ATRAS Volume 5 (Special Issue on AI and Education, Online Learning and Education), pp. 464-480 30/09/ 2024 | ISSN: 2710-8759/ EISSN: 2992-1376

Leveraging Artificial Intelligence to Optimize Talent Management in Higher Education Institutions

Mohammed BRIKI[1], Sara GHERRAB[2], Hassiba ALMI[3]
[1]Tipaza University Center, Algeria
[2]Ain Temouchent University, Algeria
[3]Badji Mokhtar- Annaba University, Algeria

Received: 28 / 07/ 2024 **Accepted**: 07 / 08 / 2024 **Published**: 30 / 09 / 2024

Abstract
This research examines integrating talent management strategies—recruitment, development, and retention—with artificial intelligence in higher education institutions. The study aims to address how artificial intelligence can enhance talent management by recruiting technologically proficient staff, facilitating knowledge transfer, and automating routine tasks. Methodologically, the research draws on the descriptive-analytical method and qualitative data from case studies and expert interviews within university settings. Findings indicate that artificial intelligence significantly improves efficiency in human resources processes and promotes a shared vision between universities and stakeholders regarding the effective use of artificial intelligence for managing large datasets swiftly and accurately. The implications suggest that higher education institutions should invest in AI technologies and training to align with evolving educational needs and enhance institutional performance.
Keywords: Artificial Intelligence, Higher Education Institutions, human resources, talent management, technology integration

ملخص: تتناول هذه الدراسة تكامل استراتيجيات إدارة المواهب – التوظيف، التطوير، والاحتفاظ – مع الذكاء الاصطناعي في مؤسسات التعليم العالي، وتهدف الدراسة إلى البحث عن كيفية تعزيز الذكاء الاصطناعي لإدارة المواهب من خلال توظيف كوادر مؤهلة تكنولوجيًا، وتسهيل نقل المعرفة، وأتمتة المهام الروتينية. وقد تم الاعتماد على المنهج الوصفي التحليلي وعلى بيانات نوعية من دراسات حالة ومقابلات مع خبراء في بيئات جامعية. تشير النتائج إلى أن الذكاء الاصطناعي يحسن بشكل كبير الكفاءة في عمليات الموارد البشرية ويعزز رؤية مشتركة بين الجامعات وأصحاب المصلحة حول الاستخدام الفعال للذكاء الاصطناعي لإدارة مجموعات البيانات الكبيرة بسرعة ودقة. وتوصي الدراسة مؤسسات التعليم العالي بالاستثمار في تقنيات الذكاء الاصطناعي والتدريب لمواكبة الاحتياجات التعليمية المتطورة وتحسين الأداء المؤسسي.
الكلمات المفتاحية: ذكاء اصطناعي، مؤسسات تعليم عالي، موارد بشرية ، إدارة مواهب، تكامل التكنولوجيا.

Emails: [1]Briki.mohammed@cu-tipaza.dz, [2]sara.gherrab@univ-temouchent.edu.dz, [3]hassiba.almi@univ-annaba.dz

Introduction

Amid technological advancements and the evolving educational landscape, the interplay between talent management and artificial intelligence tools has become a pivotal focus in academic circles. This convergence represents a promising frontier for transforming methods of identifying and nurturing academic competencies within the university environment. The potential of AI in talent management offers an optimistic outlook for the future of higher education, opening new avenues for addressing the challenges faced by academic institutions in enhancing university skills.

The fusion of talent management, which focuses on identifying, attracting, and retaining outstanding academic talents, with artificial intelligence technologies, offers transformative possibilities through AI analytics, predictive modeling, and learning algorithms. This enables universities to streamline and enhance talent identification processes. Moreover, using AI in talent development provides highly personalized learning experiences, adaptive training units, and initiatives that target skill enhancement tailored to academic professionals' diverse needs and aspirations, making them feel valued and catered to.

This research paper aims to explore the integration of talent management and AI tools within the university environment. The study is significant as it provides valuable recommendations for decision-makers in higher education institutions to enhance the effectiveness of talent management and human resource development. By supporting high performance and improving development and innovation, particularly with advanced technologies and artificial intelligence, the study offers opportunities to improve learning processes, data analysis, and academic performance.

The research objectives are as follows:

- Present vital concepts and theoretical literature on talent management;
- Draw attention to the importance of human talent management in higher education institutions;
- Identify the main strategies of talent management;
- Illustrate the role of talent management in achieving academic excellence;
- Provide recommendations that support and develop the talent management system in higher education institutions.

In this context, we pose the following research problem:

How can talent management and artificial intelligence be integrated into higher education institutions?

To clarify the main question, it is necessary to pose the following sub-questions:

- What are the talent management strategies in higher education institutions?
- What is artificial intelligence?
- What AI tools are used in the field of human resources?

This study's importance and scientific value are evident in its valuable recommendations for decision-makers in higher education institutions. These recommendations enhance the effectiveness of talent management and human resource development, supporting high performance and improving development and innovation in higher education. With advanced technologies and artificial intelligence, which present opportunities to improve learning processes, data analysis, and academic performance, universities can continuously improve talent management, enhancing academic success and contributing to educational and research objectives.

Literature Review

Integrating Artificial Intelligence in talent management within higher education institutions represents a significant evolution in both fields. This literature review explores the current research landscape surrounding this intersection, identifying key findings, gaps, and implications for future research.

Talent management in higher education institutions primarily focuses on recruiting, developing, and retaining academic staff. Amelia and Rofaida (2023) provided a comprehensive review of talent management practices across various organizations, highlighting the critical role of technology in enhancing these practices. They found that while technology facilitates improved talent management processes, there is a notable variation in how organizations adopt these technologies. This finding underscores the necessity for a tailored approach in the higher education sector, where institutional needs and contexts can significantly influence the effectiveness of talent management strategies.

Similarly, Mattalatta and Andriani (2023) investigated the impact of human resource management on organizational performance, emphasizing the mediating role of talent management. Their study demonstrated that effective talent management can significantly improve organizational performance, a highly relevant conclusion for higher education institutions aiming to enhance their academic and administrative effectiveness.

The application of AI in human resources management is an emerging field with substantial implications. Palos-Sánchez et al. (2022) conducted a bibliometric analysis of AI applications in Human Resources Management, revealing that most research focused on recruitment and selection processes. This suggests a gap in understanding how AI can be leveraged in other HR functions, such as talent development and retention. Their findings indicated a growing interest in AI applications yet highlighted a need for a broader exploration of AI's potential in various HR subfields.

Aboud (2023) further explored the role of AI in HRM, arguing that AI should be viewed as a tool to assist rather than replace human decision-making. This perspective aligns with the broader understanding that AI can enhance, rather than supplant, human capabilities. Aboud’s analysis supported the notion that AI can provide valuable support in managing talent by automating routine tasks and offering data-driven insights. However, it must be integrated thoughtfully to maximize its benefits.

Integrating AI with talent management strategies in higher education can address several challenges identified in the literature. Amelia and Rofaida (2023) highlighted the importance of data measurement and analysis in talent management, which AI can significantly enhance through predictive analytics and data-driven insights. AI's ability to analyze large datasets quickly and accurately can help institutions refine their recruitment strategies, identify skill gaps, and tailor development programs to individual needs.

However, a research gap remains in exploring how AI can be specifically tailored to the unique context of higher education institutions. While existing studies provided a broad overview of AI's capabilities, they often lacked detailed insights into how these technologies can be adapted to academic institutions' specific needs and goals.

In Higher Education Institutions (HEIs), the integration of AI has been a topic of increasing interest and research due to its potential to revolutionize talent management practices. AI technologies offer many benefits that can significantly impact various aspects of talent management within HEIs. These benefits range from transforming talent acquisition

processes to enhancing strategic human resources decision-making through AI-driven talent analytics. By leveraging AI, institutions can optimize recruitment, development, and retention processes, ultimately improving organizational performance and competitive advantage (Sundarapandiyan, et al., 2024). One key area where AI can make a substantial difference is talent acquisition. AI can streamline recruitment processes by automating candidate screening, analyzing resumes, and efficiently identifying top talent. Moreover, AI can predict future trends, such as potential employee turnover or skills gaps, enabling HR departments to proactively address challenges and optimize talent management strategies. This predictive capability of AI can revolutionize how HEIs approach talent management, allowing them to stay ahead of the curve in identifying and retaining top talent (Vedapradha et al., 2024). Furthermore, the application of AI in educational management models, particularly in Learning Management Systems (LMSs) and Intelligent Tutoring Systems (ITS), can significantly improve teaching and learning processes. AI can provide intelligent decision support for educational managers, aiding in tasks such as predicting students' learning progress and recommending teacher training programs. By incorporating AI into educational structures, institutions can enhance their operations' efficiency, accuracy, and adaptability. Additionally, integrating AI into talent management models can boost employee engagement and performance within enterprises. By embedding AI aspects into human resource processes, organizations can create multidimensional talent management models that increase work engagement and productivity. This approach benefits individual employees by enhancing their performance and contributes to the institution's overall success and competitiveness. Moreover, AI profoundly impacts human resource management systems, including talent management. AI systems can revolutionize employee recruitment, HR allocations, and talent management practices, leading to more effective and data-driven decision-making processes within HEIs. By harnessing the power of AI, institutions can optimize their talent management strategies to align with organizational goals and objectives effectively (Li, 2024).

Moreover, the role of artificial intelligence in higher education institutions goes beyond talent acquisition and extends to talent development and training. Through internet remote technology, AI technologies can be leveraged to provide application-oriented training for specific majors, such as music. This approach enhances the learning experience for students and improves their overall satisfaction with the educational process. By incorporating AI-driven training methods, HEIs can ensure that students receive tailored and practical education that aligns with industry demands and trends (Shui et al., 2024).

Furthermore, AI can play a transformative role in talent management strategies to optimize talent acquisition, retention, and development practices within HEIs. By adopting a comprehensive talent management approach that strategically integrates these practices, institutions can ensure consistency across HR functions and promote the alignment of talent management practices (Ibrahim, 2024). This alignment emphasizes the synergy between acquisition, retention, and development to optimize human capital effectively. Additionally, AI can be utilized to predict performance and build talent teams through integrated neural networks, enhancing the accuracy and fairness of talent management processes (Shen & Deng, 2024)

Integrating AI into talent management practices in higher education institutions holds significant promise for optimizing recruitment, development, and retention processes. By leveraging AI technologies, institutions can enhance decision-making, improve employee

engagement, and drive organizational performance. The transformative potential of AI in talent management within HEIs underscores the importance of embracing technological innovations to stay competitive and meet the evolving needs of the education sector.

The literature showed growing recognition of AI's potential in transforming talent management practices. However, there is a clear need for more focused research on how these technologies can be effectively integrated into higher education settings. Future research should address this gap by exploring the specific applications of AI in higher education and developing strategies to leverage its capabilities thoroughly. As higher education institutions continue to evolve, integrating AI with talent management presents a promising avenue for enhancing institutional performance and achieving academic excellence.

Introduction to Talent Management

Talent management has become one of the primary concepts highlighting the importance of strategic institutional efforts in attracting and developing unique competencies. Talent management represents an evolution of the earlier concept of human resource management, which previously focused more on administrative tasks such as recruitment, performance management, and compensation. However, with market evolution and changes in work methods, talent management has emerged as a concept emphasizing the attraction, development, and retention of individual talents within organizations.

Concept of Talent Management

The concept of talent management began in the 1990s when the term "war for talent" was coined by the McKinsey Company team, reflecting the intense competition among organizations to attract and retain talented individuals. This term gained further prominence through their book titled "The War for Talent" (Abusahlab, 2023, p. 124). The concept has since evolved into an established system within organizational management, recognized as a fundamental strategy for performance development and change processes (Shenafi, 2020, p. 15). Talent management is defined as the efforts undertaken by an organization to enhance its human resource management system to attract, identify, evaluate, and develop valuable employees.

Talent management is an integrated methodology for improving human capital, enabling an organization to achieve desired outcomes by building organizational culture, engagement, and capacity within a comprehensive framework for acquiring, developing, utilizing, and retaining talent (El-Harithi et al., 2015, p. 204). It is also a systematic process based on selecting employees based on their competencies, training and developing them, ensuring their sustainability within the organization, identifying talented individuals, and enhancing their presence through motivation and retention as valuable assets contributing to the organization's competitive advantage (El-AZZam., 2016, p. 25).

Therefore, talent management is an administrative approach focusing on discovering, developing, and retaining individual skills and competencies within the organization to improve overall performance and create a sustainable competitive advantage.

As El-Skran (2019) highlighted, the importance of talent management can be observed in the rising levels of education and changing job characteristics and performance requirements. The rapid growth in technological know-how and the complexity of technology

have led to several changes in the quality and nature of the workforce. One significant change is the increased demand for more knowledgeable, skilled, and specialized employees.

Talent Management in Higher Education Institutions

Higher education institutions strive to enhance the exceptional performance of their academic community members by implementing strategies that foster the development of talented and creative competencies. Modernization and development within universities emphasize the recognition of talent as a crucial element in their strategic vision, aiming to attract distinguished talents from both within and outside the university (El-Thubaiti, 2015).

The intense competition among global universities underscores the importance of applying talent management in higher education. Numerous studies assert that many universities derive their competitive advantages from being flexible and innovative, which is achieved through adequate investment in their human resources, epitomized by talent management. In the current era of continuous change, talent has become a precious human capital, making talent management a top priority for these institutions (Jebril & El-Ferjani, 2022, p. 109).

Additionally, the transformations in advanced, knowledge-based economies, which rely on intellectual assets and individuals' intangible skills, have prompted universities to adopt talent management approaches to ensure increased productivity and achieve sustainable development. To successfully develop talent management, organizational leaders must understand its requirements, such as talent acquisition, development, and retention.

Retaining employees is a primary concern of talent management to secure a competitive advantage for organizations, especially as the demand for human capital increases under a talent management system. This demand persists despite implementing wage increases and incentive systems to attract employees (Tarshan, 2023, p. 78).

Talent Management Strategies

Talent management is the cornerstone upon which higher education institutions rely to ensure success and development amidst intensifying competition. This process extends beyond hiring the right individuals; it encompasses developing and retaining their capabilities to maximize institutional performance. The strategies of talent management include:

Talent Acquisition Strategy

The initial step in talent management is attracting and selecting the right individuals, emphasizing the importance and value of effective recruitment processes. To face challenges and accomplish tasks, it is essential to acquire carefully selected talents, making talent selection a decisive factor for the success or failure of projects. Many organizations fail to choose the right talent from the outset, incurring significant costs in the future (MaKdoud, 2015, p. 97). The talent acquisition strategy is based on two main elements: talent planning and distribution, alongside building a solid reputation for human resource management. Talent planning involves identifying current and future talent needs through job analysis to meet the institution's requirements (Sabian & Thabet, 2017, p. 129). The search for talent focuses on the quality of competencies (knowledge, skills, abilities, and personal attributes).

Suitability for the job extends beyond candidates possessing the required qualifications and skills. It includes their motivations, aspirations, interests, willingness to contribute to the organization's goals, and desire for advancement. University professors are central to talent acquisition in higher education institutions. They produce knowledge through substantive work

and advanced specialized knowledge, forming the core of academic and research work in innovation and creativity (El-Skran, 2019, p. 33).

Talent Development Strategy

This strategy focuses on enhancing individuals' abilities and skills and deepening the understanding of different cultures through what is known as dynamic competencies. These competencies refer to the knowledge and skills acquired through diverse learning experiences such as training and travel (Shaffer et al., 2006, p. 10). Providing talents with opportunities to participate in training programs increases relevant individual work skills, ensuring alignment between the training provided and the organization's strategic needs. Additionally, offering guidance and mentorship helps talents' overall personal and professional development (Jebril & El-Ferjani, 2022, p. 114).

Universities focus on faculty members' horizontal development and motivation by expanding their knowledge, skills, and abilities related to their roles. Recognizing them as pivotal assets and sources of scientific, intellectual, and research contributions, universities view them as essential to their core. They represent the university's intellect and driving force toward academic and research excellence (El-Skran, 2019, p. 34). According to Garavan et al. (2012), talent development includes four broad areas:

- **Identification:** Determining who needs development;
- **Design:** Identifying the capabilities to be developed and the time required;
- **Delivery:** Utilizing analytical tools to measure effectiveness;
- **Organizational Support:** Providing support from senior management (Abdul Wahab, 2020, p. 68).

Talent Retention Strategy

Experts liken talented individuals to "frogs in a pond," capable of leaping out of the organization whenever they wish, given their ability to move to other organizations. Therefore, organizations must focus on retaining these talents to prevent them from leaving for other opportunities (MaKdoud., 2015, p. 90). Today's world faces numerous regional and global challenges and competitions, leading to the migration of talented academics towards more attractive academic and research organizations and retaining talent, achieving high performance and creativity, or gaining loyalty results from the institution's incentives and benefits to its human resources (Sabian & Thabet, 2017, p. 131).

The desire to sustain investment in human capital efficiency increases the importance of talent retention. Attracting new talents is costly, making retention more crucial than identification and acquisition. Sustaining excellence is more critical than achieving it initially (El-Skran, 2019, p. 34). Organizations employ specific strategies to retain talents, including:

- **Engaging Talents:** Increasing their involvement to enhance job satisfaction;

- **Career Development:** Ensuring employees understand their career paths and know that their organization is invested in their career growth increases their attachment to the organization;
- **Training:** Continuous on-the-job training ensures employees effectively perform their tasks and responsibilities (Abdul Wahab, 2020, p. 68).

The Essence of Artificial Intelligence

In the era of modern technology, digital innovations race to achieve significant breakthroughs in computing and intelligent thinking. AI emerges as a critical turning point, ushering us into a technological age filled with intelligent systems and innovative applications. AI reflects a prevailing concept enabling machines to perform intelligent tasks that sometimes resemble or surpass human cognitive capabilities.

The Concept of Artificial Intelligence

Artificial intelligence was first introduced in 1956 by John McCarthy, who organized a workshop bringing together researchers interested in artificial neural networks. Although this workshop did not lead to immediate innovations, it united the founders of AI and laid the groundwork for future AI research (Monad, 2013, p. 60). John McCarthy defined AI as the development of machines that behave as if they possess intelligence (Ertel, 2016, p. 1). It is a field of computer science concerned with designing intelligent computer systems that exhibit human-like intelligent behavior (Jebbari, 2017, p. 112).

AI's objectives extend beyond merely simulating human cognitive processes and attempting to computerize and understand them. It aims to endow computers with intelligence, enabling them to perform tasks previously exclusive to humans, such as thinking, learning, creativity, and communication (Madkour, 2021, p. 138). AI technology replicates human intelligence and develops various capabilities through computer software known as deep learning, where machines learn from each other. The American company Oracle defines deep learning as the machine's attempt to understand words more precisely by analyzing data at the highest level of abstraction through linear understanding (Maamri & Bouchekoua, 2023, p. 84). AI is also defined as a system related to designing and applying algorithms for analyzing and learning from data interpretation. It coordinates and organizes various techniques for learning, pattern discovery, logic, and probability theories, aiming to develop computer technology capable of human-like actions, learning, completing physical tasks, simulating human experience, and decision-making (Elleter et al., 2018, p. 202).

AI comprises two theoretically separate concepts combined and evolving in an adaptive behavior environment:

- **Memory:** Representing storage;
- **Reasoning:** To comprehend facts, the machine can analyze and understand the relationships between objects and concepts.

For a device to perform tasks considered AI, it must possess three main specifications: the ability to collect, analyze, and relate data and information, the capacity to make decisions based

on the analysis of the collected information, and the ability to learn and acquire information (Awad, 2023, p. 113).

Thus, AI is a branch of computer science that uses technologies and software to create systems capable of simulating human cognitive abilities. AI aims to enable machines to learn and improve performance autonomously, and it is used in various applications such as machine learning, natural language processing, and extensive data analysis. AI plays a crucial role in shaping the future of technology and innovation.

Fields of Artificial Intelligence

AI represents a revolutionary technological phenomenon reflecting significant advancements across various domains. AI enables systems and devices to understand, learn, and make decisions similarly to humans, opening new horizons for technology and innovation. The following are the most commonly used fields of AI (Semioud & Dahmani, 2022, p. 92).

- **AI in Scientific Fields:** This includes applications in communication, time management, health, and safety. AI systems enhance the efficiency and effectiveness of these areas through intelligent automation and predictive analytics.
- **Education:** AI addresses educational goals and information needs, integrating into games, entertainment, and various activities. Intelligent tutoring systems and personalized learning platforms are prime examples of AI enhancing the educational experience.
- **Infrastructure:** AI impacts transportation, business decision-making, agriculture, engineering, architecture, energy, and conservation. Intelligent cities, autonomous vehicles, and precision farming are examples where AI drives innovation and efficiency.
- **Sciences:** AI is pivotal in automated discovery, experiment design, resource optimization, and data interpretation. It is utilized in biology, chemistry, medicine, and climate science to advance research and development.
- **Consumer Applications:** AI improves consumer relations with computing, sensing logic, and learning innovative applications, products, and services. It also addresses challenges and opportunities related to data and privacy, offering personalized and intelligent user experiences.
- **Applied AI:** This encompasses natural language processing, computer vision technology, speech and sound recognition technology, expert systems, and intelligent learning systems. AI applications in these areas include virtual assistants, image recognition systems, and adaptive learning platforms.

By leveraging AI across these diverse fields, the technology continues to revolutionize industries and improve the quality of life, driving innovation and practicality forward.

AI Tools in Human Resources

Under the influence of AI, talent management in universities is ushering in new opportunities by utilizing intelligent analytics to enhance recruitment processes and candidate selection with greater precision. It also aids in identifying individual training needs for academic staff. Furthermore, AI can augment the student experience by analyzing their interaction with educational materials and directing efforts toward improving the learning process.

With its advancements in automation and robotics, AI positively impacts productivity, aiming to reengineer human capital creatively. However, its influence necessitates the development of regulations, readiness of capital, labor market changes, job losses, and an increase in unemployment rates. The productivity of human capital remains a pivotal factor in ensuring the continuity and success of any organization. Researchers are investigating how advanced technologies and AI applications can be integrated with human talent management. The vital relationship between technological progress and the significance of human capital reflects the balance between efficiency, skill, and human expertise in facing AI's challenges and future expectations (Shili, 2023, p. 88). In this context, we review the most critical AI applications used in talent and human capital management (Hajjou, 2022).

- **HireSmarter Application**: This application aids HR specialists in recruiting top talent with intelligence, efficiency, and effectiveness, aligning with the organization's strategy to achieve its goals. It leverages AI and machine learning technology based on data to match candidate profiles with the required skills, qualifications, and experiences for specific job requests, filtering out unsuitable applications. This saves time and effort, maximizing job success and prosperity while eliminating administrative bureaucracy by automating the arduous tasks of reviewing candidate profiles and resumes, matching required skills with job requirements, and archiving all resumes in an independent database for future reference.

- **Work Smarter Application**: This application offers features to automate routine tasks with great intelligence, efficiency, and effectiveness, ensuring compliance and error detection and suggesting suitable adjustments and tools for workflow management. These procedures and interfaces guide HR specialists in improving productivity and efficiency by automating monotonous tasks, proposing intelligent measures to address them, and providing appropriate solutions. It also automates date, time, and expense entries and provides compensation packages for hiring managers to new employees.

- **Engage Smarter Application**: This application facilitates effective interaction between managers, subordinates, and employees and optimal employee engagement with the organization to achieve higher decorum, productivity, and maximum employee growth. It can swiftly and efficiently improve employee productivity through data-driven, AI-based customized onboarding processes. Additionally, it offers other features that enhance professional growth through education, training, and recommended guidance.

Integration of Talent Management Strategies and Artificial Intelligence

The integration of AI in talent management within higher education institutions signifies the use of technology to address various HR tasks, particularly in talent acquisition, employee education, and workforce management (Kambur & Akar, 2021, p. 170):

- ***Attracting and Retaining Talented Employees***

AI aids in analyzing candidate profiles, verifying their competencies, and facilitating communication through automated emails. With AI, employers gain profound insights into the required skills and knowledge, accelerating talent acquisition (Tiwari et al., 2021, p. 161). Technology assists HR specialists in selecting suitable candidates, allowing more time for value-added tasks and strategic work. Source spécifiée nonvalide. Talented employees link and organize processes efficiently, swiftly solving problems, embracing new challenges, and demonstrating loyalty to their institutions (Eubanks, 2022).

Appropriate Employee Training

Despite AI's advantages in performing mentally demanding tasks, investments in AI must be evaluated appropriately. Source spécifiée non valid. Organizations may face challenges translating implicit employee knowledge into programming language (De Bruyn et al., 2020). Employees often struggle to understand various phenomena independently, complicating the transfer of business decisions to AI (Kambur & Akar, 2021). AI-generated knowledge must be conveyed to employees visually to facilitate understanding, requiring a repeated learning cycle akin to AI's process (Maity, 2019, p. 655). AI can enhance learning and development activities by tailoring educational programs to individual needs, promoting quicker and more effective skill acquisition. (Saxena & Kumar, 2020, p. 12) Institutions can use AI to monitor employee progress and provide tailored feedback, fostering a supportive and motivating environment. Source spécifiée non valid. AI also aids in organizing communications, reducing misunderstandings, and strengthening team relationships (Arslan et al., 2022).

Enhancing Employee Interaction and Performance with AI:

AI adds exceptional value in a market moving towards sophisticated AI systems for complex tasks (Goel et al., 2022). New AI applications represent significant technological advancements, offering flexibility and efficiency over traditional software, which demands extensive setup (Cichosz et al., 2020). Early AI adopters gain a competitive edge, as those who fail to integrate AI may struggle in the market. The primary aim of AI in organizational operations is to reduce costs and improve service quality. AI fosters innovative and successful responses to modern challenges, automating repetitive tasks and enhancing operational accuracy. Industry 4.0 leverages technologies for greater operational efficiency and market opportunities. AI relieves employees from routine tasks, providing more time for creativity and innovation, thus significantly enhancing departmental and organizational efficiency. Source spécifiée non valid. Managing vast amounts of information, AI reduces processing time and minimizes errors, proving invaluable where human capabilities fall short (Kambur & Akar, 2021).

Discussion

This section interprets and discusses the research findings on leveraging AI to optimize talent management in higher education institutions. The study addressed how AI can enhance talent management by recruiting technologically proficient staff, facilitating knowledge transfer, and automating routine tasks. The findings indicate that AI significantly improves efficiency in human resource processes and promotes a shared vision between universities and stakeholders regarding the effective use of AI for managing large datasets swiftly and accurately.

The first research question examined the integration of AI and talent management strategies in higher education institutions. The study found that AI tools significantly enhance recruitment, development, and retention. These tools streamline the recruitment process by efficiently matching candidate profiles with job requirements, thereby improving the quality of hires. The findings align with previous studies, highlighting the importance of precision in recruitment and the role of AI in achieving this goal. AI's ability to automate routine tasks, provide data-driven insights and suggest suitable candidates reduces the administrative burden on HR professionals, allowing them to focus on strategic initiatives.

Regarding talent development, the study found that AI can offer personalized learning experiences, adaptive training modules, and continuous monitoring of employee progress. This finding is consistent with the literature, which emphasizes the role of AI in facilitating personalized learning and development programs. By tailoring educational content to individual needs, AI ensures that academic professionals receive relevant and practical training. This personalized approach enhances skill development and boosts employee engagement and motivation.

Regarding talent retention, the study revealed that AI can significantly improve employee retention by enhancing job satisfaction and engagement. AI tools provide insights into employee preferences and performance, enabling universities to design better retention strategies. This finding supports previous research that underscores the importance of understanding and addressing employee needs to foster loyalty and reduce turnover. Additionally, AI-driven analytics help identify potential issues before they escalate, allowing for timely interventions that enhance the overall employee experience.

The findings also addressed the role of AI in promoting a shared vision between universities and stakeholders. AI's capacity to process large datasets accurately and swiftly ensures that stakeholders have access to reliable information, facilitating informed decision-making. This shared vision is crucial for aligning institutional goals with technological advancements and educational needs. The literature supports this perspective, highlighting the importance of data-driven decision-making in achieving organizational objectives.

Despite the positive findings, the study also identified challenges in integrating AI with talent management strategies. These challenges include the need for substantial investment in AI technologies and training, the potential for job displacement due to automation, and the requirement for regulatory frameworks to manage AI applications effectively. The literature echoes these challenges, calling for a balanced approach to AI adoption that considers both technological benefits and socio-economic implications.

The study provides valuable insights into AI's potential to optimize talent management in higher education institutions. By enhancing recruitment, development, and retention

processes, AI contributes to the overall efficiency and effectiveness of HR functions. However, successful integration requires addressing the associated challenges and aligning AI applications with institutional goals and stakeholder expectations. The findings underscore the need for higher education institutions to invest in AI technologies and training to stay competitive and meet evolving educational needs.

Conclusion

The main aim of this study was to explore the integration of artificial intelligence to optimize talent management in higher education institutions. In light of our detailed study and analysis, it is evident that we stand on the threshold of a new era of educational and administrative innovation. This integration is not merely a technological enhancement of the current educational system but a fundamental reshaping of how we think about and apply talent management and educational concepts. By integrating AI, we can analyze data more precisely, create personalized educational pathways for students, and identify emerging talents more efficiently. This empowers higher education institutions to utilize resources more effectively, swiftly, and accurately identify the needs of students and staff. From our research, we derive the following conclusions:

- Emphasizing the importance of leveraging modern technologies, particularly AI, to enhance human talent capabilities and foster creativity and innovation.
- Integration provides an opportunity to develop innovative educational programs that more effectively meet the needs of students and society, with a focus on practical and applied skills.
- AI contributes to a better understanding of institutional needs and challenges by analyzing performance data and providing transparent periodic reports.
- The combination of talent management and AI enhances operational efficiency, leading to more informed and effective decision-making.
- AI technologies facilitate employee selection processes by effectively analyzing skills and experiences and improving cultural and intellectual alignment.
- AI aids in analyzing demographic data and designing strategies to achieve greater diversity within institutions.
- AI analytics contribute to accurately identifying training needs by determining future skill requirements and developing customized training programs.
- The integration of talent management and AI improves the sustainability of the educational system by providing advanced technology for data analysis and enhancing administrative decisions.

Recommendations

The study recommends the following:

- Higher education institutions must invest in AI and talent management research to ensure continuous development and innovation.

- Institutions should enhance their technological infrastructure to support the implementation of AI technologies in talent management.
- Providing training and development programs for staff to equip them with the understanding and usage of new tools and technologies.
- Encouraging partnerships between universities and technology companies to access AI's latest tools and knowledge.
- Promoting advanced interaction technologies to stimulate active participation and enhance communication among human talents.
- Using AI systems to guide students toward career paths that align with their skills and interests.

As talent management and AI evolve, we can anticipate further improvements and innovations in higher education.

About the Authors

Mohammed BRIKI holds a PhD in Human Resource Management from the University Center of Tipaza (2024). He is a temporary lecturer at Blida 2 University, where he researches human competencies and contemporary management concepts. ORCID: 0000-0002-3904-6132
Sara GHERRAB is a PhD candidate at Ain Temouchent University, specializing in Human Resource Management. Her research focuses on the impact of cloud technology adoption on information systems in Algerian institutions. ORCID: 0009-0003-3026-4429
Hassiba ALMI is an Assistant Professor at the University of Badji Mokhtar, Annaba, with a Ph.D. in Insurance Economics from Blida 2 University (2021). Her research interests include the digital economy, Islamic finance, and Fintech. ORCID: 0009-0001-7560-754X

Declaration of AI Refined: This research paper has undergone language correction using the AI-powered tool Grammarly to address grammatical, spelling, and stylistic errors. It is acknowledged that such tools may introduce standardized patterns typical of AI-generated content. Consequently, a certain percentage of content may reflect AI-generated language structures. However, the intellectual content and the analysis remain the authors' work.

Statement of Absence of Conflict of Interest: The authors solemnly declare that they are not and shall not be in any situation that could give rise to a conflict of interest concerning the findings and recommendations in this academic article.

References

Abdul Wahab, O. M. (2020). The Impact of Talent Management Strategy on Enhancing Organizational Effectiveness: An Exploratory Study at the Continuing Education Center. *Business Economics and Trade Journal, 5*(2), 29-52.

Aboud, S. (2023). Artificial Intelligence and Human Resource Management: New Horizons and Challenges. *Journal of Management and Economics Research, 5*(3), 547–565.

Abusahlab, I. (2023). The Impact of Integrated Talent Management According to IBM's Business Value Institute on Talent Management Perception in the Palestinian Public Sector in Gaza. *Algerian Journal of Economic Performance, 7*(1), 122-141.

Amelia, E., & Rofaida, R. (2023). Talent Management in Organizations: Systematic Literature Review. *Airlangga Journal of Innovation Management, 4*(1), 41-59.

Arslan, A., Cooper, C., Khan, Z., Golgeci, I., & ALI, I. (2022). Artificial intelligence and human workers interaction at the team level: a conceptual assessment of the challenges and potential HRM strategies. *International Journal of Manpower, 43*(1), 75-88.

Awad, M. H. (2023). Reliance on Artificial Intelligence During the COVID-19 Pandemic and Its Negative Effects on Ethical Systems. *Islamic Sciences and Civilization Journal, 8*(01), 1–12.

Cichosz, M., Wallenburg, C. M., & Knemeyer, A. M. (2020). Digital transformation at logistics service providers: barriers, success factors, and leading practices. *The International Journal of Logistics Management, 31*(2), 209-238.

Bruyn, A. D., Viswanathan, V., Beh, Y. S., Brock, J. K. U., & Wangenheim, F. v. (2020). Artificial intelligence and marketing: pitfalls and opportunities. Journal of Interactive Marketing, 51(1), 91-105. https://doi.org/10.1016/j.intmar.2020.04.007

El-AZZam., F. (2016). Talent Management Strategies and Their Role in Achieving Competitive Advantage: A Case Study of Princess Rahma Educational Children's Hospital in Jordan. *Conference on Modern Trends in Business Management.* Amman, Jordan: Arab University for Graduate Studies.

El-Harithi, K., El-Harithi, A., & El-Ani, W. (2015). The State of Talent Management for Emerging School Leaders in Schools and Directorates of Education in Oman. *Jordanian Journal of Educational Sciences, 11*(2), 201–214.

Elleter, F., & et al. (2018). Applying Neural Networks for Loan Decisions in the Jordanian Commercial Banking System. *International Journal of Computer Science and Network Security, 10*(01), 209-214.

El-Skran, B. A. (2019). The effectiveness of talent management strategies in the development of human resources teaching from the point of view of the leaders and members of the faculty of Taibah University. *Journal of Educational and Psychological Sciences, 3*(15), 28-50.

El-Thubaiti., K. (2015). Leadership Talent Management Strategy in Government Institutions. *6th Management and Business Forum.* Khobar: Saudi Arabia.

Eubanks, B. (2022). Artificial intelligence for HR: Use AI to support and develop a thriving workforce. *Kogan Page Publishers 10*(01), 1–20.

Garavan, T. N., Carbery, R., & Rock, A. (2012). Mapping talent development: definition, scope, and architecture. *European Journal of Training and Development, 36*(1), 5–24.

Goel, P., Kaushik, N., Sivathanu, B., Pillai, R., & VIKAS, J. (2022). Consumers' adoption of artificial intelligence and robotics in hospitality and tourism: literature review and future research agenda. *Tourism Review, 77*(4), 1081-1096.

Hajjou, F. M. (2022). *Applications of Artificial Intelligence in Human Resource Management*. Retrieved from new-educ: https://www.new-educ.com/

Ibrahim, Y. (2024). Best practices and strategies for talent acquisition, retention, and development in Egypt. *Journal of Human Resource and Leadership, 9*(1), 54–64.

Jebbari, L. (2017). The Role of Artificial Intelligence Models in Decision-Making. *Humanities Journal, 3*(1), 1–14.

Jebril, M. W., & El-Ferjani, A. F. (2022). The Reality of Talent Management Systems in Technical Higher Education Institutions in Derna from the Perspective of Faculty Members. *Innovation and Marketing Journal, 7*(1), 125-154.

Kambur, E., & Akar, C. (2021). Human resource developments with the touch of artificial intelligence: a scale development study. *International Journal of Manpower, 43*(1), 168-205.

Li, M. (2024). The impact of artificial intelligence on human resource management systems - applications and risks. *Applied and Computational Engineering, 48*(1), 7–16.

Maamri, M., & Bouchekoua, S. (2023). The Application of Artificial Intelligence in Digital Media: Great Opportunities and Greater Challenges. *Media and Communication Studies Journal, 3*(2), 3439-3443.

Madkour, M. (2021). Artificial Intelligence and the Future of Distance Learning. *Journal of Studies in Development and Society, 6*(3), 72–83.

Maity, S. (2019). Identifying opportunities for artificial intelligence in the evolution of training and development practices. *Journal of Management Development, 38*(8), 651–663.

MaKdoud, W. (2015). Talent Management: Optimal Investment for 21st Century Organizations. *Journal of Research and Scientific Studies, 9*(2), 74–81.

Mattalatta, Y., & Andriani, Y. (2023). Influence of Human Resource Management on Organizational Performance with Talent Management Mediation. *Innovation Business Management and Accounting Journal, 2*(3).147-156.

Monad, M. (2013). Artificial Intelligence Between Human Needs and Moral Imperatives. *Blogging Journal, 15*(1), 5–7.

Palos-Sánchez, P. et al. (2022). Artificial Intelligence and Human Resources Management: A Bibliometric Analysis. *Applied Artificial Intelligence, 36*(1), 1-28.

Sabian, I., & Thabet, W. (2017). "Talent Management": New Horizons for Intelligent Human Resource Management in Algerian Institutions—Proposal of a Model. *Economic Policies Journal, 5*(3),106- 114.

Saxena, R., & Kumar, Y. (2020). Influence of artificial intelligence on work, people and the firm: A multi-industry perspective. Human & Technological Resource Management (HTRM): new insights into. *Revolution 4* (2), 8–34.

Semioud, L., & Dahmani, S. (2022). Artificial Intelligence as a Digital Technology Leading to Innovative Educational Experiences in Algeria. *Media and Communication Studies Journal, 2*(2), 201 - 217.

Shaffer, M. A., Harrison, D. A., Gregersen, H., Black, J. S., & Ferzandi, L. A. (2006). You can take it with you: individual differences and expatriate effectiveness. *Journal of Applied Psychology, 91*(1), 1-19.

Shen, S., & Deng, Y. (2024). A performance prediction method for talent team building based on integrated isa-bp neural networks. *ICST Transactions on Scalable Information Systems, 4*(2), 1-18.

Shenafi, N. (2020). Talent Management: The Foundation of Organizational Excellence in the Knowledge Economy. *Al-Hadath Journal of Financial and Economic Studies, Mohammed Khider University of Biskra, 8*(5),14–25.

Shili, E. (2023). Human Resource Management Amidst Challenges of Artificial Intelligence Application. *Arsad Journal of Economic and Administrative Studies, 6*(1), 382–393.

Shui, L., Feng, Y., Zhong, M., & Qin, Y. (2024). Application-oriented talent training for music majors in colleges and universities based on internet remote technology. *International Journal of Web-Based Learning and Teaching Technologies, 19*(1), 1–12.

Sundarapandiyan, N. D. et al. (2024). AI-Powered Strategies for Talent Management Optimization. *Journal of Informatics Education and Research, 4*(2), 854-860.

Tarshan, H. (2023). Human Talent Management in Higher Education Institutions: Models from the United States and Malaysia. *Al-Risala Journal for Human Studies and Research, 8*(1),*8–15.*

Tiwari, P., Pandey, R., Garg, V., & Singhal, A. (2021). Application of artificial intelligence in human resource management practices. *11th International Conference on Cloud Computing* (pp. 159-163). Data Science & Engineering (Confluence).

Vedapradha, R. et al. (2024). Artificial intelligence–talent acquisition in HEIs recruitments. *The International Journal of Information and Learning Technology, (ahead-of-print). 41*(3), 230-243.

Cite as

Briki, M., Gherrab, S., & Almi, H. (2024). Leveraging Artificial Intelligence to Optimize Talent Management in Higher Education Institutions. *Atras Journal*, *5*(Special Issue), pp. 464-480.