrating AI-driven technologies like the metaverse as a learning platform provides numerous advantages, including the connection of various physical campuses, corporate hubs, and online users, thereby promoting dynamic and interactive communication among participants. The platform allows participants to attend the same activities, whether in person or online, providing instructors with time efficiency and the flexibility for innovative curriculum design. Learners, in turn, benefit from activity-based, collaborative learning experiences, including problem-solving and project-based learning. The platform's versatility also enables participants to receive mentorship and hands-on guidance from industry experts. Overall, it enhances accessibility, interactivity, and the richness of learning experiences across diverse settings and participants (Mitra, 2023).

In terms of talent retention, AI-powered applications can be used to offer mentoring to employees, even chatbots can be incorporated to answer typically asked questions. By having an instant access to information along with participation in surveys, companies can extract information on what their staff members think and what motivates them, thus predicting attrition (Johnson et al., 2021). In the same line, the application of ML and DL algorithms aids in identifying factors linked to employee turnover, enabling the development of strategies to improve retention beforehand. Ultimately, organisations can strengthen their capacity to retain valuable employees, fostering a robust and productive workforce (Paigude et al., 2023).

After analysing the various benefits associated with the use of AI-powered software, drawbacks also need to be evaluated before implementing such technology:

One drawback is that some of the AI tools require close attention to avoid errors and verification steps may be added while training models with ML and DL on early stages, therefore, if not spotted on time, the outcome could be incorrect and automated recruitment processes might

not select the best candidates for a specific role (Boudi et al., 2023). Additionally, while analysing personality traits and skills, it might happen that candidates could provide untrue answers to tests and hide their true personality in the pursuit of being selected for a position (Ammer et al., 2023).

On the other hand, although one of the benefits of implementing e-recruitment is that it can lead to less biased decisions when hiring new personnel, there still exists a risk of bias when using AI given that machines are trained/programmed by humans. Therefore, results and predictions can be inaccurate due to “biased training data or algorithms” [30, p.20]. The risk of bias can also affect talent development opportunities in the sense of biased promotion and have a negative impact on staff members (Boudi et al., 2023). It is advised for corporations to include key factors of diversity such as gender and ethnicity while training machines in order to decrease AI bias (Faqihi & Miah, 2023).

One of the main drawbacks of using personalised learning and training paths creation by means of ML and DL is that it can present high implementation costs. The balance between the benefits that can be obtained by customising training and the company’s investment to put it into place, has to be evaluated before making the decision of implementing AI-based technologies (Paigude et al., 2023).

There is also a reluctance in employees to trust AI decision making processes, for instance when selecting and recruiting the best candidates according to AI technology. Generally, people tend to trust more human recommendations than algorithmic-based ones (Lacroux & Martin-Lacroux, 2022; Paigude et al., 2023). Another drawback is that the use of AI tools can also result in less human contact and communication, which could lead to missed opportunities to discuss with peers and share knowledge between them. This can create employee resistance in using AI-powered software solutions (Lytovchenko et al., 2022).

4.3. Challenges of implementing AI technologies

Challenges companies might face when deciding to implement AI tools in their learning and development processes are important to be considered. The first challenge is to avoid and minimise the risk of bias being that one the biggest drawbacks of implementing such technologies. Nowadays, employers rely every time more on AI for talent management, this raises ethical concerns about discrimination and fairness, given that ML algorithms need more judgement skills and are trained on human assumptions, there is a risk that they might worsen existing biases and might present a discriminatory impact in workers (Faqihi & Miah, 2023; França et al., 2023).

Moreover, AI systems are sometimes labelled as “black boxes” because understanding how they reached a specific decision or prediction can be difficult or even impossible. Therefore, corporations should be completely transparent in explaining how technology is being used and should be able to justify its decisions and more importantly, they need to guarantee that by implementing AI systems the workers’ freedom and autonomy is not diminished or affected and that they are ethically and responsibly used (Boudi et al., 2023; Faqihi & Miah, 2023; Paigude et al., 2023).

The integration of AI and ML also raises concerns about data privacy and presents a big challenge to corporations. These tools gather digital data from workers which is used to evaluate talent, skills, training needs, etc., and that can directly affect employees’ privacy if not used correctly. Although it may vary worldwide, legal enforcement of privacy issues is already in place in some countries, for instance, in Europe the General Data Protection Regulation is setting limits to the use of automated decision systems and requests total transparency in their use, however, it still needs to be seen how effective it will be in regulating predictive AI systems. To mitigate this risk, companies must develop and establish data privacy measures to minimise negative repercussions resulting from the use of AI (Faqihi & Miah, 2023; França et al., 2023).

Another challenge is to be able to process the sometimes-complex information extracted from DL and complex graphs. Therefore,

personnel with this expertise should be hired within the company. Similarly, proper verification tools are to be implemented and revised across time and HR managers, and organisations in general, are to develop their skills and knowledge on the matter to ensure justice and ethics and to keep up to date with the continuously evolving technology. There is an urgent need for research on AI-tools implementation in this field (Boudi et al., 2023; Faqihi & Miah, 2023; França et al., 2023).

On the other hand, skills in general and soft skills specifically will change in the future due to AI implementation and automation, hence, companies should start to think on how to train their current workforce to face this challenge. Lifelong training and a stronger link between education and the corporate world will positively contribute to ease the change. Moreover, the need of more skilled professionals in the use of AI software, analytics, etc., will become more evident in the future. Companies, universities and governments will have to cooperate to provide a skilled workforce in the forthcoming years (Bukartaite & Hooper, 2023; Sima et al., 2020).

Furthermore, companies will face the challenge of establishing positive organisational cultures that welcome AI which will foster the development of AI-driven enterprises. They might encounter employee resistance to trust AI-based decisions which is actually known as algorithm aversion (Johnson et al., 2021). Similarly, “if employees perceive technological implementation as a threat to their value and well-being, internal fear and resistance may emerge, which subsequently impedes workers from adapting to new skill requirements” [41, p.166]. Those companies which successfully cultivate positive AI culture, and which manage to create an inspiring and inclusive environment, are more likely to attract talented employees to their teams as well as to have a more motivated workforce (Rožman et al., 2022).

4.4. Future use of AI in corporate education

In this research question we analyse the current trends, advancements and potential developments in the application of AI technologies in corporate education, with the aim of providing insights into the future direction of AI integration in this domain.

It has been predicted that the future of work will be profoundly shaped by the substantial impact of AI. Consequently, there is a need for investment in AI-powered software and applications, and linked to it, an investment in improving the workforce AI skills as well as to train and retrain employees to be able to properly benefit from AI advancements (Morandini et al., 2023).

The need for automated talent management processes is pushing the scope of services and applications. Using digital applications becomes crucial to minimising resource costs while significantly contributing to employees’ management. In the future all companies should embrace talent intelligence to keep up with technology advancements (Faqihi & Miah, 2023).

On the other hand, the implementation of AI in corporations can lead to higher competitive rates and productivity, along with new ways of promotion. The workforce will be more engaged and increase their performance by recruiting more suited and talented employees with the right skills who will stay longer in the company. AI supported training and development is key to future organisations success (Rožman et al., 2022). In the same line, “enterprises especially need talents who can bring high performance in their jobs to control the development and growth of enterprises in the market competition” [31, p.8].

Currently, AI is being used and will continue to be used to collect and analyse data from employees to enhance and complement the so commonly used personality and psychometric tests as recruitment and talent management tools as well as to predict workforce behaviour and future challenges. It will help to accelerate HR processes and decision-making. AI will transform the industry with the use of big data, ML, DL, internet and intelligent talent management will be incorporated in enterprises. However, in order to reach that goal, companies will have to overcome difficulties such as “a lack of knowledge and skills in HR data

analysis, limited organisational support, unavailability of structured information, and resource constraints” [30, p.21].

In the past having cheap and skilled personnel was a competitive advantage, however in the digital era and with the incoming developments such advantage no longer exists as staff members need to be highly skilled and qualified to face future challenges. In the Industry 4.0 revolution, developing new skills is one of the companies’ main priorities and a special focus has to be put into improving training and curriculums in academic programs. AI and IoT tools can definitely help to reach that goal (Sima et al., 2020). Companies will use smart technologies to improve staff members’ skillsets taking care at the same time of their well-being by benefiting from the advantages these tools provide (Jiang et al., 2022). Therefore, it is recommended for enterprises to implement “continuous learning programs such as supplementary skills training and subsidies for seminars” and establish a “solid career development and promotions system” [17, p.8].

There has been a consistent and evident shift towards using e-learning tools in organisations and this trend will continue in the future resulting in more companies implementing them to provide corporate training. The reason behind it is that it helps to reduce training costs, saves time, facilitates access to learning materials and, primarily, it offers a more flexible and accessible learning experience to workers (Lytovchenko et al., 2022).

Additionally, ML and DL algorithms have started to be used to personalise individual employees’ training programs thus ensuring a more effective learning experience focused on the specific individual skill gaps as well as to expand the staff members’ knowledge on specific fields according to their roles. Such technologies, by analysing workers’ satisfaction, promotion and engagement level, can predict turnover in the organisation. Hence, providing companies with a tool to react beforehand and cover the workforce training and development needs in order to improve talent retention (Paigude et al., 2023).

5. Discussion and conclusions

With our systematic literature review we aimed to provide Advisors, Stakeholders, Directors of Innovation, Heads of Human Resources and Learning and Development, among others, with valuable insights to help them in their decision-making processes to adopt AI-based technology in professional development and talent management. On the other hand, this can also help other researchers and developers focused on developing AI-related technologies and platforms. In order to do it, the first step was to explore its current applications in HR departments.

Specifically, within talent management, the examined papers show that there is a special emphasis on e-recruitment linked to skills assessment and that research on this topic is proliferating. AI-driven technologies such as Machine Learning, Deep Learning, natural language processing and data clustering techniques among others, are being used for e-selection automating and speeding up processes. These tools suggest and select the most talented applicants that match better to the job position. Along with personality tests, they identify future employees’ traits and skills gaps and they are even able to provide immediate training to improve their skillsets during the application process (Fajardo Vargas, 2023; Niehueser & Boak, 2020; Votto et al., 2021).

In terms of skills assessment, present both in talent management and professional development, AI tools can help companies to identify both technical and soft skills as well as weaknesses and strengths which is vital to plan quality training. These methods also detect skill gaps of the current workforce that translate into training needs. By attracting more talented employees and offering good career planning, staff members become more motivated and engaged, and present higher performance leading to a higher retention rate (Kambur & Akar, 2022).

In training and professional development AI-driven technologies are mainly used to personalise learning experiences, to generate training paths and to provide immediate feedback. With AI assessment employees can be more aware of their strengths and their areas for

improvement, thus guiding their learning efforts more effectively and efficiently (Chen, 2023). Consequently, employees are engaged in both personal development and in achieving organisational goals. Those technologies can also predict attrition and give the opportunity to companies to prevent it by properly covering their employee’s training and development needs (Sari et al., 2020).

Moreover, it has been identified that with the industry 4.0 revolution there will be a need for high-skilled workers in the near future which companies will have to face by training and retraining staff members. Companies should also consider that lifelong learning will become essential for them to keep updated and competitive in their markets, therefore it should be encouraged by corporations (Chuang, 2022; Cramarenco et al., 2023).

Apart from exploring AI-applications in the market, being aware of the benefits and drawbacks they present is crucial for the decision-making process. Our analysis indicates that benefits of implementing AI outnumber the identified drawbacks. Its main advantages in the field of corporate education are that training needs are automatically identified and courses can be recommended to improve workers’ skills. Moreover, by analysing their current positions, new courses can be suggested to further develop their talent. AI-based software reduces training costs and facilitates access to learning and training materials. Additionally, it generates personalised training paths, thereby improving the student’s learning experience eventually boosting employee engagement (Sabale & Gomathi, 2022).

Conversely, such tools require close attention when training models on early stages to avoid errors and bias coming from human programming. The implementation of smart technologies may result in significant expenses for the companies. Additionally, employees might be reluctant to trust AI decision-making and feel that by using such tools they will miss human contact and communication (Malik et al., 2022).

Corporations should consider the challenges they will face in the future when implementing AI technologies. One of the most important is that they will have to try to minimise the risk of bias and to ensure that employees’ freedom and autonomy is not affected. Moreover, they will have to hire specialised personnel to understand complex information coming out from DL, ML, etc. Companies and HR managers will have to develop new skills and knowledge on the matter to be able to ensure ethics and justice and to keep up with technological advancements (Bankins, 2021). On the other hand, workforce required skills will change in the near future, the challenge for companies is to start thinking how to train and retrain their employees to face it (Peña-Jimenez et al., 2021).

After having analysed current trends, advancements, and potential developments in the application of AI technologies in corporate education, we can provide insights into the future direction of their use. Our research has shown that there is a need for automated talent management processes and that companies should implement talent intelligence in the future. AI supported training and development tools are key to having high-skilled and qualified personnel. Additionally, Smart technologies will be used to improve staff members skillsets and e-learning and m-learning are to be used to provide corporate training. Offering personalised training and creating customised training plans by means of AI plays a crucial role in the companies’ success (Chen, 2023).

In summary, AI tools offer a range of applications in talent management and professional development. Deep Reinforcement Learning applied on Multi State-Actor (MuStac) frameworks can create career agents that identify the best candidates, analyse their skills, detect gaps, and provide personalised career planning (Boudi et al., 2023). By integrating algorithms like Kruskal and psychological tests, companies can detect employee skills needs (Kaushik et al., 2023). ML models enhance recruitment processes, identify training requirements, forecast candidate acceptance or rejection, and detect individuals with promotion potential (Ammer et al., 2023; França et al., 2023). Additionally, natural language processing and classification analysis boost productivity and serve as interactive learning interfaces for job candidates (Yadav et al.,

2023). AI technologies such as ML, DL, chatbots, natural language processing, and predictive analytics personalise employee development and retention programs, adapting to each individual's needs (Paigude et al., 2023). Combined with e-learning, m-learning platforms, augmented reality, virtual reality, and blockchain, these AI tools create immersive learning experiences and offer immediate feedback, fostering continuous improvement and engagement (Lytovchenko et al., 2022).

In conclusion, the findings have shown that currently AI-powered applications can be implemented to enhance recruitment processes (e-recruitment or e-selection), to identify individual skills as well as training and development needs, to develop personalised training paths, to retain talent and predict attrition, and to detect skills development needs that will be required for the future workforce. Companies and employees could benefit from their implementation and speed-up and automate many of their processes while gaining more time to concentrate on more strategic initiatives.

On the other hand, the current research has revealed that companies are putting the majority of their efforts and primarily investing in talent selection. We feel there is a lack of research concretely in corporate training that directly studies professional development. Additional research is required in this field to further analyse its advantages and disadvantages, as well as to explore possibilities for future development.

Given the considerable scope of need in this area and that every company has an HR department that is responsible for talent management and professional development, it is imperative to continue researching on the topic. While there exists a number of theoretical studies on the subject, there remains a critical gap in the practical implementation and testing of AI tools within companies. From the studies included in this paper, few of them refer to specific software but they are rather centred in formulating theoretical frameworks for its future use.

Such empirical investigations are essential for understanding the tangible impacts and implications of AI adoption on the workforce dynamics. Future research should focus on analysing how these tools are integrated and the effects they might have on the organisational structure and the workforce dynamics.

Moreover, exploring ethical frameworks and guidelines for responsible AI deployment is needed to mitigate potential risks and bias and to ensure responsible and equitable practices for all stakeholders involved. The global application of AI software, particularly in multinational corporations, presents unique challenges; how these tools are managed and adapted across diverse cultural and regulatory landscapes demands scholarly attention.

Additionally, given the growing concerns surrounding data privacy and security, continued research efforts should explore strategies for safeguarding sensitive information while maximising the benefits of AI-driven talent management and professional development initiatives. By addressing these research gaps, scholars can contribute to advancing our understanding of the complex connection between AI technologies and talent management practices while simultaneously guiding the development of ethical, inclusive, and privacy-preserving AI solutions for the future workforce.

AI-powered technologies have recently impacted the corporate world and there is still much room for improvement. Moreover, technology is constantly advancing, future research should focus on implementing new tools within companies that can foster training and development. Similarly, it is key to find new ways to offer quality training accessible to employees at all times regardless of their location and that can answer their training needs helping them to climb the ladder of the corporate world by becoming more talented and high-skilled individuals who at the same time contribute to the companies' success.

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