Journal of Advanced Computing Systems (JACS)
www.scipublication.com

Strategic Implications of AI Integration in Workforce Planning and Talent Forecasting

Kiran Kumar Reddy Yanamala
Central Michigan University

DOI: 10.69987/JACS.2024.40101

Keywords

AI Integration
Artificial Intelligence
Human resource management
Talent Forecasting

Abstract

Workforce planning is a critical component of talent management, essential for aligning organizational needs with human capital to achieve efficiency, productivity, and long-term success. Traditional workforce planning methods often rely on historical data and reactive approaches, which are insufficient in today's dynamic labor markets characterized by rapid technological advancements and evolving workforce expectations. This paper explores the integration of Artificial Intelligence (AI) and predictive analytics into workforce planning as a proactive solution to these challenges. We propose a comprehensive framework that incorporates AI-driven predictive analytics into workforce planning processes. The framework focuses on three key areas: skills gap analysis and workforce forecasting, dynamic workforce allocation, and proactive succession planning. By leveraging AI, organizations can accurately identify emerging skills gaps, optimize resource utilization through real-time workforce allocation, and enhance succession planning by predicting leadership readiness. The paper develops key propositions demonstrating how AI can enhance talent forecasting and workforce management. Through AI-driven models, organizations can make data-driven decisions, improve talent retention, achieve operational efficiency, and enhance agility and responsiveness to market changes. We also discuss the strategic implications of adopting AI in workforce planning and address the challenges organizations may face, such as organizational readiness, data quality issues, skill gaps in AI and analytics, and ethical and privacy concerns.

Introduction

Workforce planning is a critical aspect of talent management, focusing on aligning organizational needs with human capital to ensure efficiency, productivity, and long-term success [1]. Traditional workforce planning methods, often reactive and based on historical trends, have struggled to keep pace with the dynamic nature of modern labor markets [2]. In response to these challenges, the integration of Artificial Intelligence (AI) and predictive analytics has emerged as a promising solution. These advanced technologies offer a proactive approach to workforce management by enabling organizations to analyze vast amounts of workforce data, predict future trends, and make informed decisions regarding talent acquisition, development, and retention.

AI and predictive analytics are reshaping workforce planning by offering unprecedented insights into workforce dynamics. These technologies can analyze employee behavior, skill sets, and external market trends to predict future workforce needs and identify critical talent gaps [3]–[5]. Furthermore, AI-driven systems can enhance decision-making by providing data-driven forecasts, improving the alignment between talent supply and demand. In this evolving landscape, organizations can leverage AI to not only react to immediate workforce needs but also proactively plan for future challenges, ensuring that they are equipped to meet their strategic objectives. Traditional workforce planning methods, while foundational, are often constrained by their reliance on historical data and reactive approaches. This leads to challenges in accurately forecasting future talent needs, identifying skills gaps, and managing succession planning.

Moreover, the increasing complexity of workforce dynamics, driven by rapid technological advancements, remote working models, and changing workforce expectations, exacerbates these challenges. Organizations require more agile and data-driven approaches to workforce planning that can respond to these complexities in real time [6].

The integration of AI-driven predictive tools provides a potential solution to these challenges [7], [8]. However, despite the increasing interest in AI for workforce management, many organizations struggle to effectively implement and leverage these tools for proactive talent forecasting. There remains a significant gap in understanding how AI can be best utilized to enhance workforce planning, particularly in the areas of skills gap analysis, dynamic workforce allocation, and succession planning.

In this study, we aim to address the limitations of traditional workforce planning by exploring how the integration of Artificial Intelligence (AI) and predictive analytics can enhance talent management. Specifically, we propose a comprehensive framework for incorporating AI-driven predictive analytics into workforce planning and develop key propositions on how AI can improve talent forecasting and workforce management. By focusing on areas such as skills gap analysis, dynamic workforce allocation, and proactive succession planning, we seek to provide a roadmap for organizations to adopt AI technologies, ultimately contributing to more agile, informed, and future-focused talent management strategies that transition from reactive methods to proactive, data-driven approaches.

Related work

AI has become a critical tool for transforming talent management processes, particularly in human resource management (HRM). Oluwatamilore et al. (2023) review AI-driven talent analytics and its role in optimizing HR decision-making in U.S. organizations, emphasizing its importance in areas like workforce planning and employee engagement [9]. This study shows how AI can support better decision-making by predicting workforce needs and managing talent effectively. Safarishahrbijari (2018) offers a systematic review of workforce forecasting models, highlighting the strengths and weaknesses of different approaches such as time series modeling and system dynamics simulations. The paper underscores how AI models can better forecast workforce needs by analyzing both internal and external data sources [10]. The study also identifies areas for improvement in traditional workforce planning methods. In HR practices, predictive analytics plays a crucial role in enhancing workforce management at every stage. Isson and Harriott (2016) demonstrate how people analytics, leveraging predictive models, can improve hiring, retention, promotion, and succession planning. Their study offers practical frameworks for incorporating analytics into HR practices [11]. This approach enables HR professionals to identify key talent and manage attrition risks more effectively.

AI's role in talent flow analysis has also been explored in detail. Xu et al. (2019) present a deep sequence prediction model that uses job transition networks to analyze and forecast talent flows within and between organizations. The model helps organizations monitor employee transitions, enabling proactive workforce allocation decisions [12]. Beyond HR, AI-based predictive analytics has been applied in several other fields. Jindal and Malaya (2015) explore how predictive analytics is used in higher education for tasks such as enrollment management and curriculum development, demonstrating its versatility across different sectors [13]. Piccialli et al. (2021) discuss AI's application in healthcare, where predictive models are used to forecast medical bookings, improving patient care and resource allocation [14]. In terms of long-term workforce planning, Roy (2021) investigates how AI-based workforce management systems are used in India to address challenges such as scheduling, recruiting, and retention. The study also highlights the future potential of AI in HRM and addresses concerns about AI replacing human roles in HR [6]. AI has also been instrumental in improving expertise management systems within large enterprises. Varshney et al. (2014) describe an analytics-driven solution at IBM, where AI predicts employee expertise by analyzing job roles and skill sets. This system reduces manual effort and provides accurate, real-time data for decision-making [15].

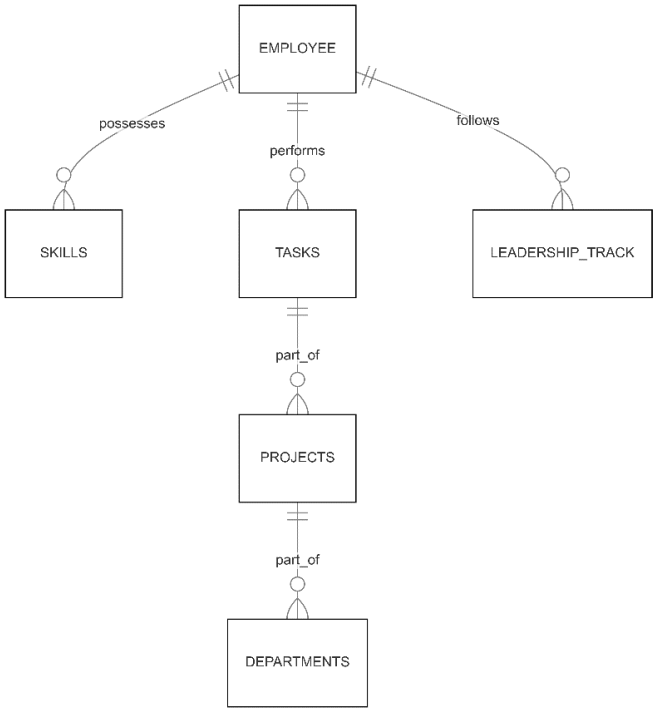

Figure 1 The close interconnection between employee and organization

In predictive workforce analytics, Kaushal et al. (2023) apply AI-based regression models to retail sales forecasting, revealing how similar approaches can be used to predict workforce requirements in other sectors [16]. Similarly, Fomude et al. (2023) examine AI models in HR, focusing on how machine learning algorithms improve HR decision-making by forecasting employee desires and revenue growth [17]. Talent management systems also benefit from AI-powered talent analytics. Chaturvedi (2016) highlights the growing relevance of big data and talent analytics in helping organizations manage human capital. This paper emphasizes the role of AI in improving employee engagement, retention, and forecasting talent needs [18]. Similarly, Flores et al. (2020) focus on AI tools that predict student performance, suggesting that these tools could be adapted for workforce planning by forecasting employee performance [19].

Propositions for AI-Driven Workforce Planning

This section presents key propositions on how AI-driven technologies can enhance workforce planning. By leveraging AI for skills gap analysis, dynamic workforce allocation, and proactive succession planning, organizations can transition from traditional, reactive methods to more proactive, data-driven approaches. These propositions are supported by visual models and theoretical insights to clarify their potential impact on workforce management and talent forecasting.

AI for Skills Gap Analysis and Workforce Forecasting

Workforce planning requires anticipating future talent needs and ensuring that the organization's current skillset aligns with emerging trends. Traditionally, this has been a manual process based on market research, industry trends, and managerial intuition. However, AI-based systems offer the potential to revolutionize skills gap analysis by aggregating data from multiple internal and external sources to predict future workforce needs with greater accuracy.

Proposition 1: AI-driven predictive models can identify emerging skills gaps and forecast talent shortages by analyzing current workforce capabilities, industry developments, and future market demands.

AI can draw from internal employee performance data, job market trends, industry benchmarks, and learning and development records to provide a holistic view of where skills gaps are likely to emerge. For example, internal data on employees' current skills and performance levels can reveal weaknesses that may need addressing. Job market data, such as demand for specific roles and skills, can highlight emerging trends, while industry benchmarks provide context by comparing the organization's skillset to those of competitors.

Table 1 Outlines how AI can utilize different data sources to enhance the accuracy of workforce forecasts and skills gap analysis.

Data Source	Insights Provided	AI Application
Internal Employee Skill Data	Current skills, performance, and developmental needs	Prediction of internal skills shortages
Job Market Trends	Emerging roles, demand for specific skills	Forecasting demand for future skills
Industry Benchmarks	Comparison of skills with leading competitors	Alignment with industry standards
Learning & Development Data	Participation in training programs	Identification of at-risk employees for skill obsolescence

By leveraging this multi-source data, AI can offer more granular insights into future workforce needs and facilitate the creation of targeted training and development programs. This ensures that organizations stay competitive in a rapidly evolving job market.

Dynamic Workforce Allocation with AI

In large organizations, workforce needs fluctuate due to factors such as seasonal demand, project-based requirements, or changing market conditions. Traditional workforce allocation methods rely heavily on static planning, which often leads to inefficiencies such as underutilized talent or overburdened teams. AI offers the potential to make workforce allocation more dynamic, allowing organizations to optimize their resources in real-time.

Proposition 2: AI can enable dynamic, real-time workforce allocation by continuously monitoring workforce metrics (e.g., availability, performance, skill level) and dynamically assigning tasks based on organizational needs.

AI-powered workforce allocation systems can continuously process real-time data from various sources such as employee availability, task complexity, performance feedback, and project requirements. These systems can then optimize task assignments by matching the right talent with the right tasks, ensuring that workforce resources are utilized efficiently. Additionally, AI can forecast future resource requirements based on historical data and current trends, allowing organizations to adjust workforce allocation preemptively.

The dynamic nature of AI-based workforce allocation not only improves efficiency but also enhances employee satisfaction by ensuring that tasks are appropriately matched to individual skill levels and interests. This reduces the risk of burnout and turnover, particularly for high-performing employees who might otherwise be overburdened by excessive responsibilities.

Table 2 Compares traditional workforce allocation methods with AI-driven dynamic models, highlighting the advantages AI brings in terms of flexibility, real-time responsiveness, and resource optimization.

Aspect	Traditional Workforce Allocation	AI-Driven Dynamic Allocation
Task Assignment	Based on manager intuition	Based on real-time data and AI-driven predictions
Adjustment Frequency	Quarterly or annually	Continuous, real-time adjustments
Resource Utilization	Often suboptimal due to static allocation	Optimized based on real-time workforce metrics
Performance Monitoring	Periodic reviews	Continuous, real-time feedback

Dynamic workforce allocation ensures that organizations can adapt to changing workforce requirements quickly and efficiently, reducing downtime and optimizing the use of available talent.

AI for Proactive Succession Planning

Succession planning is a critical aspect of workforce management, ensuring that key leadership roles are filled by qualified individuals when vacancies arise. Traditional succession planning methods often rely on manual assessments and subjective judgments, which can lead to delays or missed opportunities. AI can enhance this process by predicting which employees are most likely to succeed in leadership roles, based on data-

driven insights into their performance, career progression, and skill development.

Proposition 3: AI can facilitate proactive succession planning by identifying high-potential employees and forecasting their readiness for future leadership roles based on performance data, learning patterns, and career trajectories.

AI-driven systems can continuously monitor employees' performance metrics, professional development activities, and learning patterns to identify potential future leaders. By analyzing historical data on successful leadership transitions, AI models can develop predictive profiles of high-potential employees, identifying those who are best suited for leadership roles and recommending targeted development programs to prepare them for future responsibilities.

By implementing AI in succession planning, organizations can take a proactive approach, ensuring that leadership pipelines are filled with qualified individuals well before key roles become vacant. This reduces the risk of leadership gaps and ensures organizational stability during transitions.

Table 3 Outlines the differences between traditional succession planning methods and AI-driven approaches, emphasizing how AI can improve the process through real-time data analysis and predictive modeling.

Succession Planning Element	**Traditional Approach**	**AI-Driven Approach**
Identification of Candidates	Based on manager selection	Based on performance data and AI-driven predictions
Leadership Development	Ad-hoc, often delayed	Proactive, data-driven identification of candidates
Readiness Forecasting	Subjective evaluation	AI-based prediction of leadership readiness
Employee Engagement	Reactive; based on current roles	AI-driven recommendations for development paths

By leveraging AI, organizations can optimize succession planning processes, ensuring that high-potential employees are identified early and developed into future leaders. This not only strengthens leadership pipelines but also improves employee engagement by providing clear development pathways for those identified as future leaders.

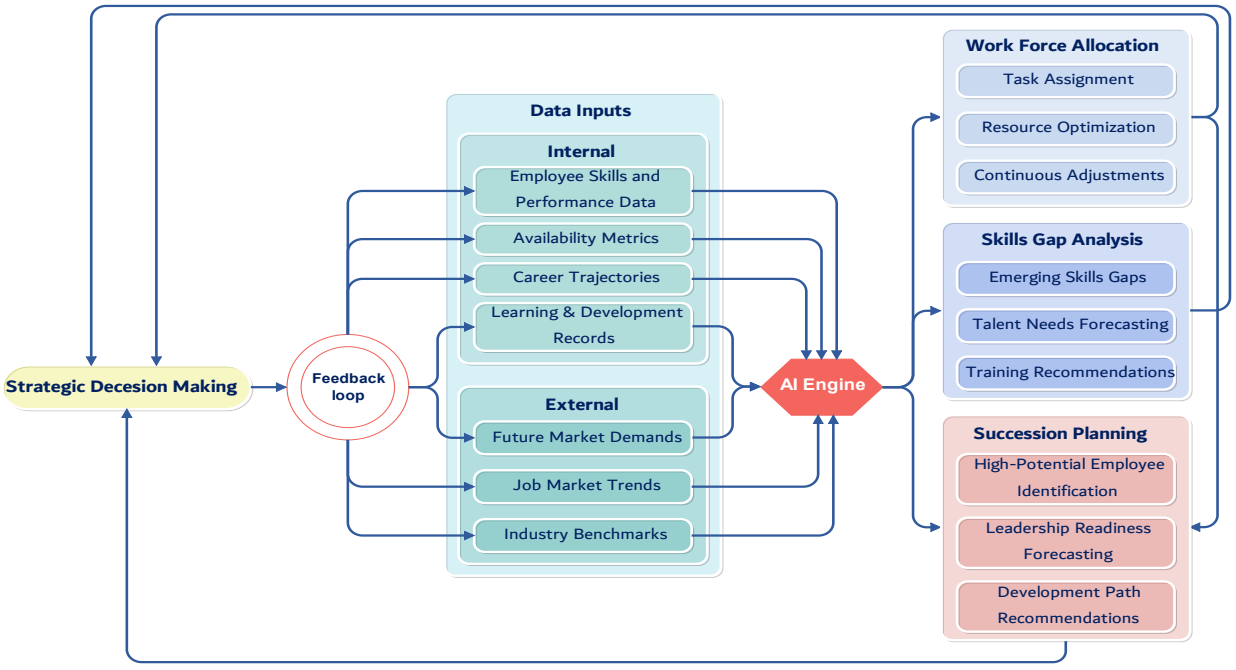

Figure 2 AI-Driven Predictive Analytics Framework for Workforce Planning. This model illustrates the integration of various data inputs into AI-powered systems to predict skills gaps, optimize workforce allocation, and facilitate proactive succession planning

Proposed Architecture for AI-Driven Workforce Planning

Framework Overview

The architecture for AI-driven workforce planning is built around four essential components: **data inputs**, **predictive models**, **talent forecasting**, and **strategic decision-making**. Each component is designed to enhance workforce management by leveraging AI and predictive analytics to provide data-driven insights and recommendations.

Data Inputs: AI systems rely heavily on diverse data sources for workforce planning. These include internal sources, such as employee performance records, skills assessments, and learning management systems, as well as external data, like labor market trends, industry benchmarks, and competitor analysis. Collecting and integrating these data sources creates a comprehensive dataset that serves as the foundation for accurate predictions and strategic decision-making.

Predictive Models: Once the data is collected, AI-driven predictive models, such as machine learning algorithms, process and analyze the information. These models can be used to predict future workforce needs, identify potential skills shortages, and assess employee performance trends. Algorithms like decision trees, neural networks, and regression models can be employed depending on the complexity of the task. These predictive models continuously learn from new data, improving their forecasting accuracy over time.

Talent Forecasting: Talent forecasting involves using the predictive outputs from AI models to identify gaps in current talent, forecast future needs, and provide strategic insights into the workforce. This includes predicting potential turnover, future leadership needs, and identifying high-potential employees who could take on key roles in the future. AI can provide more granular insights, such as identifying skills that will become critical based on emerging trends in the industry.

Strategic Decision-Making: The final step in the architecture is translating the predictive insights into actionable decisions. AI provides recommendations for recruitment, workforce development, and succession planning, enabling organizations to be proactive rather than reactive. By using data-driven forecasts, companies can implement strategies such as upskilling programs, targeted hiring efforts, or leadership development initiatives. AI-generated insights also help in scenario planning, allowing organizations to simulate various workforce-related outcomes and prepare for future challenges.

The proposed architecture is depicted in **Figure 2**, which illustrates the flow of data through each component, from inputs to predictive analytics to decision-making.

Implementation Strategy

To effectively implement AI-driven workforce planning, organizations must take a structured approach. The following steps outline a recommended implementation strategy:

Data Collection and Integration: The first phase focuses on collecting and integrating relevant data from internal systems (HR systems, performance reviews, training records) and external sources (labor market data, industry benchmarks). Ensuring that the data is of high quality, standardized, and compatible with AI algorithms is essential for the success of the models.

Model Development and Testing: The second phase involves developing AI models to process the integrated data. Organizations should begin with pilot models that focus on one or two key areas, such as skills gap analysis or succession planning, and test these models on small datasets. This allows for fine-tuning of the models based on feedback and results.

Scalability and Integration: After the pilot phase, organizations should scale the AI models to integrate with broader workforce management systems. This could include embedding predictive analytics into existing HR platforms to allow for seamless, real-time insights. Ensuring that these systems can scale as the organization grows or as new data becomes available is critical.

Continuous Monitoring and Learning: AI systems are not static; they improve through continuous learning. Once implemented, AI models should be monitored, with regular updates based on new data and performance feedback. Organizations should establish a feedback loop, where predictions are evaluated against actual outcomes to improve model accuracy.

Stakeholder Training and Buy-In: For successful AI adoption, it's important to train HR professionals and organizational leaders on how to interpret and act upon AI-generated insights. This ensures that decision-makers understand how to use the predictive tools effectively. Gaining organizational buy-in is also crucial, as resistance to AI-driven systems can impede their effectiveness.

Implications for Workforce Planning

Strategic Implications

The integration of AI-driven predictive analytics into workforce planning has the potential to revolutionize

talent management processes across various industries. The ability to analyze large volumes of workforce-related data and generate actionable insights significantly improves strategic decision-making. By leveraging AI, organizations can move from reactive, short-term planning to a more proactive and future-focused approach. AI enables dynamic workforce allocation, skills gap analysis, and proactive succession planning, which ensures that organizations are prepared for both current and future challenges.

Enhanced Decision-Making: AI-driven models provide organizations with precise insights into workforce trends and talent needs. Predictive analytics ensures that organizations can make data-driven decisions about recruitment, talent development, and succession planning, helping them stay competitive in a rapidly evolving job market.

Improved Talent Retention: AI can also support employee retention by identifying high-potential employees early, recommending development programs, and ensuring that tasks are matched to skills and interests. This leads to higher employee satisfaction and engagement, ultimately reducing turnover rates.

Operational Efficiency: Dynamic workforce allocation driven by AI optimizes resource utilization by adjusting staffing levels in real-time. This reduces downtime, improves productivity, and ensures that workforce capacity is aligned with demand.

Agility and Responsiveness: By utilizing AI for continuous monitoring and forecasting, organizations can quickly respond to changes in the market or workforce conditions. This agility is essential for organizations to stay adaptable in an increasingly complex global business environment.

Challenges in AI Adoption

Despite the clear advantages, there are challenges in adopting AI for workforce planning. Organizations must be prepared to address the following barriers to ensure successful implementation:

Organizational Readiness: Not all organizations are technologically or culturally prepared to integrate AI-driven tools into their HR processes. A lack of digital infrastructure or resistance to change can hinder adoption.

Data Quality and Integration: The effectiveness of AI models depends heavily on the quality and integration of data sources. Many organizations may struggle with disparate, unstandardized, or incomplete data, which can reduce the accuracy of AI-driven predictions.

Skill Gaps in AI and Analytics: Implementing AI-driven workforce planning requires HR professionals to develop new competencies in data analysis and AI tools. Addressing this skills gap is critical to ensure the proper use and interpretation of AI-generated insights.

Ethical and Privacy Concerns: The increased reliance on employee data for AI-driven insights raises concerns about data privacy, bias in AI models, and ethical considerations around employee monitoring. Organizations must establish clear governance and ethical guidelines to mitigate these risks.

Conclusion

The integration of Artificial Intelligence (AI) and predictive analytics into workforce planning signifies a transformative shift in talent management practices. This paper has highlighted the limitations of traditional, reactive workforce planning methods and proposed a framework for incorporating AI-driven predictive analytics to enhance talent forecasting and management. By leveraging AI for skills gap analysis, dynamic workforce allocation, and proactive succession planning, organizations can transition to proactive, data-driven approaches that align closely with their strategic objectives. AI-driven predictive models enable organizations to accurately identify emerging skills gaps by analyzing internal workforce capabilities alongside external industry developments and market demands. This proactive identification allows for targeted hiring and employee development programs, effectively addressing potential talent shortages before they impact organizational performance. Additionally, AI facilitates dynamic workforce allocation by continuously monitoring metrics such as employee availability, performance, and skill levels. By dynamically assigning tasks based on real-time data, organizations can optimize resource utilization, enhance productivity, and improve employee satisfaction through better alignment of tasks with individual strengths and interests.

Proactive succession planning is another significant benefit of integrating AI into workforce planning. AI systems can identify high-potential employees and forecast their readiness for future leadership roles by analyzing performance data, learning patterns, and career trajectories. This enables organizations to prepare personalized development paths for these employees, ensuring a robust leadership pipeline and organizational stability during transitions. The proposed architecture for AI-driven workforce planning encompasses data inputs, predictive models, talent forecasting, and strategic decision-making. Systematically collecting and integrating diverse data sources, developing and refining predictive models, and translating insights into actionable strategies enhance workforce planning processes and support more informed decision-making.

While the strategic benefits are substantial—including enhanced decision-making, improved talent retention, operational efficiency, and greater agility—

organizations may face challenges in adopting AI-driven workforce planning. These challenges include organizational readiness, data quality and integration issues, skill gaps in AI and analytics among HR professionals, and ethical and privacy concerns related to employee data usage. Addressing these challenges requires a concerted effort to ensure technological and cultural preparedness, improve data management practices, develop relevant competencies within HR teams, and establish clear ethical guidelines.

Future research is essential to validate and refine the proposed AI models in workforce management. Empirical studies focusing on real-world applications, quantitative assessments of impact, development of ethical frameworks, and cross-industry analyses will contribute valuable insights and best practices.

Reference

[1] M. Nazreen, *Talent management & employee performance in banking sector*. Blue Star Publisher, 2023.

[2] B. S. M. C. Borba *et al.*, "A review on optimization methods for workforce planning in electrical distribution utilities," *Comput. Ind. Eng.*, vol. 135, pp. 286–298, Sep. 2019.

[3] S. K. Parasa and Consultant, 14596 Farming Rd, Frisco, TX, 75035, USA, "Impact of AI on strategic workforce planning," *J Arti Inte & Cloud Comp*, vol. 2, no. 1, pp. 1–3, Mar. 2023.

[4] E. Farrow, "Determining the human to AI workforce ratio – Exploring future organisational scenarios and the implications for anticipatory workforce planning," *Technol. Soc.*, vol. 68, no. 101879, p. 101879, Feb. 2022.

[5] N. Rischmeyer, "Machine learning as key technology of AI: Automated workforce planning," in *Digitalization in Healthcare*, Cham: Springer International Publishing, 2021, pp. 235–244.

[6] M. Roy, "AI-powered Workforce Management and its future in India," in *Artificial Intelligence*, IntechOpen, 2021.

[7] G. Shen, "AI-enabled talent training for the cross-cultural news communication talent," *Technol. Forecast. Soc. Change*, vol. 185, no. 122031, p. 122031, Dec. 2022.

[8] J. M. Montero Guerra, I. Danvila-del-Valle, and M. Méndez-Suárez, "The impact of digital transformation on talent management," *Technol. Forecast. Soc. Change*, vol. 188, no. 122291, p. 122291, Mar. 2023.

[9] O. P.-. Olaniyan, O. A. Elufioye, F. C. Okonkwo, C. A. Udeh, T. F. Eleogu, and F. O. Olatoye, "Ai-driven Talent Analytics for strategic hr decision-making in the United States of America: A review," *Int. j. manag. entrep. res*, vol. 4, no. 12, pp. 607–622, Dec. 2023.

[10] A. Safarishahrbijari, "Workforce forecasting models: A systematic review," *J. Forecast.*, vol. 37, no. 7, pp. 739–753, Nov. 2018.

[11] S. J. Thakur, "Jean Paul Isson and Jesse S. Harriott. People analytics in the era of big data: Changing the way you attract, acquire, develop, and retain talent. Hoboken, NJ: Wiley, 2016, 416 pages, $49.95, hardcover," *Pers. Psychol.*, vol. 70, no. 4, pp. 929–930, Dec. 2017.

[12] H. Xu, Z. Yu, J. Yang, H. Xiong, and H. Zhu, "Dynamic talent flow analysis with deep sequence prediction modeling," *IEEE Trans. Knowl. Data Eng.*, vol. 31, no. 10, pp. 1926–1939, Oct. 2019.

[13] R. Jindal and M. Dutta Borah, "Predictive analytics in a higher education context," *IT Prof.*, vol. 17, no. 4, pp. 24–33, Jul. 2015.

[14] F. Piccialli, F. Giampaolo, E. Prezioso, D. Camacho, and G. Acampora, "Artificial intelligence and healthcare: Forecasting of medical bookings through multi-source time-series fusion," *Inf. Fusion*, vol. 74, pp. 1–16, Oct. 2021.

[15] K. R. Varshney, V. Chenthamarakshan, S. W. Fancher, J. Wang, D. Fang, and A. Mojsilović, "Predicting employee expertise for talent management in the enterprise," in *Proceedings of the 20th ACM SIGKDD international conference on Knowledge discovery and data mining*, New York New York USA, 2014.

[16] R. Kumar Kaushal, K. K. B. Giri, H. S. Kumar, K. Raina, D. Choudhury, and K. Naikade, "AI-based approach for retail sale forecasting," in *2023 International Conference on Self Sustainable Artificial Intelligence Systems (ICSSAS)*, Erode, India, 2023, vol. 4, pp. 111–116.

[17] A. H. Fomude, C. Yang, G. K. Agordzo, A. V. Serwah, and L. Abangbila, "AI model to improve HR decision-making with machine learning predictions algorithm," in *2023 25th International Conference on Advanced Communication Technology (ICACT)*, Pyeongchang, Korea, Republic of, 2023.

[18] V. Chaturvedi, "Talent analytics as an indispensable tool and an emerging facet of HR

for organization building," *FIIB Bus. Rev.*, vol. 5, no. 3, pp. 13–20, Jul. 2016.
[19] E. G. Rincon-Flores, E. Lopez-Camacho, J. Mena, and O. O. Lopez, "Predicting academic performance with Artificial Intelligence (AI), a new tool for teachers and students," in *2020 IEEE Global Engineering Education Conference (EDUCON)*, Porto, Portugal, 2020.