



# **Artificial Intelligence and its Impact on Human Development**

**Osama Ibrahim Ahmed Marzouk**

Academy of Scientific Research and Technology

## **Introduction**

The world is living in the fourth industrial revolution. It is the period of using artificial intelligence technology, which is the computer's ability to use intelligence to improve the quality and efficiency of systems in the health and education sectors. Academic and technological experts who participated in Stanford University's 100-year study on artificial intelligence (according to a report by Computer World) agreed by saying, "By 2030, artificial intelligence will have changed the way we go to work and to parties, the way we take care of our health and the way we educate our children." This study focuses on the relationship between artificial intelligence, and the impact of this on human development and the changes in accompanying habits, the concept of the "Fourth Industrial Revolution", which was launched a few years ago, and aims to reduce the number of workers in it, so that the role of humans in industry is limited to supervision, and this requires the use of scientific capabilities to possess an advanced technical and digital structure.

We have been able, through technology, to obtain new products and services that increase the efficiency and quality of our personal lives.

## **Study Problem:**

Since the beginning of creation, man has been developing human beings. In his quest for economic and social well-being, man has searched, learned, and developed himself through knowledge, work, and research for better health or a better profession, which requires more skills. He began to learn them to suit the work. Thus, in his quest for well-being, man has developed human beings.

From here, the question arises: Does artificial intelligence have an impact on human development?



Human investment here, or social capital, may be the way out of poverty to a state of societal well-being and may lead to the advancement of countries. Human investment has many aspects, whether health, economic, social, or environmental, etc. This is what artificial intelligence helps with, as it has rapid analysis technology and access to appropriate programs to bring about human development in all fields.

From here, this study focuses on one of the important aspects of human investment and the ability of man to carry out the development process, by preparing him and providing him with the basic requirements to carry out development.

**Importance of the study:**

Identifying the role of artificial intelligence and how to benefit from its technologies and its impact on human development.

**The study aims to:**

Identifying artificial intelligence and its various aspects

Identifying human development and its various aspects

The difference between human development and vocational training.

Highlighting how to benefit from artificial intelligence technologies and their effects on human development

**Research methodology**

It relies on the descriptive approach by explaining the concepts related to artificial intelligence and human development

**Hypotheses**

The role of artificial intelligence in solving problems that are difficult for the human element to solve quickly

**Chapter One:**

Given artificial intelligence and its impact on human resources, it has become one of the indispensable technological tools in use in human resources management, as it always requires keeping pace with technological changes that occur overnight suddenly.

The concept of artificial intelligence (AI)



The term artificial intelligence originated in 1956 at a scientific conference at Dartmouth College. One of the founding fathers of artificial intelligence, Marvin Minsky, described it as "the science of making machines do things that would take intelligence if they were done by men."

Modern AI systems have evolved to demonstrate problem-solving capabilities for tasks such as visual perception, speech recognition, planning, decision-making, and translation between languages. They can process terabytes of data and insights in real time, and have proven themselves as flexible, responsive technologies that augment the capabilities of human users and increase efficiency, productivity, and satisfaction in the workplace. It refers to software and tools that perform a wide variety of complex functions.

It is the effort to develop information systems.

Artificial intelligence - a technology with human-like problem-solving capabilities.

Artificial intelligence at work mimics human intelligence - it can recognize images, write poems, make data-driven predictions, and make intelligent suggestions for analysis.

Types of artificial intelligence

An AI system is a set of technologies that can be combined to perform different types of tasks. These tasks can be very specific, such as understanding spoken language and responding appropriately, or very broad,

Three Main Types of AI

**Narrow AI (also known as weak AI):** An AI system designed to perform a specific task or set of tasks. This is the type of AI used in current applications. It is called weak not because it lacks power or ability, but because it is a long way from having the human understanding or awareness that we associate with true intelligence. These systems are limited in scope and do not have the ability to perform tasks outside their specific domain. Examples of narrow AI include voice assistants, facial and speech recognition, and self-driving cars. **General AI (also known as strong AI)** is an AI system that will be able to successfully perform any intellectual task that a human can—perhaps even better than a human can. Like narrow AI, general AI systems will be able to learn from experience and identify and predict patterns, but they will have the ability to take things a step further, extrapolating that knowledge across a wide range of tasks and situations that are not covered by previously acquired data or existing algorithms. There is no general AI yet, although there is ongoing research and development in this area with some promising progress.



**Superintelligent AI:** An AI system is defined as a fully self-aware system that exceeds human intelligence. In theory, these systems would have the ability to improve themselves and make decisions with intelligence above human levels. Far from simply mimicking or identifying human behavior, superintelligent AI could comprehend it at a fundamental level. Empowered with these human traits—and augmented by massive processing and analytical power—it could far exceed our own capabilities. If developed, a superintelligent AI system could change the course of human history, but currently it exists only in science fiction, and there is no known way to achieve this level of AI.

**How does AI work?**

Apart from the main classifications of narrow, general, and superintelligent AI, there are several different and interconnected levels of AI.

**Machine learning** is a subset of AI that enables computer systems to learn and improve from experience or data, and incorporates elements from fields such as computer science, statistics, psychology, and economics. By applying algorithms to different types of learning methods and analytical techniques, it can automatically improve from data and experience without being explicitly programmed to do so. For businesses, machine learning can be used to predict outcomes based on the analysis of large, complex data sets.

**Neural networks** are a core component of artificial intelligence, inspired by the structure and function of the human brain. These multi-layered computational models have nodes that cluster together like neurons in a biological brain. Each artificial neuron takes an input, performs mathematical operations on it, and produces an output that is then passed to subsequent layers of neurons via rapid parallel processing. During training, neural networks adjust the strength of connections between neurons based on examples in the data, allowing them to recognize patterns, make predictions, and solve problems. They employ a variety of techniques to learn from data depending on the task and the type of data. Neural networks have found applications in various fields such as image and speech recognition, natural language processing, modeling, autonomous vehicles, and more.

**Deep learning (DL)** is a data-focused subset of machine learning that uses multi-layer (deep) neural networks to learn and extract features from massive amounts of data. These deep neural networks can automatically discover complex patterns and relationships in data that might not be immediately apparent to humans, allowing for more accurate predictions and decisions. Deep learning excels at tasks such as image and speech recognition, natural language processing, and data analysis. By



leveraging the hierarchical structure of deep neural networks, deep learning has revolutionized many fields, including healthcare, finance, and autonomous systems. Generative AI is a type of deep learning that uses foundation models such as large language models to generate brand-new content—including images, text, audio, video, and software code—based on their training data. It's an umbrella term for various foundation model techniques—neural networks trained on massive amounts of data using self-supervised learning, such as predicting the next word in a text. Its emerging capabilities make it a breakthrough in AI, with a single model sometimes able to write both poems and business documents, create images, and pass reasoning tests.

### **AI Applications**

#### **Cybernetics**

Robots have been used in manufacturing for years, but before the introduction of AI, they had to be calibrated and reprogrammed manually — usually only after something broke down. By using AI — often in the form of Internet of Things (IoT) sensors — manufacturers have been able to dramatically expand the scope, scale, and type of tasks their robots can perform, while improving their accuracy and reducing downtime. Some common examples of AI-assisted robots include order-picking robots in warehouses and agricultural robots that water crops at optimal times.

#### **Computer Vision**

Computer vision is how computers “see” and understand the contents of digital images and videos. Computer vision applications use sensors and learning algorithms to extract complex contextual information that can then be used to automate or inform other processes. They can also extrapolate from the data they see for predictive purposes, as in the case of self-driving cars.

#### **Natural Language Processing (NLP)**

Natural language processing systems recognize and understand written or spoken language. In more sophisticated applications, nLP can use context to infer attitude, mood, and other subjective attributes to more accurately interpret meaning. Practical applications of NLP include chatbots, call center interaction analysis, and digital voice assistants like Siri and Alexa.

#### **Measurable benefits of building AI:**

- **Boosting efficiency and productivity:** One of the most important benefits of AI in the enterprise is its ability to automate tasks and streamline processes. AI-powered systems can process large amounts of data at lightning speed, freeing up valuable human resources to focus on more value-added activities.



This increased efficiency leads to improved productivity, as employees can devote their time to strategic decisions and innovation rather than routine, mundane tasks.

- **Improving customer experience:** AI technology has revolutionized the way businesses interact with customers. Through NLP and ML algorithms, AI-powered chatbots and virtual assistants can provide personalized, real-time customer support, around the clock. This availability not only enhances customer satisfaction, but also helps businesses deliver a seamless customer experience across channels while reducing response times and human error.
- **Data-driven decision making:** Enterprise AI systems can analyze massive amounts of structured and unstructured data, enabling organizations to make more informed decisions. Deriving meaningful insights from this data enables businesses to identify trends, predict customer behavior, and improve their operations. AI algorithms can spot patterns that humans might miss, providing valuable insights for strategic planning, risk assessment, and streamlining business processes.
- **Operational efficiency:** AI can automate repetitive and time-consuming tasks and workflows, as well as accurately process complex calculations, analyze data, and other tedious tasks, improving accuracy and reducing errors. AI can also help quickly detect irregularities, fraud, and security breaches, mitigating potential losses.

- **Enhanced workforce collaboration:** AI can foster greater collaboration and knowledge sharing among employees. Intelligent systems can help with data discovery by providing easier access to relevant information and delivering insights that help employees make informed decisions. Additionally, AI-powered collaboration tools enable seamless communication and knowledge sharing across teams, departments, and even geographically dispersed locations, encouraging innovation and boosting productivity.

- **Enterprise AI in Action**

- The scale and accessibility of AI for modern enterprises makes it useful for many industries.

Some examples of AI use cases across industries include:

**AI in Healthcare:** Medical datasets are some of the largest and most complex in the world. A key focus of AI in healthcare is leveraging that data to find relationships between diagnoses, treatment protocols, and patient outcomes. Additionally, hospitals are turning to AI solutions to support operational initiatives, such as workforce satisfaction and optimization, patient satisfaction, and cost reduction.





**AI in Banking:** The financial services industry has been one of the earliest to adopt AI on a large scale, specifically to speed up transactions, customer service, and security response. Common applications include AI bots, digital payment advisors, and fraud detection.

**AI in Manufacturing:** Today's smart factory is a network of machines, IoT sensors, and computing power—an interconnected system that uses AI and machine learning to analyze data and learn as it goes in real time. AI is constantly improving and informing automated processes and intelligent systems within the smart factory, from monitoring equipment conditions to predicting supply chain issues to enabling predictive manufacturing.

**AI in Retail:** Online shoppers are engaging across a wide range of touchpoints and generating larger volumes of complex, unstructured data sets than ever before. To make sense of this data, retailers are using AI solutions to process and analyze disparate data sets, improve marketing, and provide better shopping experiences.

The role that AI plays is essentially mimicking humans in their performance. The intense competition between it and human capabilities and skills has led to its spread in all fields, including human resources, and from here two aspects arise: positives and negatives

The first aspect is positives:

1. It helps people achieve high rates of economic, social and human development in general.
2. Reducing production costs.
3. Providing services and means of transportation and communication that combine high efficiency and lower cost
4. Contributes to providing better health care for people.
5. It saves a lot of time in the development process

The second aspect is negatives

It requires a comprehensive economic restructuring, coupled with a social and political restructuring,

1. A change in cultural and social values, which will lead to the decline of the role of medium and small companies in the production process,
2. The dominance of large companies
3. This leads to social and political problems, due to the spread of poverty and the deterioration of living conditions
4. The risk of insufficient measures by economic institutions to reduce cyber attacks

## **Chapter Two**



**The Concept of Human Development:**

The world wars and their devastating effects played a fundamental role in the emergence of the concept of human development, which helped to redevelop society and administrative, cultural and political development in all countries.

Human development is the process that focuses on the human being and seeks to develop his skills and abilities to reach a good standard of living through his personal effort.

The definition of human development is based on the fact that people are the real wealth of nations, and that human development is the process of expanding people's options.

Human development does not end with the formation of human capabilities such as improving health and developing knowledge and skills, but rather depends on further in terms of benefiting from them, whether in the field of work through the availability of opportunities for creativity, enjoying free time, enjoying self-respect and ensuring human rights, and contributing to economic, political, cultural and social activities.

**Human development goals:**

Providing the necessary means that help people in one society obtain proper educational opportunities.

Working to reduce the phenomenon of unemployment and seeking suitable job opportunities.

Working to develop health care, and provide health and medical aid and assistance.

Seeking to improve the individual's standard of living, and provide all his necessary needs.

Improving a person's self-confidence, and his sense of self-efficacy, to improve his self-image.

Improving the individual's personal and cognitive skills to raise his morale, and ensure psychological stability for him.

Improving the individual's performance at work, and training him in the art of mastering work.

Developing positive and good qualities in a person.

**Components of human development:**

**Education:**

A person cannot achieve the success and goals he dreams of without education, as education contributes to overcoming the many difficulties that a person may face, and facilitates the path of leadership and innovation, so that he succeeds in proving himself and his abilities in the society in which he lives.

**Training:**





Training contributes effectively to transferring skills, experiences, ideas and technical practices that a person possesses from the theoretical level to the applied level, which contributes to pushing a person to work, innovate and become professional, to show all the skills he possesses and refine them to achieve all his goals.

**Culture:**

The cultural stock in society contributes to studying the individual's behavior according to the type of culture prevailing in his society, as general culture complements education and is a cornerstone for it. For example, an educated young man is fully aware of all the things he needs and does, and does not act at all in a random and disorganized manner, and usually relies on a work plan that helps him implement his goals and go on the right path within a specific number of months and a specific time frame.

**Attention to social protection methods:**

It is one of the basic components of human development that is concerned with caring for children from the psychological, health, and social aspects, to guide them correctly to become productive and effective citizens, by bringing out the potential within them, and benefiting from it in a practical way to build a new and prosperous future.

**Obstacles to human development:**

**Political obstacles:**

Political problems lead to hindering the process of human development in global societies, as a result of the negative effects of these problems such as wars, economic blockade, and the absence of security and psychological stability for humans.

**Economic obstacles:**

Poor economic conditions affect the course of human development and its spread in global societies, due to poverty, deterioration of infrastructure, widespread unemployment, and lack of job opportunities.

**Health obstacles:**

These are the problems that cause the deterioration of human health, as a result of political and economic wars, such as exposure to malnutrition, and the spread of many serious diseases and epidemics that are difficult to eradicate.

**Educational Obstacles:**



The absence of education and educational institutions negatively affects the success of the human development process in all societies, because development depends on educating people and providing them with knowledge.

#### **Cultural and Social Obstacles:**

The suffering of society from some cultural and social problems greatly hinders the success of human development and the performance of its correct role, due to the outbreak of disputes between members of the same society, in addition to the spread of ignorance and intellectual fanaticism.

#### **Artificial Intelligence in Human Resources:**

Artificial Intelligence in Human Resources refers to the use of technology and intelligent systems that rely on artificial intelligence to improve and facilitate human resource management processes within organizations. In this context, artificial intelligence aims to improve employee experience and facilitate the management of daily human resource management operations.

This includes the use of artificial intelligence technologies such as big data analysis, machine learning, natural language processing, and intelligent robots, to improve several aspects of human resource management. Artificial intelligence in Human Resources can help speed up recruitment processes and select the right candidates, analyze employee performance and provide guidance for their development, and improve the employee experience in the organization by providing interactive and personalized solutions.

In general, artificial intelligence in Human Resources aims to improve the efficiency of administrative processes, increase employee productivity and efficiency, enhance employee satisfaction, and maintain talented and satisfied employees in the organization.

#### **Areas of use of artificial intelligence in human resources**

At the present time, it can be said that artificial intelligence represents an individual in human resources management, due to its multiple roles and tasks, and you will learn in the following lines and in some detail about these roles:

##### **1- Appointing new employees**

Recruiting new employees is not an easy process, but rather requires performing many procedures and tasks that are characterized by routine and consume a lot of time and effort, so human resources management uses artificial intelligence to perform a number of tasks by automating them, in order to ensure a higher level of efficiency, accuracy and speed.



Among the procedures that human resources management relies on in artificial intelligence: creating documents for the employee, disclosing documents, setting a date for meetings with new employees. Of course, performance management is based on scientific foundations and frameworks that determine specific systems that should be adopted in directly handling this aspect, and among the most important systems in this regard is the performance management system, which aims to achieve integration between the performance of the company's management and job performance. As shown in the image below, we find that the performance of the company's management is related to performance evaluation, then strategic planning, communication and budgeting. While job performance is related to monitoring performance, evaluating performance, developing performance and planning to enhance performance.

## **2- Development and Training**

Artificial intelligence contributes vitally to the development and training of employees, as human resources management relies on it to design programs that work to develop employees' skills and abilities and help them raise their efficiency at work, and these programs are designed according to the needs of employees.

In this aspect, the use of artificial intelligence is useful in achieving the goals of each employee in developing his skills and abilities, and it also helps human resources management in identifying the needs of each trainee by providing them with the necessary reports after examining their CVs.

## **3- Examining CVs**

When the human resources department announces a new job, it receives many applications from candidates, and it is difficult to evaluate and review each person's CV as this requires a lot of time and effort.

Here comes the role of artificial intelligence, which examines each candidate's CV in record time, and then provides the management with the most suitable candidate. This happens according to specific criteria set in selecting candidates, whether in educational qualifications, experience, or skills, and on this basis, artificial intelligence evaluates the CV.

## **4- Orienting employees**

Orienting and preparing new employees on their first days of work is a routine task that consumes time and effort from the management, but with artificial intelligence, things have become smoother. Programs have been allocated to direct new employees by introducing them to the most important



work policies, the tasks that need to be performed in detail, introducing the work team, and other information that explains everything to the employee about the company he works for.

#### **5- Managing internal employee movements**

By relying on artificial intelligence programs and algorithms, and according to specific standards for measuring performance, human resources management relies on artificial intelligence to monitor internal movements among employees, through which the employee most deserving of promotion is chosen.

It can also be used to identify the most satisfied employees, and the least satisfied employees, who have a higher desire to leave work at any time.

#### **5- Facilitating communication**

On the external level, artificial intelligence technologies have activated and simplified communication with new candidates, and the company has enabled communication through chatbots that provide each candidate with the required information about the company and the job through emails that are automatically sent to them.

On the external level, communication with artificial intelligence technologies helps human resources management formulate the required policies according to the available data.

### **Artificial Intelligence Applications in Human Resources**

Human Resources Management uses many applications that have contributed to making its tasks efficient, with less effort and time. Learn about the most famous of these applications used:

#### **1- Performance Management Applications**

There are many applications dedicated to employee performance management that are based on analyzing the performance of each employee in the roles they perform, in addition to evaluating the level and tracking the goals that each employee works for.

#### **2- Recruitment Applications**

These applications aim to facilitate the procedures for hiring candidates by examining each candidate's data in the CV according to the specified criteria, in addition to tracking the recruitment steps, in addition to using these applications to organize appointments for personal interviews.

#### **3- Development and Training Applications**

Human Resources Management relies on these applications to provide employees with training courses that meet their needs in developing their skills and abilities, and provides a training course dedicated to each employee.



#### **4- Diversity and Inclusion Applications**

These applications help apply the principle of equal opportunities among candidates to achieve neutrality between them regardless of their cultures, genders or races. They do this by ignoring and deleting unwanted candidate data such as race or gender, after examining the data.

The impact of artificial intelligence on human resources

We conclude from the above that artificial intelligence has the following advantages for human resources:

##### **1- Saving time and effort**

Artificial intelligence performs many routine tasks that take a long time for human resources, such as examining resumes and organizing personal interviews with candidates. This saving of time and effort helps management accomplish other tasks that require a degree of focus, such as strategic planning.

##### **2- Predicting employee situations**

Human resources rely on artificial intelligence to evaluate employee data, and through this analysis, human resources management identifies employees who are likely to leave work and then begins to solve this problem, and thus artificial intelligence helps maintain the presence of employees.

##### **3- Customized training for each employee**

According to each employee's skill needs, artificial intelligence works to provide customized training programs for each employee to help them meet their requirements, which results in raising the efficiency of employee performance.

##### **4- Hiring the best candidates**

Artificial intelligence contributes vitally to selecting the right and best candidate for the job, by analyzing each employee's data in the CV and matching this data with the criteria for selecting candidates in terms of skills and experience.

##### **5- Employee performance analysis**

Artificial intelligence works to analyze employee performance through which weaknesses that require improvement in skills, experiences and knowledge are identified, and then the employee is provided with the training programs he needs to improve his performance.