



# Success Factors in Adopting AI in Human Resource Management in UAE Firms: Neutrosophic Analysis

Abderrahmane Bettayeb<sup>1,\*</sup>, Muhammad Eid Balbaa<sup>2</sup>

<sup>1</sup> American University in the Emirates, UAE

<sup>2</sup> Tashkent State University of Economics, Uzbekistan

Emails: [Abdul.rahman@ae.ae](mailto:Abdul.rahman@ae.ae); [m.balbaa@tsue.uz](mailto:m.balbaa@tsue.uz)

## Abstract

The revolutionary breakthroughs of artificial intelligence (AI) are swiftly and extensively invading many domains of human activity, serving as the central driving force of the next wave of informatization progress and industrial revolution. Although artificial intelligence (AI) technology and apps have been extensively explored, and variables affecting AI acceptance have been found, the influence of success factors on the acceptance of AI is still unclear. Thus, this study presents a methodology to investigate the effects of gadgets, organizations, and ecosystems on the acceptance of AI in Human Resource Management (HRM) in the UAE. This study used a neutrosophic set (NS) to overcome the vague information. The NS is integrated with the AHP method to rank the success factors in adopting AI in HRM in UAE. The AHP method is used to give importance to these factors. This study used 12 factors in UAE to rank it by the N-AHP.

**Keywords:** Human Resource Management; Neutrosophic Set; AHP; AI.

## 1. Introduction

In the field of human resource management (HRM), human resource analytics (HRA) is becoming more popular. Data-driven choices in HRM, including choosing employees, staff engagement and sentiment analysis, and decline forecasting, have been sped up by the development of innovative technologies like AI, neural network methods, data mining, ML, and the IoT. The potential for data-driven workforce management to advance has also been greatly aided by these innovations. That's why so many businesses are pouring money on analytics infrastructure like software and human resources. Nevertheless, HRA's uptake has been slower than anticipated[1]–[3].

Since HRA permits the systematic examination of complicated data, it may help tackle several difficulties faced by organizations. Similar to how an empirical method aids in marketing's ability to make educated choices about their client's consuming method and the banking ability to make accurate financial forecasts, the adoption of a technological method for HR decision-making has the ability to enhance choices about people. Integrating HRA with appropriate items, offerings, and business-level KPIs is essential for data-driven decision-making[4]–[6].

In the last decade, the proliferation of big data and the development of the IoT have made AI-enabled technologies a primary priority for corporations. Organizations that have adopted a data-centric and digital culture have found that AI is the primary driver of novel business models, process alteration, disruption, and the attainment of a competitive edge[7], [8]. According to the available literature, there has been a 70% growth in the use of AI in this sector over the

last five years. According to projections made by International Data Corporation, worldwide investment in artificial intelligence would soar from \$85.3 billion in 2021 to more than \$204 billion in 2025, a CAGR of 24.5%. The World Economic Forum estimates that by 2022, the widespread use of artificial intelligence would render 75 million jobs obsolete while simultaneously generating 133 million new ones[9]–[11].

Similar to the internet and the world wide web, which gave rise to e-commerce, consumer-centric practices, the collaborative economy, and the gig economy, AI is having a profound effect on companies and society. Workforce demographics, the nature and significance of jobs, the two parties, connection, the connection among technology and human resources, client experience, and the competitive edge within an ever-changing market surrounding will all be profoundly altered by the advent of AI-based systems in business companies[12]–[14]. There are success factors in adopting AI in HRM, so this problem is a MADM.

Multiple attribute decision-making (MADM) and other decision-support technologies are increasingly recognized as significant business analytic methodologies that may assist major firms in their pursuit of delivering long-term profitability by fostering agility in their manufacturing processes. Methods like the analytic hierarchy process (AHP) may be found in the MADM literature because of their ease of use and adaptability. Because of its accessibility and potential for hybridization with other MADM approaches, the AHP has become a popular tool[15]–[17].

The AHP method has been used to evaluate complex multi-attribute options by soliciting feedback from a panel of decision-makers (DMs). One of the advantages of the AHP over competing MADM techniques is that it allows for the consideration of subjective elements. Fuzzy AHP (F-AHP) is an extension of AHP that uses fuzzy sets (FS) to account for uncertainty, and it has been the subject of several investigations. Although theories concerning uncertainty like neutrosophic sets (NS) may improve decision-making in an unclear setting, few research efforts have focused on extending AHP in tandem with these other approaches[18]–[20].

Properties of the membership functions of indeterminacy may be separately quantified using the NS concept. The knowledge concerning rejection may be expressed in the NS concept, which the FS concept lacks. The reasoning literature is increasingly incorporating NS theory. In, Smarandache proposed the NS theory and provided extensive examples to illustrate the differences between the NS and intuitionistic fuzzy set (IFS) concepts[21]–[23].

## **2. Literature Review**

Modern-day social trends and information technology are becoming essential in any environment. Most organizations are being forced into change implementation, updating, and recreating their systems and structures. For HR, there is an increasing backdrop towards adopting and using artificial intelligence (AI) technologies. Human resources are responsible for investigating and summarizing the tasks to be completed by an organization. HR also has the prudence associated with the future development of patterns promoting strategic planning. [25]. [29]. Therefore, HR can utilize AI efficiently to improve their strategic planning efficiency. Using AI provides evidence of HR expectations, especially in planning, promoting task sensibility, and promoting innovation for the company [27]. In UAE, companies such as Celadon, 10Pearls, Prolitus, and Napollo Software Design L.L.C are using AI in improving their HR practices. [4]

Research conducted by Aydın & Turan determined that Artificial intelligence theory illustrates the ability of computers to perform functions normally accomplished by human beings. For HR, artificial intelligence theory illustrates the ability to promote strategic planning through efficient decision-making [24]. Napollo Software Design L.L.C in the UAE has used AI to master data differently from what a human being can do hence impacting their planning by eliminating the complexity of the work content [7]. HR can achieve efficient planning from accurate precision of employee demands due to the available information. AI can solve complex problems and eliminate complex processes within HR, facilitating efficient and better decision-making [33]. At the same time, it can facilitate compatibility procedures with the capability to make precise matching, hence helping HR reduce the time that would otherwise e spent in manual searching. This makes it easy for HR to shift their planning using different monitoring programs and systems [29]. It is easy to study the functional units of an organization to determine whether they are performing up to stakeholder expectations.

AI ensures that HR can understand the important attributes of the organization, the optimization of data, and the development of significant patterns of the entire industry can be used to forecast future performance, among others. [28]. All these aspects are associated with its ability to achieve big data analysis. When it comes to understanding the annual size of the farm, AI is used to simplify data analytics [31]. 10Pearls in UAE uses AI automation and enabling preparation, visualization, predictive modeling, and other analytical tasks facilitating the ability of HR to predict the annual size of the farm. As a result, this information is used to make decisions towards recruiting more employees or laying some employees. These are tasks that would otherwise be labor-intensive without using AI. The predictive analytics capabilities of AI are also important in predicting farm size [7]. The business applications offered by AI can easily utilize different algorithms and modeling to turn the available data into actionable insights for the company. This can determine how the company can optimize different functions and business processes associated with the firm size. Predictive analytics can facilitate forecasting unknown events for the farm through statistical data modeling. It can easily examine the current firm size, historical data, and current events, among others. [4]

HR are conducting recruitment and selection; their objective is not just to look at the professional qualities. [31]. They consider communication, words used, individual actions, and appearance, among others. All these elements are known to objectively and accurately influence the interview process and the section. Using AI can make the entire process easier and more efficient for the company [32]. For instance, using AI can show the dynamic aspect of candidates' psychology, behavior, and actions, among others. firms such as Prolitus use AI to help the HR management to judge the candidates directly and objectively based on several algorithms and intelligent learning tools. Investigating their quality can help find the best candidates suitable for the organization. Aydın & Turan argue that AI is more precise and can avoid prejudice, discrimination, and emotional constructs. [24]. In this manner, it offers HR a relative advantage by creating techniques to develop significant qualities important in selecting candidates. Some qualities developed in such cases include self-reflection, the ability to respond to complex situations, resolving problems, and decision-making skills [27]. Generally, AI makes information extraction for HR easy, improving the resume scanning process.

### **3. Planned training and development process:**

Several AI-enabled tools are designed for employee training and development. [26]. HR can easily use such tools to promote job satisfaction and increase performance. HR is responsible for devising career development plans to improve the company output and reduce absenteeism [32]. AI can also be used in the development of individual employee maps. Such maps can identify employee skills and knowledge, helping HR understand where every employee is lacking. Therefore, they can use software like mobile coaching to help employees understand their requirements. They can implement customized training and programs to help those employees work efficiently [27]. The work requirements for each employee are evaluated with the use of AI software hence guiding them into their future career paths and development. The HR can also easily predict the training output among employees using AI. Based on reactive AI theory, AI is programmed to offer predictive output based on the input received [26]. Employees are always likely to respond to identical situations after they have received training. This illustrates the managerial support capabilities where AI ensures that business managers perform predictive analytics, job optimization, and process automation.

Based on research conducted by Tuffaha & Perello-Marin, Sometimes, HR suffers due to high costs and investments needed to facilitate employee development within an organization. [7]. This is especially so when HR is invested in understanding the employees' behavioral and psychological judgments. However, AI has developed capabilities that can easily determine employee psychology and predict different behaviors within the work environment [33]. AI allows an individual to explore different appropriate models to facilitate training through information analysis. AI can also be used in balancing and observing the training situation of the staff members any time the organization conducts the training [28]. Employees can also be offered specific AI algorithms that combine private customized trainers. These are specific to the training needs of the individual employees [28]. This can help HR save costs while enhancing the training effects. In such instances, AI can help HR manage the comparative pressure of determining the training output to the employee as related to the resources being invested. AI uses big data, promoting better predictability and performance [27]. All these are achieved through experience and data analysis.

AI could offer cognitive insights helping HR decide on areas to focus on in promoting employee development. [32]. Based on the limited memory AI, learning, and building from past experiences, observational data and historical facts is possible. Using observational data promotes combining pre-programmed information and historical facts to predict and perform other complex tasks [30]. HR can use data from past training experiences to automatically observe the current employees' training performance. This can help identify errors with the training programs and make any required adjustments. Understanding the components of training by comparing them helps improve general efficiency. In this manner, AI helps HR in their technical capacity in handling routine tasks that can otherwise consume a lot of time and resources. For instance, it is easy to use AI algorithms to explore hidden trends which are otherwise difficult to identify. [4]

#### **4. AI in HR tactical performance appraisal:**

AI promotes a relative advantage for HR in achieving tactical performance appraisal. [30]. It enables HR to develop significant qualities related to the work setting, including self-reflection and the ability to solve complex situations through decision-making. It can accurately and objectively record data used to mitigate the issue of daily performance errors caused by the psychological behaviors of employees [31]. AI can use the enterprise development status data and industry performance data to develop a fair and objective performance appraisal system hence formulating performance standards. Via data analysis, AI can be fitted through data analysis to avoid cases of coagulation of the performance of the entire organization [7]. This makes the process more comfortable for the employees, more beneficial and enhances the employees' enthusiasm towards performance. It also helps in mitigating any irrelevant costs within the firm. Via machine learning and algorithms, AI facilitates the planning of repetitive work in HR, including leave procedures, payments, processing, and contract disputes, among others [27]. It can ease the process of expiry affiliation, especially when contracts end or when a need arises to terminate a contract due to employee behavior or other reasons.

Government institutions can facilitate their involvement in different HR operations within a firm by using AI. [26]. For instance, there would be reported cases of misconduct in HR by the employees, facilitating government involvement. Therefore, the government can use AI to monitor any unusual work or points of entry within the organization. In this manner, it is easy to identify potential data vulnerabilities and implement better access restrictions to solve the issue at hand [31]. HR can involve government institutions directly with AI, enabling both sides to develop justifiable policies, regulations, and employee labor associations. AI can facilitate the implementation of labor associations based on fair and objective conditions. AI contains a lot of positive recommendations for government involvement in HR operations [29]. The HR can also use such recommendations to promote better and more efficient vendor partnerships. AI can help analyze the available data to predict vendor behaviors, enabling HR to make proactive decisions and mitigate future risks [28]. HR can use AI to streamline vendor management processes, minimizing possible errors and increasing operational efficiency.

AI promotes organizational attributes that encourage important functional areas. HR can use AI to improve the decision-making intensity for specific tasks. It can also offer cognitive insights regarding changes in employee behaviors. [25]. OECD wrote a report that indicated that AI-improved HR practices are important in helping HR to complete various tasks irrespective of people intervention. [29]. AI can also be embedded in an organization to help predict important customer purchasing behaviors. In this manner, it is easy to encourage the organization to implement customized advertisements to promote products and services. It is easy to predict market uncertainty through probabilistic reasoning [33]. The company can combine probability theory with logic hence handling uncertainty efficiently. AI can generate targeting messages specifically meant for diversified groups of individuals, maximizing the effort put in place to promote better advertisements. It can be used to assess and link job characteristics to employee satisfaction. HR can predict the uncertainty of the future labor market [31]. As a result, they can implement better techniques and decision-making processes to help maintain the workforce, hence avoiding the need to deal with uncertainties. HR determines the kind of workforce that will be efficient for the firm. It is easy to predict which skills will be in demand in the future [28]. As a result, HR can develop techniques to help their workforce acquire those skills. In the process, it can eliminate the process of being forced to hire new staff into the future who possess the needed skills.

### 5. Neutrosophic Analysis

In this method, the AHP method under a neutrosophic set is used to analyze the success factors in adopting AI in HRM. The N-AHP method computes the weights of factors, then ranks them. This section is split into two parts, first part is the equation of neutrosophic sets and part two presents the steps of the N-AHP method[34]–[38]. Figure 1 shows the phases of the proposed method.



Figure 1: The stages of N-AHP.

The neutrosophic set operations are disused [39]as:

$$NS = \langle (x_1, x_2, x_3, x_4; T, I, F) \rangle$$

$$T(y) = \begin{cases} \frac{(y-x_1)w_{x_1}}{(x_2-x_1)} & x_1 \leq y \leq x_2 \\ w_{x_1} & x_2 \leq y \leq x_3 \\ \frac{(x_4-y)w_{x_1}}{(x_4-x_3)} & x_3 \leq y \leq x_4 \\ 0 & otherwise \end{cases} \tag{1}$$

$$I(y) = \begin{cases} \frac{(x_2-y+u_{x_1}(y-x_1))}{(x_2-x_1)} & x_1 \leq y \leq x_2 \\ w_{x_1} & x_2 \leq y \leq x_3 \\ \frac{(y-x_3+u_{x_1}(x_4-y))}{(x_4-x_3)} & x_3 \leq y \leq x_4 \\ 1 & otherwise \end{cases} \tag{2}$$

$$F(y) = \begin{cases} \frac{(x_2-y+p_{x_1}(y-x_1))}{(x_2-x_1)} & x_1 \leq y \leq x_2 \\ p_{x_1} & x_2 \leq y \leq x_3 \\ \frac{(y-x_3+p_{x_1}(x_4-y))}{(x_4-x_3)} & x_3 \leq y \leq x_4 \\ 1 & otherwise \end{cases} \tag{3}$$

$$\begin{cases} x_1 = \langle x_{11}, x_{12}, x_{13}, x_{14}; w_{x_1}, u_{x_1}, p_{x_1} \rangle \\ x_2 = \langle x_{21}, x_{22}, x_{23}, x_{24}; w_{x_2}, u_{x_2}, p_{x_2} \rangle \end{cases} \quad (4)$$

$$x_1 + x_2 = \left\langle \begin{pmatrix} x_{11} + x_{21}, \\ x_{12} + x_{22}, \\ x_{13} + \\ x_{23}, x_{14} + x_{24} \end{pmatrix}; w_{x_1} + w_{x_2}, u_{x_1} + u_{x_2}, p_{x_1} + p_{x_2} \right\rangle \quad (5)$$

#### A. Build the decision tree

This step builds the hierarchy tree between the goal and factors of HRM to make the problem easy.

#### B. Evaluation of the success factors

These steps evaluate the components in the pairwise comparison matrix between success factors in HRM. The experts use the neutrosophic scale as in [39] to rate the success factors. The below equation is used to build the pairwise comparison matrix between success factors.

$$X_d = [x_{ij_d}] = \begin{bmatrix} 1 & \cdots & x_{1nd} \\ \vdots & \ddots & \vdots \\ 1/x_{1nd} & \cdots & 1 \end{bmatrix} \quad (6)$$

Where  $k$  refers to the number of experts and decision-makers and  $j = 1, 2, \dots, n$  success factors

#### C. Determine the CR

This step computes the consistency ratio (CR). The CR can be defined as

$$CR = \frac{\lambda_{max} - n}{n - 1} \frac{1}{RI} \quad (7)$$

#### D. Obtain the neutrosophic numbers

This step is used to replace the terms by experts with neutrosophic numbers.

#### E. Combine the pairwise comparison matrix

This step is used to average the pairwise comparison matrix

#### F. Compute the value of neutrosophic synthetic as:

$$T_i = \sum_{j=1}^n x_{ij} \left[ \sum_{i=1}^n \sum_{j=1}^n x_{ij} \right]^{-1} \quad (8)$$

#### G. Obtain the rank of success factors

This step is used to determine the importance of success factors as:

$$E_i = \frac{T_i}{\sum_{i=1}^n T_i} \quad (9)$$

### 6. Case Study

This study applied the neutrosophic AHP method in HRM in UAE to analyze the success factors of adopting AI. This study collected 12 factors from previous studies as shown in Figure 2. This section presented the application of the neutrosophic AHP method. The experts and decision makers evaluate the 12 success factors in UAE by neutrosophic

scale to build the pairwise comparison between success factors. Then replace the opinions of experts with the neutrosophic number as shown in Table 1.

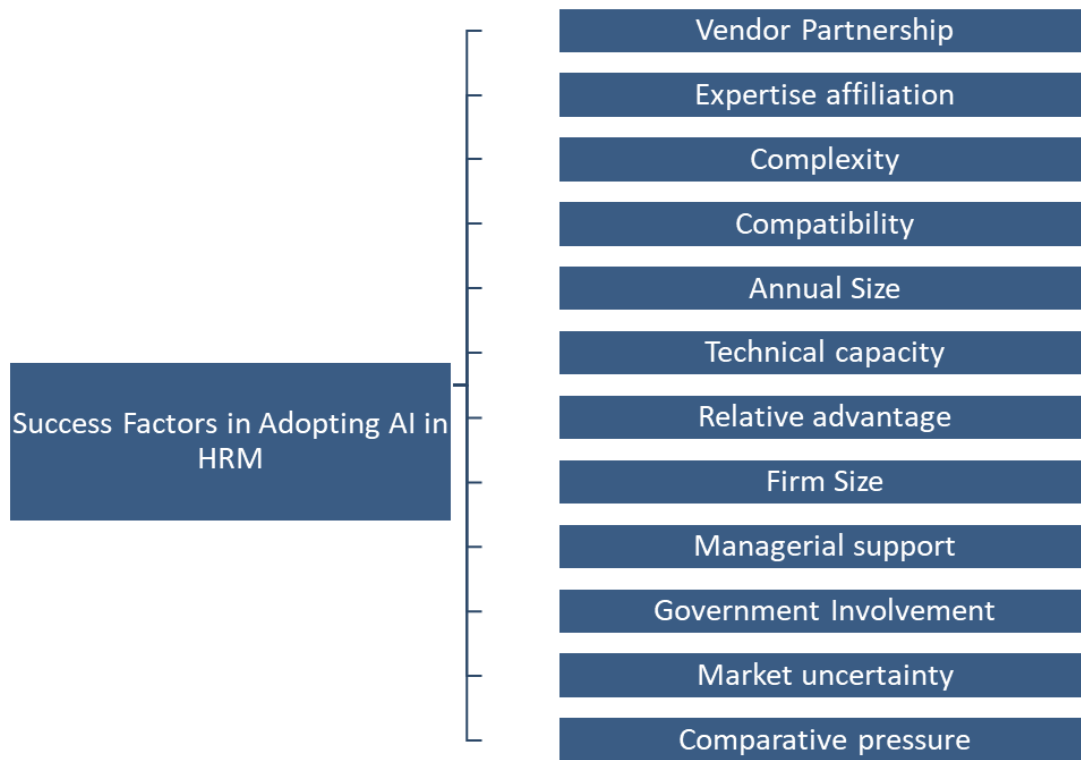


Figure 2: List of success factors in adopting AI in HRM.

Table 1: The neutrosophic numbers in pairwise comparison

	SFAI <sub>1</sub>	SFAI <sub>2</sub>	SFAI <sub>3</sub>	SFAI <sub>4</sub>	SFAI <sub>5</sub>	SFAI <sub>6</sub>	SFAI <sub>7</sub>	SFAI <sub>8</sub>	SFAI <sub>9</sub>	SFAI <sub>10</sub>	SFAI <sub>11</sub>	SFAI <sub>12</sub>
SFAI <sub>1</sub>	1	<(9,9,9,9);1,0,0>	<(7,8,9,9);0,85,0,1>	<(6,7,8,9);0,9,0,1>	<(5,6,7,8);0,7,0,2>	A	<(7,8,9,9);0,85,0,15>	<(6,7,8,9);0,9,0,1>	<(5,6,7,8);0,7,0,2>	<(4,5,6,7);0,8,0,1>	<(3,4,5,6);0,6,0,3>	<(2,3,6,7);0,5,0,7>
SFAI <sub>2</sub>		1	<(9,9,9,9);1,0,0>	<(6,7,8,9);0,9,0,1>	<(4,5,6,7);0,8,0,1>	<(4,5,6,7);0,8,0,15>	<(3,4,5,6);0,6,0,3>	<(2,3,6,7);0,3,0,75>	<(2,3,6,7);0,3,0,7>	<(2,3,6,7);0,3,0,7>	<(9,9,9,9);1,0,0>	<(2,3,6,7);0,3,0,7>
SFAI <sub>3</sub>			1	<(9,9,9,9);1,0,0>	<(3,4,5,6);0,6,0,3>	<(2,3,6,7);0,3,0,75>	<(3,4,5,6);0,6,0,3>	<(2,3,6,7);0,3,0,75>	<(3,4,5,6);0,6,0,3>	<(3,4,5,6);0,6,0,3>	<(7,8,9,9);0,85,0,15>	<(9,9,9,9);1,0,0>

S F A I <sub>4</sub>	1/<(6, 7,8,9); 0.9,0. 1,0,1>	1/<(6, 7,8,9) ;0.9,0. 1,0,1>	1/<(9, 9,9,9); 1,0,0>	1	<(7,8, 9,9);0 .85,0. 1,0,15 >	<(7,8, 9,9);0. 85,0.1 .9,0,1, ,0,15>	<(6,7, 8,9);0 .9,0,1, ,0,1>	<(5,6, 7,8);0. 7,0,25 ,0,3>	<(2,3, 6,7);0 .3,0,7 5,0,7>	<(4,5, 6,7);0 .8,0,1 5,0,2>	<(6,7, 8,9);0 .9,0,1, 0,1>	<(7,8, 9,9);0 .85,0. 1,0,15 >
S F A I <sub>5</sub>	1/<(5, 6,7,8); 0.7,0. 25,0,3 >	1/<(4, 5,6,7) ;0.8,0. 15,0,2 >	1/<(3, 4,5,6); 0.6,0. 35,0,4 >	1/<(7, 8,9,9); 0.85,0 .1,0,1 5>	1	<(9,9, 9,9);1, 0,0>	<(2,3, 6,7);0 .3,0,7 5,0,7>	<(2,3, 6,7);0. 3,0,75 ,0,7>	<(9,9, 9,9);1 .9,0,1 ,0,0>	<(4,5, 6,7);0 .8,0,1 5,0,2>	<(5,6, 7,8);0 .7,0,2 5,0,3>	<(6,7, 8,9);0 .9,0,1, 0,1>
S F A I <sub>6</sub>	1/<(9, 9,9,9); 1,0,0>	1/<(4, 5,6,7) ;0.8,0. 15,0,2 >	1/<(2, 3,6,7); 0.3,0. 75,0,7 >	1/<(7, 8,9,9); 0.85,0 .1,0,1 5>	1/<(9, 9,9,9) ;1,0,0 >	1	<(9,9, 9,9);1 .9,0,1 ,0,0>	<(3,4, 5,6);0. 6,0,35 ,0,4>	<(7,8, 9,9);0 .85,0. 1,0,15 >	<(5,6, 7,8);0 .7,0,2 5,0,3>	<(4,5, 6,7);0 .8,0,1 5,0,2>	<(5,6, 7,8);0 .7,0,2 5,0,3 >
S F A I <sub>7</sub>	1/<(7, 8,9,9); 0.85,0 .1,0,1 5>	1/<(3, 4,5,6) ;0.6,0. 35,0,4 >	1/<(3, 4,5,6); 0.6,0. 35,0,4 >	1/<(7, 8,9,9); 0.9,0. 75,0,7 1,0,1>	1/<(2, 3,6,7) ;0.3,0. 75,0,7 1,0,0>	1/<(9, 9,9,9); 1,0,0>	1	<(9,9, 9,9);1, 0,0>	<(6,7, 8,9);0 .9,0,1, 0,1>	<(6,7, 8,9);0 .9,0,1, 0,1>	<(3,4, 5,6);0 .6,0,3 5,0,4>	<(4,5, 6,7);0 .8,0,1 5,0,2 >
S F A I <sub>8</sub>	1/<(6, 7,8,9); 0.9,0. 1,0,1>	1/<(2, 3,6,7) ;0.3,0. 75,0,7 >	1/<(2, 3,6,7); 0.3,0. 75,0,7 >	1/<(5, 6,7,8); 0.7,0. 25,0,3 >	1/<(2, 3,6,7) ;0.3,0. 75,0,7 >	1/<(3, 4,5,6); 0.6,0. 35,0,4 >	1/<(9, 9,9,9) ;1,0,0 >	1	<(5,6, 7,8);0 .7,0,2 5,0,3>	<(7,8, 9,9);0 .85,0. 1,0,15 >	<(2,3, 6,7);0 .3,0,7 5,0,7>	<(4,5, 6,7);0 .8,0,1 5,0,2 >
S F A I <sub>9</sub>	1/<(5, 6,7,8); 0.7,0. 25,0,3 >	1/<(2, 3,6,7) ;0.3,0. 75,0,7 >	1/<(3, 4,5,6); 0.6,0. 35,0,4 >	1/<(2, 3,6,7); 0.3,0. 75,0,7 >	1/<(9, 9,9,9) ;1,0,0 5>	1/<(7, 8,9,9); 0.85,0 .1,0,1 >	1/<(6, 7,8,9) ;0,9,0. 1,0,1>	1/<(5, 6,7,8); 0.7,0. 25,0,3 >	1	<(9,9, 9,9);1 .3,0,7 5,0,7>	<(2,3, 6,7);0 .3,0,7 5,0,7>	<(9,9, 9,9);1 .0,0>
S F A I <sub>10</sub>	1/<(4, 5,6,7); 0.8,0. 15,0,2 >	1/<(2, 3,6,7) ;0.3,0. 75,0,7 >	1/<(3, 4,5,6); 0.6,0. 35,0,4 >	1/<(4, 5,6,7); 0.8,0. 15,0,2 >	1/<(4, 5,6,7) ;0.8,0. 15,0,2 >	1/<(5, 6,7,8); 0.7,0. 25,0,3 >	1/<(6, 7,8,9) ;0,9,0. 1,0,1>	1/<(7, 8,9,9); 0.85,0 .1,0,1 5>	1/<(9, 9,9,9) ;1,0,0 >	1	<(3,4, 5,6);0 .6,0,3 5,0,4>	<(5,6, 7,8);0 .7,0,2 5,0,3 >
S F A I <sub>11</sub>	1/<(3, 4,5,6); 0.6,0. 35,0,4 >	1/<(9, 9,9,9) ;1,0,0 >	1/<(7, 8,9,9); 0.85,0 .1,0,1 5>	1/<(6, 7,8,9); 0.9,0. 25,0,3 1,0,1>	1/<(5, 6,7,8) ;0.7,0. 25,0,3 >	1/<(4, 5,6,7); 0.8,0. 15,0,2 >	1/<(3, 4,5,6) ;0.6,0. 35,0,4 >	1/<(2, 3,6,7); 0.3,0. 75,0,7 >	1/<(2, 3,6,7) ;0.3,0. 75,0,7 >	1	<(3,4, 5,6);0 .6,0,3 5,0,4 >	<(3,4, 5,6);0 .6,0,3 5,0,4 >
S F A I <sub>12</sub>	1/<(2, 3,6,7); 0.3,0. 75,0,7 >	1/<(2, 3,6,7) ;0.3,0. 75,0,7 >	1/<(9, 9,9,9); 1,0,0>	1/<(7, 8,9,9); 0.85,0 .1,0,1 5>	1/<(6, 7,8,9) ;0,9,0. 25,0,3 1,0,1>	1/<(5, 6,7,8); 0.7,0. 25,0,3 >	1/<(4, 5,6,7) ;0,8,0. 15,0,2 >	1/<(4, 5,6,7); 0.8,0. 15,0,2 >	1/<(9, 9,9,9) ;1,0,0 >	1/<(5, 6,7,8) ;0,7,0. 25,0,3 >	1/<(3, 4,5,6) ;0,6,0. 35,0,4 >	1

Then aggregate the opinions of experts. Then obtain the value of neutrosophic synthetic. The values of neutrosophic synthetic are shown in Table 2. Then compute the importance of success factors as shown in Figure 3.

Table 2: The values of neutrosophic synthetic.

	SFAI <sub>1</sub>	SFAI <sub>2</sub>	SFAI <sub>3</sub>	SFAI <sub>4</sub>	SFAI <sub>5</sub>	SFAI <sub>6</sub>	SFAI <sub>7</sub>	SFAI <sub>8</sub>	SFAI <sub>9</sub>	SFAI <sub>10</sub>	SFAI <sub>11</sub>	SFAI <sub>12</sub>
SFAI <sub>1</sub>	0.280 207	0.631 318	0.348 552	0.265 621	0.203 246	0.267 378	0.225 499	0.229 857	0.117 785	0.103 604	0.062 04	0.022 245

SFA I <sub>2</sub>	0.031 134	0.070 146	0.438 737	0.265 621	0.217 639	0.148 246	0.087 676	0.043 588	0.032 353	0.026 576	0.200 849	0.022 245
SFA I <sub>3</sub>	0.039 19	0.007 794	0.048 749	0.354 162	0.121 25	0.038 027	0.087 676	0.043 588	0.070 267	0.057 719	0.159 564	0.156 413
SFA I <sub>4</sub>	0.041 512	0.010 392	0.005 417	0.039 351	0.311 848	0.212 417	0.212 883	0.158 686	0.032 353	0.103 604	0.150 637	0.124 261
SFA I <sub>5</sub>	0.060 13	0.014 057	0.017 535	0.005 504	0.043 615	0.267 378	0.040 369	0.043 588	0.227 483	0.103 604	0.103 995	0.117 31
SFA I <sub>6</sub>	0.031 134	0.014 057	0.038 085	0.005 504	0.004 846	0.029 709	0.283 844	0.094 667	0.180 722	0.096 752	0.111 36	0.080 987
SFA I <sub>7</sub>	0.039 19	0.025 233	0.017 535	0.005 83	0.034 074	0.003 301	0.031 538	0.306 476	0.170 612	0.140 145	0.062 04	0.086 722
SFA I <sub>8</sub>	0.041 512	0.054 802	0.038 085	0.008 444	0.034 074	0.010 687	0.003 504	0.034 053	0.117 785	0.148 45	0.028 565	0.086 722
SFA I <sub>9</sub>	0.060 13	0.054 802	0.017 535	0.030 743	0.004 846	0.004 155	0.004 672	0.007 307	0.025 276	0.186 86	0.028 565	0.156 413
SFA I <sub>10</sub>	0.056 154	0.054 802	0.017 535	0.007 886	0.008 74	0.006 375	0.004 672	0.004 763	0.002 808	0.020 762	0.062 04	0.080 987
SFA I <sub>11</sub>	0.100 794	0.007 794	0.006 818	0.005 83	0.009 359	0.005 954	0.011 345	0.026 604	0.019 747	0.007 468	0.022 317	0.048 314
SFA I <sub>12</sub>	0.218 912	0.054 802	0.005 417	0.005 504	0.006 461	0.006 375	0.006 32	0.006 824	0.002 808	0.004 455	0.008 028	0.017 379

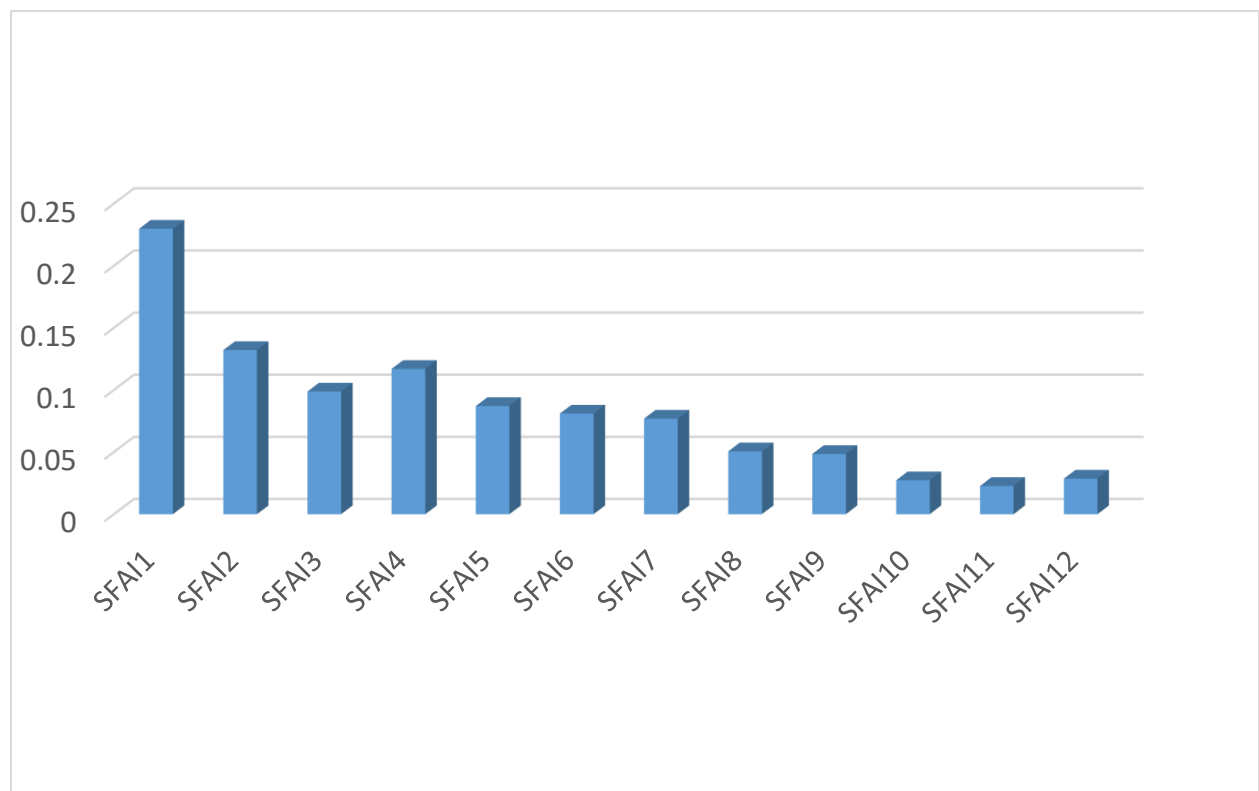


Figure 3: The importune of success factors in adopting AI in UAE.

## 7. Conclusion

Profit margins, whole sectors, and even society itself might all be upended by the advent of AI. When AI is implemented successfully, certain conditions must be met. The findings provide credence to the recommended paradigm for how best to use AI. Features of AI's role in innovation, internal resources, and external conditions all play a role. The research results back up the significance of these aspects in the spread of IT. Management competence is a determinant of AI implementation. To illustrate the utility of the suggested hybrid technique, a decision-modeling methodology was included in an investigation of a case involving the use of artificial intelligence in human resource management in the United Arab Emirates. Confusion theories like FS, IFS, and PFS are used in the MCDM sector to account for the inapplicability of precise numbers while trying to simulate real-world situations. Using the N-AHP, we were able to quantify the relative relevance of several aspects of AI adoption in UAE HRM.

## References

- [1] H. Chen, L. Li, and Y. Chen, "Explore success factors that impact artificial intelligence adoption on telecom industry in China," *J. Manag. Anal.*, vol. 8, no. 1, pp. 36–68, 2021.
- [2] M. Dora, A. Kumar, S. K. Mangla, A. Pant, and M. M. Kamal, "Critical success factors influencing artificial intelligence adoption in food supply chains," *Int. J. Prod. Res.*, vol. 60, no. 14, pp. 4621–4640, 2022.
- [3] S. Chowdhury *et al.*, "Unlocking the value of artificial intelligence in human resource management through AI capability framework," *Hum. Resour. Manag. Rev.*, vol. 33, no. 1, p. 100899, 2023.
- [4] H. A. H. A. Almarashda, I. Bin Baba, A. A. Ramli, A. H. Memon, and I. A. Rahman, "Human Resource Management and Technology Development in Artificial Intelligence Adoption in the UAE Energy Sector.," *J. Appl. Eng. Sci.*, vol. 11, no. 2, 2021.
- [5] P. Hamm and M. Klesel, "Success Factors for the Adoption of Artificial Intelligence in Organizations: A Literature Review.," in *AMCIS*, 2021.
- [6] S. V. Shet, T. Poddar, F. W. Samuel, and Y. K. Dwivedi, "Examining the determinants of successful adoption of data analytics in human resource management—A framework for implications," *J. Bus. Res.*, vol. 131, pp. 311–326, 2021.
- [7] M. Tuffaha and M. Perello-Marin, "Artificial Intelligence definition, applications and adoption in Human Resource Management: A systematic literature review," *Int. J. Bus. Innov. Res. doi*, vol. 10, 2021.
- [8] E. Kambur and C. Akar, "Human resource developments with the touch of artificial intelligence: a scale development study," *Int. J. Manpow.*, vol. 43, no. 1, pp. 168–205, 2022.
- [9] A. Agarwal, "AI adoption by human resource management: a study of its antecedents and impact on HR system effectiveness," *foresight*, 2022.
- [10] Y. Suseno, C. Chang, M. Hudik, and E. S. Fang, "Beliefs, anxiety and change readiness for artificial intelligence adoption among human resource managers: the moderating role of high-performance work systems," *Int. J. Hum. Resour. Manag.*, vol. 33, no. 6, pp. 1209–1236, 2022.
- [11] D. Vrontis, M. Christofi, V. Pereira, S. Tarba, A. Makrides, and E. Trichina, "Artificial intelligence, robotics, advanced technologies and human resource management: a systematic review," *Int. J. Hum. Resour. Manag.*, vol. 33, no. 6, pp. 1237–1266, 2022.
- [12] R. Pillai and B. Sivathanu, "Adoption of artificial intelligence (AI) for talent acquisition in IT/ITeS organizations," *Benchmarking An Int. J.*, vol. 27, no. 9, pp. 2599–2629, 2020.
- [13] A. Margherita, "Human resources analytics: A systematization of research topics and directions for future research," *Hum. Resour. Manag. Rev.*, vol. 32, no. 2, p. 100795, 2022.

- [14] B. I. Hmoud and L. Várallyai, "Artificial intelligence in human resources information systems: Investigating its trust and adoption determinants," *Int. J. Eng. Manag. Sci.*, vol. 5, no. 1, pp. 749–765, 2020.
- [15] M. Yucesan and M. Gul, "Failure modes and effects analysis based on neutrosophic analytic hierarchy process: method and application," *Soft Comput.*, vol. 25, no. 16, pp. 11035–11052, 2021.
- [16] M. V. Alava, S. P. D. Figueroa, H. M. B. Alcivar, and M. L. Vázquez, *Single valued neutrosophic numbers and analytic hierarchy process for project selection*. Infinite Study, 2018.
- [17] A. Vafadarnikjoo, H. Badri Ahmadi, J. J. H. Liou, T. Botelho, and K. Chalvatzis, "Analyzing blockchain adoption barriers in manufacturing supply chains by the neutrosophic analytic hierarchy process," *Ann. Oper. Res.*, pp. 1–28, 2021.
- [18] A. Singh, A. Das, U. K. Bera, and G. M. Lee, "Prediction of transportation costs using trapezoidal neutrosophic fuzzy analytic hierarchy process and artificial neural networks," *IEEE Access*, vol. 9, pp. 103497–103512, 2021.
- [19] Ahmed M. Ali, Ranking Renewable Energy Alternatives by using Triangular Neutrosophic Sets Integrated with MCDM, *Journal of Neutrosophic and Information Fusion*, Vol. 1 , No. 1 , (2023) : 17-26 (Doi : <https://doi.org/10.54216/NIF.010102>)
- [20] D. J. Y. Tey *et al.*, "A novel neutrosophic data analytic hierarchy process for multi-criteria decision making method: A case study in kuala lumpur stock exchange," *IEEE Access*, vol. 7, pp. 53687–53697, 2019.
- [21] C. P. Cisneros Zúñiga, R. C. Jiménez Martínez, and L. R. Miranda Chávez, "Neutrosophic Analytic Hierarchy Process for the Control of the Economic Resources Assigned as Alimony.," *Neutrosophic Sets Syst.*, vol. 37, 2020.
- [22] C. P. C. Zúñiga, R. C. J. Martínez, and L. R. M. Chávez, *Neutrosophic Analytic Hierarchy Process for the Control of the Economic Resources Assigned as Alimony*, vol. 37. Infinite Study, 2020.
- [23] Abdullallah Gamal, Nehal Nabil Mostafa, Sustainable Supplier Selection using Neutrosophic Sets and MCDM Framework, *Journal of Neutrosophic and Information Fusion*, Vol. 1 , No. 1 , (2023) : 27-33 (Doi : <https://doi.org/10.54216/NIF.010103>)
- [24] E. Aydın, & M. Turan (2023). An AI-Based Shortlisting Model for Sustainability of Human Resource Management. *Sustainability*, 15(3), 2737. MDPI AG. Retrieved from (Doi : <https://doi.org/10.3390/su15032737>)
- [25] D. Chen, JP. Esperança & S. Wang (2022). The Impact of Artificial Intelligence on Firm Performance: An Application of the Resource-Based View to e-Commerce Firms. *Front. Psychol.* 13:884830. (Doi : <https://doi.org/10.3389/fpsyg.2022.884830>)
- [26] T. Jacob Fernandes França, H. São Mamede, J.M. Pereira Barroso, & V.M. Pereira Duarte Dos Santos (2023). Artificial intelligence applied to potential assessment and talent identification in an organisational context. *Heliyon*, 9(4), e14694. (Doi : <https://doi.org/10.1016/j.heliyon.2023.e14694>)
- [27] Q. Jia, Y. Guo, R. Li, YR. Li, & Y.W. Chen (2018). A conceptual artificial intelligence application framework in human resource management. In *Proceedings of The 18th International Conference on Electronic Business* (pp. 106-114). ICEB, Guilin, China, December 2-6. [http://iceb.johogo.com/proceedings/2018/ICEB2018\\_paper\\_77\\_full.pdf](http://iceb.johogo.com/proceedings/2018/ICEB2018_paper_77_full.pdf)
- [28] P. Li, A. Bastone, T.A. Mohamad & F. Schiavone (2023). How does artificial intelligence impact human resources performance. evidence from a healthcare institution in the United Arab Emirates. *Journal of Innovation & Knowledge*. <https://www.sciencedirect.com/science/article/pii/S2444569X23000367>
- [29] OECD (2021). Artificial Intelligence, Machine Learning and Big Data in Finance: Opportunities, Challenges, and Implications for Policy Makers, <https://www.oecd.org/finance/artificial-intelligence->

machine-learning-big-data-in-finance.htm

- [30] N. A. Perifanis & F. Kitsios (2023). Investigating the Influence of Artificial Intelligence on Business Value in the Digital Era of Strategy: A Literature Review. *Information*, 14(2), 85. MDPI AG. Retrieved from (Doi : <https://doi.org/10.3390/info14020085>)
- [31] H. Taherdoost & M. Madanchian (2023). Artificial Intelligence and Knowledge Management: Impacts, Benefits, and Implementation. *Computers*. 12(4):72. (Doi : <https://doi.org/10.3390/computers12040072>)
- [32] A. Singh & A. Shaurya (2021). Impact of Artificial Intelligence on HR practices in the UAE. *Humanit Soc Sci Commun* 8, 312. (Doi : <https://doi.org/10.1057/s41599-021-00995-4>)
- [33] J. Williams, SM. Fiore & F. Jentsch (2022). Supporting Artificial Social Intelligence With Theory of Mind. *Front. Artif. Intell.* 5:750763. DOI: 10.3389/frai.2022.750763. <https://www.frontiersin.org/articles/10.3389/frai.2022.750763/full>
- [34] S. Karadayi-Usta, "A new servicizing business model of transportation: Comparing the new and existing alternatives via neutrosophic Analytic Hierarchy Process," *Neutrosophic Sets Syst.*, vol. 48, no. 1, p. 5, 2022.
- [35] S. Aydın, A. Aktas, and M. Kabak, "Neutrosophic fuzzy analytic hierarchy process approach for safe cities evaluation criteria," in *13th International Conference on Theory and Application of Fuzzy Systems and Soft Computing—ICAFS-2018 13*, Springer, 2019, pp. 958–965.
- [36] F. Kutlu Gündoğdu and C. Kahraman, "Hospital performance assessment using interval-valued spherical fuzzy analytic hierarchy process," *Decis. Mak. with Spherical Fuzzy Sets Theory Appl.*, pp. 349–373, 2021.
- [37] S. D. Á. Gómez, J. F. G. García, and B. P. Guanolesma, *Linking neutrosophic ahp and neutrosophic social choice theory for group decision making*, vol. 37. Infinite Study, 2020.
- [38] Shima Said, Mahmoud M. Ibrahim, Mahmoud M. Ismail, An Integrated Multi-Criteria Decision-Making Approach for Identification and Ranking Solar Drying Barriers under Single-Valued Triangular Neutrosophic Sets (SVTNSs), *Journal of Neutrosophic and Information Fusion*, Vol. 2 , No. 1 , (2023) : 35-49 (Doi : <https://doi.org/10.54216/NIF.020103>)
- [39] A. Vafadarnikjoo and M. Scherz, "A hybrid neutrosophic-grey analytic hierarchy process method: decision-making modelling in uncertain environments," *Math. Probl. Eng.*, vol. 2021, pp. 1–18, 2021.