

## **Applications of artificial intelligence in human resources management Conceptual approach-**

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### **Abstract:**

Artificial intelligence technologies and programs have developed amazingly during the last years of this millennium. This has increased the ability of organizations to produce and collect data and employ them better, to improve both productivity and individual and organizational efficiency, by integrating artificial intelligence applications into human resources management, which contributed to providing a comfortable and stimulating work environment, to improve and develop human resources capabilities, which opens the door to innovation and continuous improvements.

**Keywords:** Artificial intelligence; Artificial intelligence technologies; Human resources management; organization; employees; efficiency.

### **Introduction:**

Artificial intelligence is one of the most prominent innovations of the human mind; it's the result of its many experiences and expertises that transformed human history. For this; considered as a qualitative leap in the technology field, through it; there is a transition from the traditional methods to modern methods in the field of management and providing public services, regardless of its field

The use of artificial intelligence technologies in contemporary societies characterized by knowledge has become an urgent necessity due to their excellence in providing

public service speedily, professionally and with high quality. Because of facilities that workers in public organizations find while using and dealing with them, it makes these technologies the goal and inspiration of all organizations and employees, especially in the human resources management

For this reason; this work seeks to answer the main question; what are the most prominent application of artificial intelligence in the field of human resources management?

This required dividing the work into three basic axes. The first dealt with the theoretical framework of artificial intelligence, while the second axis dealt with the framework of human resources management practices, and the third dealt with the most important applications of artificial intelligence used in human resources management services.

## **The first axis: the theoretical framework of artificial intelligence**

### **1- Roots of artificial intelligence:**

The field of AI does not live in isolation, and has significant roots in number of older disciplines, particularly,

Philosophy, example, Gottfried Wilhelm Leibnitz (1646-1716), a philosopher who supported the materialist nature of mind, said that mind operates by ordinary physical processes, in the present context; this means that the machines can perform mental processes.

Logic Mathematics, example, Gottlob Frege(1848-1925) introduced the first order logic that today forms the most common knowledge representation system, called FOPL(first order predicate logic)

Computing, example, Alan M. Turing (1912-1954) tried to characterize exactly what are the functions that can be computing. He used what we called now as turning machine.

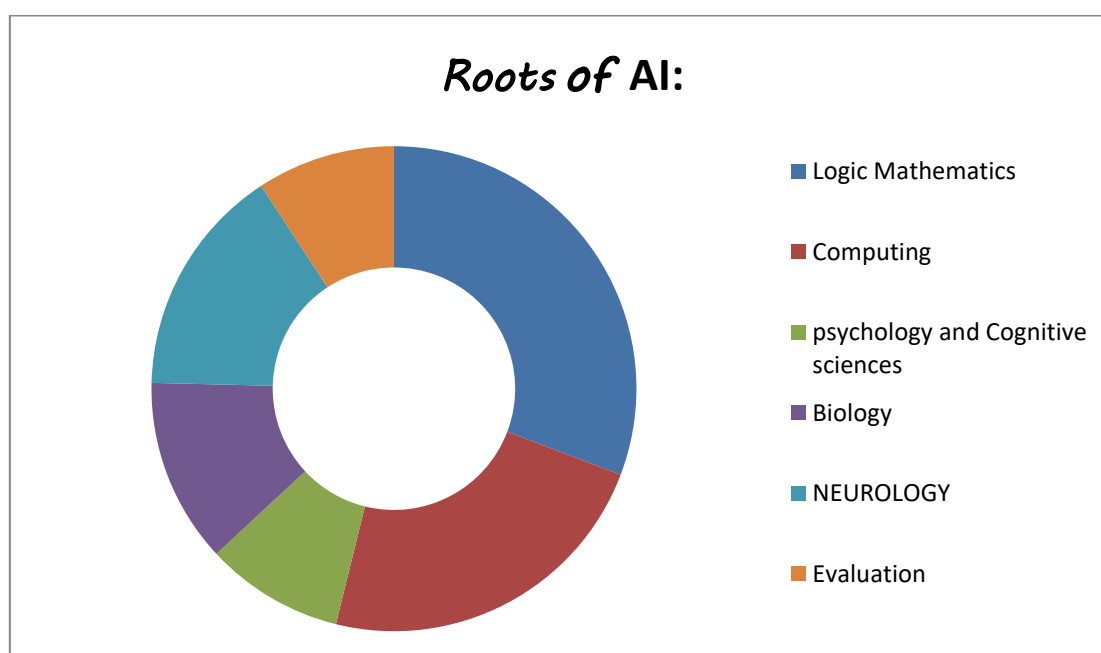
Psychology, Cognitive sciences. It is human's quest to understand as to how our brains lead to intelligent behavior, with the aim ultimately to build AI systems.

Biology/ Neuroscience, and Evolution

In the above domains, there is significant overlap, for example, between philosophy and logic, and between mathematics and computation. By looking at each of these in turn, we get a better understanding about their role in AI. We also understand better how these fields have developed to play that role in AI. (Chowdhury .2020.p7)

The following figure shows the most important roots of AI: Logic Mathematics, Computing, Psychology, Cognitive sciences, Biology Neuroscience Evolution

Figure (1): Roots of AI



Source: prepared by the researcher based on multiple sources

## 2- Definition of artificial intelligence:

Artificial intelligence has become a defining characteristic of our era, as an umbrella term for applications that perform complex tasks that in the past required human input. Brien defines it as a science and technology; based on a group of cognitive fields such as mathematics, engineering, computer science, philosophy which aims to emulate human intelligence, what makes computers do the things people do today better. The precise definition and meaning of the artificial intelligence has caused a lot of confusion .One dictionary alone (The New International Webster's Comprehensive Dictionary of the English Language, Encyclopaedic Edition), for example, gives four definitions:

- An area of study in the field of computer science, concerned with the development of computers able to engage in humanlike thought processes such as learning, reasoning, and self-correction
- The concept that machines can be improved to assume some capabilities normally thought to be like human intelligence such as learning, adapting, self-correction
- The extension of human intelligence through the use of computers, as in times, past physical power was extended through the use of mechanical tools,
- In a restricted sense, the study of techniques to use computers more effectively by improved programming techniques

The definition has also changed in the course of time, due to the rapid developments. Definitions that are more recent speak of “imitating intelligence human behaviour” which is already a much stronger definition .for some time now; the AI community has been trying to imitate intelligent behaviour with computer programs (Kok2009.p2).

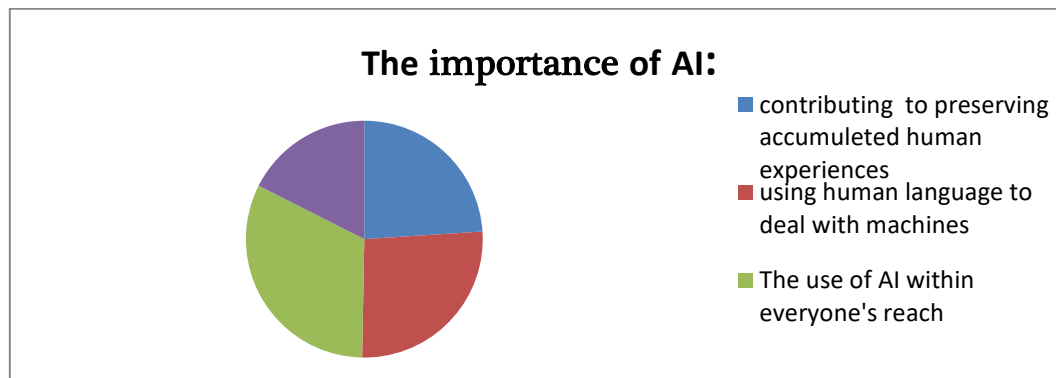
### **3- The importance of artificial intelligence:**

One thing is very clear, artificial intelligence is going to change our world forever, and the change is likely to be more profound than most people realize today. No matter what job you are in, no matter what business or industry you work in, AI is going to augment, if not completely transform it (Marr.2019.p1).

Its importance derives from the importance of its programs and technologies in all areas of life, especially in the field of public service, in light of everyone’s ability to access information with the possibility of using its applications in a large and tangible way that contributes to providing public services that are accurate quick and objective.

In general, some aspects of the importance of AI could pointed out in the following figure:

Figure (2): The importance of artificial intelligence



Source: prepared by the researcher based on multiple sources

#### **4- The characteristics of artificial intelligence:**

- Using intelligence to solve the problems presented in the complete absence of information
- Thinking ,perceiving, acquiring and applying knowledge
- Education and understanding of previous experiences and expertise
- Using old experiences and employing them in new situations
- Rapid response to new locations and circumstances
- Dealing with difficult and complex cases
- Dealing with ambiguous cases in the absence of information
- Visualization, creativity and perception
- Providing information to support decisions

#### **5- The goals of artificial intelligence:**

The primary goal of artificial intelligence is to develop technology that allows computers and machines to work intelligently, as follows:

- Software capable of performing behaviours that are described as intelligent when performed by humans.
- Developing the ability to carry out tasks that require human intelligence when performing them, such as logical deduction, and thus the ability to make devices more useful.
- Connecting bridges between cognitive processing and behavioural response.
- Increasing the effectiveness of human –computer interaction.
- Make it possible for machines to process information in a way more similar to the way human do, known as parallel processing which occurs when many instructions are executed simultaneously.

## **The second axis: the theoretical framework of human resources management:**

### **1- Definition of human resources management :**

The human resources management definitions are many and differ according to the different administrative schools .the definition that we adopt in this work is the basic processes of building culture necessary for the development of organizations and keeping pace with technological development, in order to achieve the established goals and organizational excellence.

### **2- the importance of human resources management:**

Different organizations require giving importance to human resources management on the basis that:

- It determines the quality of human resources in the organization's functional activities.
- It deals with valuable capital that has the ability to innovate and develop
- It realize that the outputs of human resources outweigh the cost of inputs, rather these costs can be reduced by improving quality through motivation and training.
- There is always constant ability to correct human resources practices.
- It helps working individuals improve their work and achieve their goals in parallel with the organization's goals.
- It explains the importance of this system in developing capabilities and skills of employees, based on their positive role in organizational performance and results.
- It keeps pace with all modern organizational and technological developments facing the organization, in order to develop social activities, and pay attention to the humanitarian fields that link worker to the organization.

### **3- Objectives of human resources management:**

Human resources management includes a large number of goals that are consistent with the aspirations of individuals, the organization, and its employees. We mention the following:

- HRM focuses on hiring skilled persons who are able to promote the growth of organization, and also retain them for long –term through manpower planning, effective

recruitment procedure, selection and fair policies of promotion(Ravi .2023.p23)

- HRM ensure quality of work and provide it with stimulating work environment, training and advancement because employee satisfaction contributes to increase in success and competitiveness of the entire organization or company (Jayaprakashnarayana .2016.p387).
- HRM increase job satisfaction which is affected by intrinsic and extrinsic motivating factors, like the quality of supervision, social relationships with the work group, career opportunities, job influence, and job challenge ...etc.
- HRM ensure proper working environment by providing a platform to address and manage conflicts and grievances, creating a harmonious work environment
- HRM maintain proper coordination where human resources discharge their responsibilities effectively by establishing proper coordination(Tapomoy.2006.p74)
- HRM Make optimum use of existing human resources
- HRM train and develop human resources through guaranteeing talented loyal and devoted workers for the organization in the future.
- HRM manage change to mutual advantage of individual, group, organization and society

The following figure summarizes the most important objectives of human resources management:

Figure (3): The most important objectives of human resources management



Source: prepared by the researcher based on multiple sources

#### **4- The characteristics of human resources management:**

Human resources management is characterized by a set of characteristics, including the following:

- Attention to individuals as a major resource in the organization
- Diversity of HRM functions in rapidly changing environment
- Interests in developing skills and capabilities of individuals working in the organization
- Takes care of employee problems and finds effective solution to them
- Determine the reward that is appropriate to the job
- Affects individual trends and performance levels
- Ensures the well-being of employees and enriches quality
- Employees' awareness of HRM practices affects the quality of performance

#### **5- Human resources management and artificial intelligence:**

As technology continuous to advance, the integration of AI in various fields has become increasingly prevalent. Especially, the human resources management field, from the initial use of computer system to the recent developments and innovations in AI in HRM; by integrating its effective applications in order to make HRM tasks easier, faster and better. Where

human resources department resorts to strengthening its activities, considering that all contemporary indicators show that the field of administration and business is completely dependent on appropriate AI applications, which is being developed at breakneck speed in technologically advanced countries, where ensuring quality information is the key factor of success (Dutta & others.2003.p22)through the analysis of vast amounts of data, machine learning algorithms that can saving valuable time and resources(Miller.2017.p7)

### **The third axis: The most important applications of artificial intelligence used in human resources management.**

Many contemporary countries are aiming to provide an appropriate technological infrastructure, which is a great aspiration and an important goal to be achieved, especially with the development of the software industry and information technology services, by providing appropriate means and mechanisms to implement digital management, which has clearly benefited from the AI applications. It was able to develop the use of information and communication technology while performing routine and simple tasks by rationalizing this use through following specific and easy steps to deepen the advantages of applying these useful technologies in administrative work within human resources management. Among the most important applications of artificial intelligence used in the field of human resources management, we note the following:

#### **1- Automate CV Screening:**

The AI gather the CVs and input them into application using a prompt like ‘screen these CVs for candidates with specific criteria (Nunez .2024.p106) the program converted job information into bullet points (Cecchi-Dimeglio.2023.p54), based on the total points obtained through the CVs, the candidates for the job are ranked according to their competency.

#### **2- Conducting initial interview:**

Artificial intelligence is able to share deeply personal situations that resonate with the audience. Getting to that emotional depth requires more than just surface-level questions. AI applications can helps HRM to choose questions that effectively encourage candidates to open up and discuss more difficult personal challenges they’ve faced (Sutton.2024. p31)

### **3- Powered recruitment :**

Artificial intelligence helps HRM by revolutionizing the recruitment process through automating various tasks and streamlines HRM processes, and improves workers engagement. Making data driven decisions; its algorithms can analyse resumes, assess candidate profiles, after it match them efficiently with job recruitment

### **4- Providing customized training programs for employees:**

Artificial intelligence works to provide training programs for employees, by anticipating the needs arising from them and from the organization as well, which allows providing opportunities to improve or reshape skills on the job. These AI applications also works by designing training programs to persuade employees to adopt new practices or procedures, which establishes a type of support to help them adapt to the changes by improving performance and raising efficiency rates.

### **5- Post job descriptions:**

AI applications can help in tailoring job description, by focusing on highlights and articulating in a manner that attracts the right candidates. Words selection is crucial in the job posting (Heinzman & others.2022.p62); it provides a long list of suitable candidates for a specific job. This helps HRM to communicate with the candidates who have applied for the vacant positions.

### **6- Reduce the burden of administrative tasks:**

AI through specific and effective applications, reduces routine and repetitive administrative tasks, allowing employees to focus better on aspects of their work that require thinking; concentration; analysis or dealing with many files on an ongoing basis. Thanks to AI algorithms that made employees more interactive, resilient allowing human resources to stay strong and preserve in the face of challenges at work. In an increasingly competitive and changing work environment (Bianco.2024.p58)

### **7- AI-Driven Onboarding:**

Onboarding for a newly hired employee is an important and simultaneously challenging procedure for both the employee and the organisation. Employee Onboarding implies the process of a recruit's induction into a new role and incorporation into the new employer organization.AI helps HRM to involving educating employees on organization's corporate rules, and organizational

culture and delivering appropriate skills to execute professional function into organization (Del Val Nunez.2024.P220)

**8- Certification:**

The AI applications encourage HR to pursue relevant AI certifications and data analytics to validate their skills (Rahman, Ameen.2024.p114)

**9- AI and talent acquisition:**

Many up skilling and reskilling efforts are needed to equip HR with the necessary AI competencies. For that, AI determined applications can help HRM to control the technical expertise and knowledge required to effectively manage AI technologies, in a way that shows the talents and excellence of HRM and at the same time highlights employees talent in use of AI applications to accomplish the tasks assigned to them.

**10- Providing emotional and psychological satisfaction for employees:**

AI has contributed to supporting the psychological and mood state of employees, by working to provide and monitor the psychological and emotional well-being of employees, in order to maintain their satisfaction and raise their morale.

**11- Performance Management:** AI applications determine the success of HRM with regard to the performance of employees, from which they will be able to synchronize their professional achievements with the objectives set by the organization, as well as to control this process. Information gathered by AI application can be utilized to create individualized performance upscaling strategies for specific staff members, which can boost output and performance overall(De Gruyter.2024.p78)

**Conclusion:**

Artificial intelligence is witnessing extremely rapid development, heralding a major change in the work environment of organizations. This makes the integration and modernization of its applications essential in human resources management, considering the human resource as the basic advantage and the true wealth of organizations in all their diversity; which can outperform artificial intelligence models by developing their performance in order to achieve excellence and innovation to ensure sustainability and well-being.

No one can denied that applications of artificial intelligence have made a significant difference in human resources management practices, whether in the field of recruiting talented energies, implementing jobs, or transforming human resources processes with the corresponding analyzes within very accurate algorithms, ..or other human resources management practices, but at the same time they create ongoing challenges; such as those related to ethical issues, or problems of bias or limited knowledge of artificial intelligence, which requires defining organizational and administrative frameworks to confront them.

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