

# Artificial Intelligence (AI) - Powered Workforce Planning: The Future of Strategic Human Resource Management

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**Abstract** — Artificial Intelligence (AI) is revolutionizing various industries, Human Resources being one of them. Many organisations have started integrating AI solutions in their workforce strategies and are seeing impressive results. AI can be implemented at any and every stage of workforce lifecycle, beginning from workforce planning to talent management, employee retention, employee satisfaction, general employee management and onboarding/offboarding. AI can be used to build frameworks, strategies and guide autonomous decision making based on inputs from various disparate sources – including internal workforce data, historical data, external market position, trends and evolving technology. This document focuses on the need for implementing AI solutions in the workforce planning module and its benefits. Workforce being the key strength of any organisation, it is essential to have the ‘right resources with the right skill-set at the right time’[1]. The document briefly describes the need for strategic and efficacious workforce planning which concurs with an organisation’s success. The document describes in detail the challenges faced by a traditional workforce planning model and why an AI solution would be successful. Along with the virtues, the article will also describe the challenges and considerations that arise with using AI. In conclusion, with mindful implementation of AI, HR professionals can highly benefit and be a key contributor in setting up an organisation for success.

**Keywords:** Artificial Intelligence (AI), Strategic Human Resource Management

## I. INTRODUCTION

### A. Definition of workforce planning

According to NIH (National Institutes of Health), workforce planning is defined as the process of analysing, forecasting, and planning workforce supply and demand, assessing gaps, and determining target talent management interventions to ensure that an organisation has the right people - with the right skills in the right places at the right time - to fulfil its mandate and strategic objectives.[1]. The workforce is a company’s most powerful asset, making it essential to strategically plan resources to align with changing market demands. Bringing in the right talent with the appropriate skills and finding innovative ways to retain top talent are key factors in driving a company’s success.

### B. Why is workforce planning important

Workforce planning is essential to keeping your business appropriately staffed, drive constant innovation and develop fresh perspectives. Without workforce planning, businesses can easily become overstaffed with excessive payroll expenses or understaffed and unable to meet customer or client needs. As Forbes states, "Without proper workforce planning, companies risk not having the right talent in place when they need it, which can negatively impact productivity, customer service, and overall business

performance"[2]. Workforce planning can help organisations optimise their workforce costs, manage logistics and office infrastructure costs and maximise productivity. According to a study by the Society for Human Resource Management (SHRM), "Organisations that engage in workforce planning are better able to avoid talent shortages or surpluses that can impede their ability to achieve business goals" [3].

## II. THE BUSINESS CASE FOR AI-DRIVEN WORKFORCE PLANNING

The talent requirement space is ever evolving due to the technological advancement of today’s world. The traditional methodologies of workforce planning, that rely heavily on manual processes and historical data, is not suitable to the ever-changing landscape.

Following are a few reasons why the traditional methods are not the most effective -

### A. Limited Scalability

Scaling manual processes for an organisation that is rapidly growing in size and scope is difficult, and inability to do so may result in disruptions in the operations. It is necessary to have efficient technologies and framework to handle the growing needs of an organisation without putting a strain on its existing resources.

### B. Lack of real time insights

Traditional workforce planning relies on data collected via manual processes or tools that provide a snapshot in time, rather than the dynamic real time data. Hence the decision for organisations are made based on the outdated data insights, leading to challenges like inefficient resource allocation, inaccurate forecasting and inability to adapt to changing circumstances. These may include not having the right resources when an opportunity arises, missed deadlines or having too many resources for a specific skill set without having enough opportunities to engage them

### C. Skill Obsolescence

A key obstacle that an organisation can face is, skills and technologies becoming obsolete in future. An organisation may invest heavily on a particular skill-set, in terms of acquiring employee resources but might face a challenge in the future due to the technology diminishing in value. The ever-evolving landscape of skills and technologies, makes it difficult for organisations to strategically invest and forecast skills that would be in demand [4].

### D. Reactive Approach

The traditional approach to workforce planning includes being reactive as compared to proactive. Reactive indicates responding to changes after they occur rather than proactively forecasting or anticipating them. A reactive HR strategy allows decisions to be made quickly, but these decisions may be inefficient as they are based on incomplete information [5] In workforce planning this reactive approach can lead to

delays in addressing workforce gaps or excesses, resulting in inefficiencies and potential disruptions to operations.

#### E. Time-consuming Process

Manual workforce planning processes can be time-consuming and labour-intensive, requiring significant effort to collect, analyse, and consolidate data from disparate sources. This can cause delays in decision-making and inefficient use of resources.

#### F. Subjective Decision Making

Traditional methods often rely heavily on subjective inputs and assumptions from organisation managers or HR professionals, which can introduce bias and inconsistencies in workforce planning decisions [6].

#### G. Siloed Approach

Workforce planning is often conducted internally within the HR department, with little to no visibility to all the other existing business groups or verticals. This can lead to disconnects between workforce planning and broader business strategies resulting in disruptions, missed opportunities and misalignment between workforce capabilities and organisational goals [7].

### III. HOW AI CAN HELP IN WORKFORCE PLANNING

When workforce planning is integrated with an artificial intelligence (AI) solution it offers an agile, robust and predictive approach, applying the strengths of advanced analytics, machine learning algorithms and big data. These solutions can analyse vast amounts of internal and external data, including employee performance metrics, skills inventories, market trends, and industry forecasts, to provide valuable insights and recommendations [8].

#### A. Predicting Future Workforce Needs

AI can help in analysing and integrating the historical data, with current workforce skill set, market trends to predict future workforce needs. This will help businesses in identifying what skills will be required, how many employees will be needed, what are the existing gaps and finally help in eliminating overstaffing or understaffing [9]. Industry trends, consumer preferences, and technological advancements can significantly impact the skills and expertise required within an organisation [9]. AI can constantly supervise market trends, industry movements and changes, various external data sources to identify emerging skills gaps and redundancies, helping companies to proactively forecast and adapt their workforce strategies.

#### B. Improving Employee Experience

AI can help in enhancing talent retention and improving overall employee experience. Articulating the data gathered from employee feedback, opinion surveys, performance reviews and check-ins; AI can build a framework by integrating this information to identify key drivers that contribute to employee satisfaction or attrition. In turn, it will enable the organization wide strategies that promote better employee experience thereby reducing attrition.

#### C. Enhancing Employee Retention and cost optimization

Retaining top talent to minimize the cost of employee turnover is a challenge faced by most organisations. [10]. Knowledge and skill set is very unique per employee, built over their years of experience, and when an employee leaves, they take this invaluable experience with them. Replacing these resources takes time and incurs substantial costs associated with recruitment and training. AI can help in determining the factors responsible for employees leaving, by identifying triggers due to quality of work environment, career development opportunities, work life balance, compensation with respect to market rates and overall employee satisfaction. This information can help build strategies to promote a more positive work environment to reduce turnover.

#### D. Succession Planning with AI

AI algorithms can identify high impact individuals based on their performance, work ethics and business acumen. Succession planning with AI is the process of using artificial intelligence technologies and techniques to facilitate and enhance the process of identifying, developing, and preparing employees to fill critical roles and leadership positions within an organisation. Predictive analytics in AI, can help in offering these individuals the right opportunities at right time for career progression along with resources for career development [11].

#### E. Compensation Management Using AI

A crucial part of workforce planning is incentives, benefits and compensation offered to new or existing employees. To attract and retain the best talent, it is essential for organisations to offer fair and competitive compensation packages. Artificial Intelligence can play a pivotal role in establishing fairness in compensation evaluation. AI can be used to analyse trends in labour markets, gather historical and current data, identify skills that are high in demand, take into consideration the education level and overall employee's work experience to build models that can advise on employee compensation packages. Using AI these models can be adjusted further to take into consideration company performance and employee performance along with any global events that can affect the market [12].

#### F. Role of AI in Talent Sourcing and Matching

Traditionally, talent sourcing and matching have been time-consuming and cumbersome tasks. The process often involves scanning through numerous resumes to find the right candidate for an open position. While applicant tracking systems (ATS) have improved efficiency, they still lack the precision and flexibility needed to identify the best talent. [13]

AI can significantly enhance talent matching by identifying potential candidates for open positions across the entire candidate pool for an organisation, even if they haven't applied for a specific role. AI algorithms can scan resumes and match candidates to multiple roles based on their skills, experience, and qualifications.

Additionally, AI can assign a score to each candidate profile for a particular job listing, based on how well their skill set aligns with the job role. Hiring managers can then

use these scores to prioritise candidates who are or who can be the best fit for the role.

### G. Diversity and Inclusion in Workforce Planning

The integration of diversity and inclusion (D&I) principles in AI has the potential to mitigate the challenges posed by the lack of fairness and bias [14]. Artificial intelligence can be used to analyse existing diversity metrics for every vertical/geography in an organisation and also advise on strategies to improve diversity by ensuring that recruitment and retention efforts align with organisational goals around inclusion.

### H. AI-Assisted Job Posting Creation

AI can assist HR and hiring managers in streamlining job postings. By inputting the required and preferred qualifications, skills, role description, and expectations, AI ensures the job posting follows the correct format and template. It identifies any missing information, ensures all necessary requirements are included, and safeguards against exposing private or confidential details in the job description [15].

## IV. CHALLENGES AND CONSIDERATIONS WHILE IMPLEMENTING AI FOR WORKFORCE PLANNING

Though there are multiple benefits of implementing artificial intelligence solutions in workforce planning, an organisation must be mindful of the following challenges and considerations

### A. Data Quality and Availability

AI models rely heavily on accurate and comprehensive data. Having adequate historical data is also necessary. Data which is flawed, incomplete or incorrect can lead to incorrect predictions.

### B. Bias in historical data

As historical data is a key input in training AI models, it is important that the data is audited and cleaned to avoid the AI model picking up on perpetuity biases and affecting recruitment or employee retention.

### C. Ethical Considerations

It is necessary to consider potential ethical concerns while using AI, especially regarding transparency and accountability. Ethical standards must be maintained to ensure AI models are transparent, decisions made by AI models can be explained and decision-making by AI is not autonomous but includes human oversight. The acquisition and utilization of employee data by AI systems raises privacy concerns, which is why it is necessary to conform to legislation governing data protection [16]. It is necessary to implement strong data protection protocols, particularly when handling sensitive employee information.

## V. THE FUTURE OF WORKFORCE PLANNING

As technologies evolve, artificial intelligence will increasingly impact all aspects of workforce analytics, including planning, management, and decision-making. HR professionals will be able to develop more streamlined and equitable strategies, supporting the workforce across the

entire employee lifecycle—from onboarding and retention to satisfaction, promotions, and offboarding. In conclusion, HR professionals have an opportunity to utilise AI to enhance employee experiences and drive overall business success.

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