Identifying the Indicators of Artificial Intelligence in the Development of Human Resources

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Abstract

Artificial Intelligence, a technology that allows machines to work intelligently and intelligently is transforming human lives. This tool is now being used in a wide range of fields such as finance, agriculture, health care, production, marketing, e-commerce and also human resource management. The potential of artificial intelligence to replace human cognitive ability is what is making it gain huge acceptance and popularity in several areas. The recent and prevailing trend in human resources is the use of Artificial Intelligence (AI). Terms like data mining, machine learning, deep learning and neural networks that were unknown in the past have become the buzzwords in the present time. Many organizations have already started adopting and implementing artificial intelligence technology to their advantage thus making it no longer a concept for the future . Therefore the current research has been carried out with the aim of identifying the indicators of artificial intelligence in the development of human resources. This research is a qualitative research in terms of practical purpose, in terms of method and in terms of data collection, it is a developmental research. It is exploratory in nature and inductive in terms of strategy. The current research was conducted with a qualitative approach and a meta-composite method and with an in-depth review and analysis of the subject literature in the period from 2000 to 2023 and under the seven stages of Sandelowski and Baros (2007) and using coding, the indicators of artificial intelligence in the development of human resources were extracted. The results of the analyzes showed that the indicators of artificial intelligence in the development of human resources include three categories (intelligence of human resources, management of digital human resources and human resources architecture) and nine concepts (advancement and promotion of intelligent human resources, intelligentization of strategic planning of human resources, cultural development of human resources aligned with artificial intelligence, training and empowerment of human resources aligned with artificial intelligence, using artificial intelligence tools in performance evaluation, core technology, organizational learning, intelligentization of knowledge management, digital talent management) and 45 extracted codes.

Keywords: *Artificial intelligence, Human Resources Development, Intelligent Human Resources, Intelligent Human Resources.*

Introduction

Today, businesses are changing their ways due to technology. Artificial intelligence is also one of the technologies that promote organizations towards productivity (Hashmad and Kurdi, 2022:2). Artificial intelligence is now recognized as one of the fastest growing fields of

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technology development and has given many opportunities to countries to improve their capabilities and even achieve new capabilities in the field of human resource development and empowerment. The realization of these opportunities requires a strategic and coherent approach (Rostami, 2022:47). In general, artificial intelligence is defined as the ability to process and transform data into information to achieve a targeted behavior. Simultaneously with the rapid development of technology and the elimination of human-centered organizations and companies, artificial intelligence has caused transformation in organizations and companies and enables innovation management in them (Safari, 2022:24). Despite the mentioned cases, artificial intelligence can act like a double-edged sword in the field of human resources development. This fact has made the method of dealing with management policies and increasing applications of artificial intelligence become a key issue in the field of human resource management (Alinghian et al., 2021:96).

One of the main characteristics of artificially intelligent machines is that "intelligence" comes from a process of continuous learning and adaptation. Artificial intelligence-based technologies collaborate with humans to improve decision-making and increase quality of life (Jaiswal et al., 2022:1180). On the other hand, the increasing development of human knowledge, the penetration of information technology and the emergence of topics such as virtualization and the addition of the term "intelligentization" to the beginning of words such as "government" and "business", have caused organizations to feel a change in their existence. Due to these factors, many approaches related to the development of human resources in connection with the impact of intelligentization technologies on organizations have attracted a lot of attention (Rajabi Farjad and Attapur, 2022:103). Today, the importance of big data and artificial intelligence and machine learning tools, especially in the fourth industrial revolution, has been revealed to everyone. According to Devalrich's 2016 Human Resource Development Model, one of the nine competencies associated with human resource development is the adoption and application of the latest technologies. "Technology has always been a tool in human resources," says Ben Yobneks, author of Artificial Intelligence in human resources. In fact the developments that are happening today in the field of domestic and international management have made the professionalization approach of organization managers more obvious. A manager, who in the past could easily manage anywhere or in any field, now must appear at a professional and excellent level so he must be able to acquire a set of professional and behavioral qualifications and use these qualifications to achieve results should be used (Zamaniyan et al., 2021:53).

Also artificial intelligence is increasingly being considered in the workplace to improve the execution of tasks and functions and is adapted to computer systems and programs. These systems and applications include machine learning, soft computing, fuzzy logic systems, intelligent robots, virtual reality and augmented reality (Pereira et al., 2023:1). Artificial intelligence is a relatively new phenomenon in the field of computer science. With the rapid development and widespread use of artificial intelligence and other innovative technologies, the nature of interaction between organizations, employees and customers is changing and the process of automation of administrative components has also increased the activities and tasks of human resource management. For example humanoid service robots and robots equipped with artificial intelligence are increasingly attracting the attention of various industries. These intelligent robots have revolutionized traditional human resource functions and have increasing powers and potentials in human resource development. Also deep learning algorithms, intelligent objects and the Internet of Things (IoT) are especially useful for cross-border businesses because they can enhance coordination and collaboration (Vrontis et al., 2022:1).

Today's organizations are in indecisiveness due to globalization of competition, rapid technological developments and continuous environmental changes. Organizations should compete at the local, national and international level based on new competitive patterns. In this regard, Diaz Franades et al. (2014) believe that based on the mentioned conditions, traditional reactive measures cannot respond to the needs of customers and competitive advantage in organizations and organizations need intelligent development of human resources to create a sustainable competitive advantage and must rely on the capacity building and dynamization of their human resources capabilities (Bahraini et al., 2021:661). In contrast to transformative technologies such as artificial intelligence, proper coordination between the organization's capabilities, abilities and multifaceted skills of employees to create value in the organization is emphasized. In fact the organization as an economic and social system is faced with issues and phenomena that, by examining them, the necessity of comprehensive and coherent attention is revealed (Rastegar et al., 2022:216).

The evolution and development of capabilities requires an understanding of the current state of artificial intelligence in relation to human resource development processes so experts and researchers in the field of human resources should pay attention to the capabilities of human resources enhanced by artificial intelligence (Votto et al., 2021:1). According to the above explanations, it can be said that things like the evaluation of issues related to artificial intelligence, digital transformation and intelligentization in organizations and industries and active companies in Iran have not been well considered so to create synergistic in the performance of organizations, the role of artificial intelligence and Its components should be discussed and evaluated in the development of human resources. Based on this, the purpose of this research is to identify intelligence indicators in the development of human resources of organizations. Now the main research question is what are the indicators of artificial intelligence in the development of human resources?

Theoretical Foundations of Research

Artificial intelligence: the concept of artificial intelligence was introduced about a century ago but after the 1950s, it was more effectively considered. Human workers were gradually replaced by machines in the 1970s when computers and the Internet became part of working life. In 2012, a new wave of artificial intelligence applications was formed and investments in this field reached billions of dollars from 2012 to 2016 (Hashmad and Kurdi, 2022:2). Artificial intelligence, whose roots are related to philosophy, mathematics, psychology and neuroscience is becoming a new situation in manufacturing and service industries. The goal of artificial intelligence is to make machines think like humans and perform better than humans when it comes to working methods. Artificial intelligence enables machines to independently collect and process information from their environment to make decisions, solve problems and perform reasoning in a human way (Pereira et al., 2023:1). Recent advances in technology in the fields of processing, improving the performance of sensors and increasing the ability to store data have brought this technology into various fields (Rostami, 2022:46). Artificial intelligence is a relatively broad concept that has gained significant popularity today. Now this technology is considered a subset of computer science but it was originally a subset of mathematics. According to an accepted definition, artificial intelligence refers to the programmed ability to process information but there is also a more comprehensive definition, according to which artificial intelligence is actually the science of making machines to do things that, if done by humans, then They will need intelligence (Alinghian et al., 2021:83).

Artificial intelligence systems enhance human capabilities by sensing, understanding, learning and acting. Artificially intelligent machines are gradually taking over tedious, mechanical and repetitive human tasks such as documentation, scheduling, equipment inspection, data collection and basic analysis (Jaiswal et al., 2022:1179). Artificial intelligence plays an essential role in social development and so far it has achieved transformative results in improving labor efficiency, reducing labor costs, optimizing the structure of human resources and creating new job demands (Zhang & Lu, 2021:1). Artificial intelligence is actually a key to achieving major functional and operational transformations in most of today's organizations and today it is considered as one of the essential activities of business organizations. The main goal of artificial intelligence is to imitate the human brain and make decisions similar to humans in different conditions and situations. But some thinkers believe that artificial intelligence can destroy our world. They say that intelligent machines that can perform high-level mental processes such as thinking, perception, learning, problem solving and decision-making, if equipped with current advances in data collection, analysis and computer processing power, can surpass the power of human intelligence (Safari, 2022:25).

Artificial intelligence has emerged as a new paradigm, allowing employees to work in both physical and virtual spaces. Artificial intelligence increases the productivity of employees and such employees can reduce their useless traffic and have more work flexibility, manage things better and collaborate with others without any time and place restrictions (Malik and Tripathi, 2021:335). Artificial intelligence, in a new definition is known as the frontier of computational advances that assist human intelligence in handling more complex decision-making problems. This definition emphasizes several points: first that artificial intelligence has a single and recognizable nature, it does not mean that it is a phenomenon or a collection of independent technologies. Second, this definition shows how decision-making is the core of understanding the role of artificial intelligence in organizations. Third, the focus of the definition on decision-making considers the relationship between artificial intelligence and human behavior (Achak et al., 2022:132). Artificial intelligence is a general and practical method that has the ability to learn mathematical relationships between a set of input variables (predictor or independent) and analog output variables (criterion or dependent). With the help of its internal neurons (intermediate layers), the network can model the complex relationships of input and output variables and make predictions for other data after learning (Rajabi Farjad and Attapur, 2022:107).

Development of human resources: sustainable development and achieving economic, social, political and cultural prosperity of any society is based on the human resources of that society. In fact human power is known as the main basis of the process of development and progress of any society. Also the level and quality of knowledge, attitude and skills of human resources also determine the level of development of a society (Shanyan et al., 2021:259). A major driving force for an organization's success is its competitive advantage in the form of human resource development. Organizations can use these human resources together with their combination and operational capabilities in an optimal way (Malik and Tripathi, 2021:334). Human resource development is one of the most important topics that has attracted the attention of successful and forward-looking managers today. Having skilled employees is the key to the success of many organizations but the success of having such employees has always been one of the fundamental challenges of organizations because in the field of innovation, quality improvement, continuous development and other important data that are important for survival in the competitive and new world of business. Humans generate ideas (Shirbeygi et al., 2021:125). Human resource development is defined as a process to develop human expertise

through organizational development and employee training and development with the aim of improving performance (Zargaran Khozani et al., 2021:2). In the definition of human resource development, it is also referred to the consistent application of training, career paths and organizational development to improve individual and organizational effectiveness (Piwowar Sulej, 2021:3). In the development of human resources, issues such as creating a dynamic organization and creating opportunities for training and development and learning of employees are discussed with the aim of improving organizational, group and individual performance. In general, different definitions of human resources development include the components of creating scientific awareness and improving employees' knowledge, producing scientific behaviors in employees, creating added value, improving employees' capabilities, developing work skills, updating employees' information, the ability to solve problems in a scientific way, doing things right. Affairs, rational decision-making, the ability to combine information and create new sets (Shoghi et al., 2021:26).

Human resource development can increase the productivity potential of labor resources in terms of knowledge, skills and abilities through appropriate mechanisms such as training, counseling, career planning, performance or self-evaluation, rewards, etc. The human resources development method includes training or apprenticeship, job rotation, adaptive studies, qualification tests and coaching (Kalangit et al., 2022:18). Human resource development is actually a process that stimulates learning and facilitates employees' access to knowledge. Therefore in addition to formal training, human resource development includes informal learning such as unstructured learning processes, experimental processes and non-organizational processes (Bahraini et al., 2021:661). Human resource development activities are divided into four components: identity formation, coordination, adaptation and success. Two components, namely, identity formation and coordination, focus on the internal aspect of the system and the other two categories, namely, adaptation and success, focus on the external aspect of the system (Zare et al., 2019:25). Also the development of human resources is very important to improve the productivity of employees' performance and it is recommended that synergistic should be created between the development of human resources and the skills and abilities of employees and sufficient financial resources are provided for the development of human resources and periodic evaluation is also done to measure the level of To achieve the development of human resources (Gholizade et al., 2021:186).

Background Research

Akbari and Tahmasabi (2023) in a research entitled "Identifying the applications and requirements of artificial intelligence in the recruitment process", concluded that the identified applications and requirements for the use of artificial intelligence in the recruitment process include seven main concepts: applications, technical requirements, Intelligence requirements, functional requirements, ethical requirements, malfunctions and non-structural factors. Hashmad and Kurdi (2022) in a research titled "Evaluating the impact of artificial intelligence systems on human resource practices", concluded that artificial intelligence is a branch of science and technology that has been used effectively in various fields for decades and now as one of the leading technologies, it has become an essential part of organizational methods. Human resource management is often based on technological approaches because human resource management has become a potential need for every department of human resources with the aim of playing its role in the development of the entire organization. Technologies based on artificial intelligence are known as future intelligent systems and will change human

resource management processes due to greater dependence on advanced technologies. Rostami (2022) in a research entitled "Identification and introduction of the applied capacities of artificial intelligence in the development of strategic concepts in military organizations" concluded that the applications of artificial intelligence technology in the military field are:1- Weapons platform, 2- Cyber security, 3 Logistics and transportation, 4- Maintaining health in the battlefield, 5- Simulation and training, 6- Planning and allocation of resources, 7- Environmental awareness and threat monitoring, 8- Information processing.

Achak et al. (2022) in a research entitled "Identification and prioritization of the components of research management and data-oriented development in companies and institutions active in artificial intelligence", concluded that the components of artificial intelligence are, respectively: systematic management, provision of resources, the ability to use big data analysis, supporting policies, platforms and infrastructures, development of data science, organizational factors and business interests. Alinghian et al. (2021) in a research titled "Policy objectives and tools in the field of artificial intelligence development, review of programs related to the policy of selected countries", concluded that the policy objectives of artificial intelligence development are:1- Achieving competitive advantage and growth economic, 2- improving human and knowledge capital, 3- increasing social welfare and improving public services, 4- improving scientific capacities and 5- improving technical and data infrastructures. Also the policy tools are:1- Financing research and development, 2- Determining rules and providing standards, 3- Creating culture and education, 4- Consulting services, 5- Networking and ecosystem development, 6) Government procurement, 7- Stimulating demand. Market. Zamaniyan et al. (2021) in a research titled "Categorization of Iranian Gas Industry Managers and Prioritization of Managers' Qualifications Based on the Evaluation Results of the Organizational Excellence Model and the Artificial Intelligence Approach", concluded that the special feature of this method is that it is based on the output and real performance of successful organizations is achieved. Zargaran Khozani et al. (2021) in a research entitled "The basic model of human resource development with a neurocognitive approach", concluded that the basic model of human resource development is based on employees' cognitive core (including justice, ethics, creativity, motivation and trust), behavioral rules The staff and the executive staff of human resources development managers are formed. Also the results of this research showed that neurocognitive science can be used to advance the management and development of people in a more effective way. Of course, the application of the findings of neurocognitive science in human resources methods and processes is still in the early stages but it has provided us with a new perspective for continuing research and implementing human resources development.
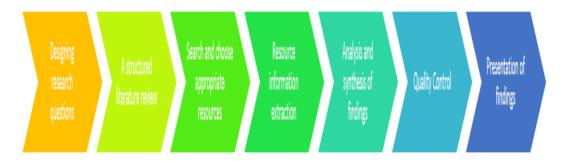
Vrontis et al. (2022) in a research titled "artificial intelligence, robotics, advanced technologies and human resource management: a systematic assessment", concluded that intelligent automation technologies offer a new approach to managing employees and improving organizational performance, thus providing numerous opportunities for management. Human resources as well as solving technical and ethical challenges of presentation arise. The impact of these technologies on focus on human resource management strategies, human-robot collaboration, learning opportunities and human resource management activities, training and job performance have been identified. Jaiswal et al. (2022) in a study titled "Artificial Intelligence-related Skill Enhancement in Multinational Enterprises" concluded that artificial intelligence envisions a scenario where intelligent machines perform normal human tasks so humans can spend more time Spend on creative things. Although many people are worried about losing their jobs with the advent of artificial intelligence, corporate think tanks guarantee

to reach the synergistic peak of man and machine. In this regard, employees are asked to improve their qualifications using dynamic skills, neo-human capital and artificial intelligence job replacement theories.

Pan et al (2022) in a research titled "Artificial intelligence adoption on employee recruitment process and the influence of contextual factors", concluded that artificial intelligence as a powerful tool in human resource management can be achieved through technological competence. The relative advantages of artificial intelligence technology, firm size and industry size do not significantly affect the use of artificial intelligence. Also the researchers' findings indicate the moderating effects of transaction costs on the effectiveness of technology complexity and technology competence of organizations. Votto et al. (2021) in a research titled "artificial intelligence in human resource management: a systematic literature review", concluded that digitalization in human resource management has led to the increasing promotion of artificial intelligence in human resource management systems and human resource information systems. Also in the case of recruitment procedures, evaluation of employee performance and satisfaction, analysis of rewards and benefits, analysis of best practices and employee training and development systems, the degree of integration with artificial intelligence has increased.

Research Methodology

This research is applied in terms of purpose and in terms of method, it is a qualitative research and in terms of data collection, it is a development-based research. Also this research is exploratory in nature and apriority in terms of strategy. This research was done with qualitative approach and meta-synthesis method. This method is a type of qualitative study that uses the findings of other qualitative researches on a specific topic as data. In meta-synthesis, the researcher includes samples of qualitative research based on the research question. The steps of using the meta-synthesis method are: clear design of the problem and addressing the question, comprehensive search of the subject literature, detailed evaluation of research for the feasibility of entering the meta-synthesis method, evaluation of the results of qualitative research, presentation of synthesis findings and reflecting the results in the process used (Yarahmadi et al., 2019:37). Therefore in the design of the final model, the source of documents has been used for the purpose of gathering information. In the library method, books, theses, English and Farsi articles, websites and Internet information portals have been used. You can see the steps of meta-synthesis based on the 7-step method of Sandlowski and Baros (2007) in figure 1.

Figure 1- Steps of Meta-Synthesis Based on the 7-Step Method of Sandlowski and Baros (2007).

Research Findings

In this section, we have explained the details and results of the meta-synthesis method based on the 7-step model of Sandlowski and Baros (2007).

The first step: the question of this research in the meta-synthesis section based on the parameters "what?", "when?", "who?" and "how?", it is raised as follows: what are the elements and indicators of artificial intelligence in the development of human resources in the years 2000 to 2023?

The second stage: the statistical population of the research is searched through several Farsi and English keywords which are: artificial intelligence, digital transformation, human resource development, intelligent human resources and human resource intelligence. Also most research focuses on online databases. In this research, several English databases (Science Direct, Springer, Emerald, ProQuest, Google Scholar, Google and Scopus) and several Persian databases (Irandoc, Nurmagz, Meg Iran, Civilica, Comprehensive Humanities Portal, Iran Scientific Database) Ganj), Persian search engine ElmNet, Sid, etc.) have been used as the most relevant databases in the field of management. In the next step, the collected resources were evaluated based on acceptance or non-acceptance indicators.

Third step: after a complete search in all the mentioned websites, 132 articles were obtained. After initial evaluation and measurement of primary indicators, 98 articles were excluded. These articles did not have initial acceptance indicators. Then, the stage of detailed evaluation of the remaining articles and the selection of suitable cases as the basis of the analysis began. After evaluating the abstracts of the articles, those that did not correspond to the research questions were removed. In the next step, the remaining articles were evaluated in terms of content and those that were not consistent in terms of content were removed.

Table 1- Analysis Steps.

Keyword	Artificial intelligence, digital transformation, human resource development, intelligent human resources, human resource intelligence
Source type	Books, dissertations, English and Farsi articles, websites and internet information portals
Bases	English: Science Direct, Springer, Emerald, ProQuest, Google Scholar, Google and Scopus Farsi: Irandoc, Nurmagz, Mag Iran, Civilica, Comprehensive Humanities Portal, Iran Scientific Information Database (Ganj), ElmNet and Sid Farsi search engine
Evaluation period	2000 to 2023
The number of primary documents	132
The number of final documents	98
Select the unit of analysis	Entire text of the document

Fourth stage: in this stage, the process of extracting information from articles, extracting points from articles and selecting appropriate sources were evaluated several times and carefully and points related to the questions presented were obtained.

Table 2- Points Extracted from the Articles.

Extracted codes	Source
Improved management decisions	Pereira et al. (2023), Qamar et al. (2021)
Faster and more effective hiring of employees	Rostami (2022), Chaudhuri et al. (2023)
Better learning processes at work	Pereira et al. (2023), Verma and Bandi (2019)
Employee participation	Pereira et al. (2023), Abdul Daim and Al-Dalimi (2020)
Retention of employees	Bankins (2021), Tiwari and Pent (2020)
Flexibility in workforce planning	Rastegar et al. (2022), Pereira et al. (2023)
Job replacement	Sohrabi et al. (2014), Jia et al. (2018)
Allocation of manpower on multiple projects	Zamaniyan et al. (2021), Keshtri (2021)
Prediction of vacancies	George et al. (2019), Strohmeier and Piazza (2015)
Job description optimization	Akbari and Tahmasabi (2023), BAhardvaj (2020)
Predicting employee performance	Hashmad and Kurdi (2022), Bellinikova and Young (2020)
Performance monitoring and evaluation system	Pan et al (2022), Kiva and Yaw (2021)
Assessment, identification and normalization of skills	Forzandeh Junqhani et al. (2022), Mehdi Beigi et al. (2020)
Optimizing human resource management	Mehdi Beigi et al. (2019), Bozko et al. (2016)
Development of technical and operational talents	Fethian et al. (2013), Sitambaram and Tajudin (2022)
Staff training	Mehrdad et al. (2019), Gong et al. (2022)
Extracting educational needs	Safari (2022), Barheil et al. (2020)
Create learning and create knowledge	Alinghian et al. (2021), Arora et al. (2021)
Development of professional skills	Zargaran Khozani and others (2021), Navaz (2021)
Predicting the behavior and attitude of talented employees	Vrontis et al. (2022), Tiwari et al. (2021)
Dynamic talent flow analysis	Jaiswal et al. (2022), Hamod (2021)
Prediction of voluntary job resignation	Khatari et al. (2020), Yavalkar (2019)
Developing the frontiers of knowledge	Rastegar et al. (2022), Rankma (2022)
Determining the digital mission for the organization	Rajabi Farjad and Attapur (2022), Zargaran Khozani et al. (2021), Navaz (2021)
Developing job activities based on digital requirements	Rastegar et al. (2022), Jiang et al. (2019)
Coherence in performing human resources activities	Akbari and Tahmasabi (2023), Rastegar et al. (2022),
Increasing the dynamic capability of manpower	Achak et al. (2022), Forzandeh Junqhani et al. (2022), Mehdi Beigi et al. (2020)
Using digital software to do things	Rastegar et al. (2022), Vrontis et al. (2022), Tiwari et al. (2021)
Digitization of human resources processes	Hashmad and Kurdi (2022), Votto et al. (2021), Bellinikova and Young (2020)
Monitoring and using new technologies	Safari (2022), Rastegar et al. (2022), Sharma (2021)
Digital research and development	Fethian et al. (2013), Sitambaram and Tajudin (2022), Tambe et al. (2019)
Development of individual skills	Rastegar et al. (2022), Zamaniyan et al. (2021), Keshtri (2021)
Team learning	Rastegar et al. (2022), Wang and Lin (2018)
Creating new organizational knowledge	Rastegar et al. (2022), Sohrabi et al. (2014), Jia et al. (2018)

Extracted codes	Source
Ability to use new technologies	Rastegar et al. (2022), Vrontis et al. (2022), George et al. (2019), Strohmeier and Piazza (2015).
Improving the strategic thinking of employees	Kiyaey (2022), Pereira et al. (2023), Abdul Daim and Al-Dalimi (2020)
Job regeneration	Delavar et al. (2016), Rankma (2022), Yavalkar (2019)
Improving employee performance	Kikha (2022), Pan et al (2022), Kiva and Yao (2021)
Senior managers' support for digital approaches	Nazimi et al. (2021), Mehrad et al. (2019), Gong et al. (2022)
Encouraging employees to accept artificial intelligence requirements	Akbari and Tahmasabi (2023), Nazimi et al. (2021), Jiang et al. (2019)
Designing digital-oriented executive programs	Safari and Ansari (2022), Nazimi et al. (2021), Bozko et al. (2016)
Providing strategies related to the development of human resources based on artificial intelligence	Nejatpour et al. (2022), Nazimi et al. (2021), Strohmeyer (2022)
Reduce human error	Akbari and Tahmasabi (2023), Langer and Koenig (2022)
Easy access to data and information needed to develop and use artificial intelligence	Safari and Ansari (2022), Hammoud and Veraliai (2020)

The fifth step: in this step of the meta-synthesis process, to analyze and then combine the research findings, we first summarize the extracted codes in the previous step. So at this stage, some codes are combined and aggregated. After categorizing the extracted codes, the researcher summarized the congruent data using the open coding method and categorized the codes based on conceptual similarity, frequency of repetition and importance in the form of artificial intelligence concepts in human resource development. You can see the results of this coding in table 3.

Table 3- Classification of Codes Based on Dimensions and Indicators.

Component	Concept	Extracted codes
intelligentization of human resources	Advancement and promotion of intelligent manpower	Promotion of technical and operational talents
		Improving professional skills
		Improving employee performance
	strategic human resource planning intelligentization	Improved management decisions
		Job replacement
		Faster and more effective hiring of employees
		Flexibility in workforce planning
		Allocation of manpower to several projects
		Prediction of vacancies
		Job description optimization
		Designing digital-oriented executive programs
Digital human resources performance management	Cultural development of human resources based on artificial intelligence	Senior managers' support for digital approaches
		Encouraging employees to accept artificial intelligence requirements

Component	Concept	Extracted codes
		Development of the culture of intelligentization of human resources processes
	Training and empowering human resources based on artificial intelligence	Better learning processes at work
		Training employees to use artificial intelligence
		Extracting educational needs
		Improving individual skills
		Providing human resource development strategies based on artificial intelligence
	Using artificial intelligence tools in performance evaluation	Performance monitoring and evaluation system
		Assessment, identification and normalization of skills
		Optimizing human resource management
		Predicting employee performance
		Reduce human error
		Easy access to data and information needed to develop and use artificial intelligence
Human resources architecture	Technologicalism	Determining the organization's digital mission
		Developing job activities based on digital requirements
		Using digital software to do things
		Digitization of human resources processes
		Monitoring and using new technologies
		Digital research and development
	Organisational Learning	Developing the frontiers of knowledge
		Team learning
		Creating new organizational knowledge
		Learning and creating knowledge
	intelligentization of knowledge management	Ability to use new technologies
		Improving strategic thinking in employees
		Job regeneration
	Digital talent management	Provision for voluntary resignation from work
		Predicting the behavior and attitude of talented employees
		Dynamic talent flow analysis
		Coherence in performing human resources activities
		Increasing the dynamic capability of manpower
		Employee participation
		Retention of employees

The sixth step: in this step, the articles and sources used are quality controlled. At this stage, all articles were evaluated through searching in valid scientific databases and defining initial acceptance indicators for searches as well as comprehensive and multi-stage search with time intervals and using broad keywords to ensure complete extraction of information sources related to the research topic. Also the quality of the analysis and coding of extracted information was controlled by following a round trip process and constant comparison. For complete control, the agreement method between two coders was used. In this method, the extraction process was provided by the researcher to two coders and the classification of codes was done in the form of relevant concepts. Finally the kappa agreement coefficient between two coders was calculated using SPSS software, the results of which can be seen in table 4.

Table 4- Kappa Agreement Coefficient Results.

Value		Asymptotic Standard Error[a]	Approximate T[b]	Approximate Significance
Measure of Agreement	Kappa	0.612	0.079	4.778	0.000
N of Valid Cases		98			

According to table 4, the value of the kappa agreement coefficient is equal to 0.612. This value is greater than 0.6. Also the meaningful level is higher than the 0.05 error level so it can be said with 99% confidence that the agreement between the two coders is significant.

Seventh step: in this step, findings based on meta-synthesis results are presented. The results of the research show that the indicators of artificial intelligence in the development of human resources include 3 components (intelligentization of human resources, digital human resources performance management and human resources architecture) and 9 concepts (advancement and promotion of intelligent human resources, intelligentization of strategic planning of human resources, Cultural development of human resources based on artificial intelligence, training and empowerment of human resources based on artificial intelligence, use of artificial intelligence tools in performance evaluation, technologicalism, organizational learning, intelligentization, knowledge management and digital talent management) and 45 codes are extracted.

Conclusion

This research was done with the aim of identifying the indicators of artificial intelligence in the development of human resources. The results of the analysis in this research show that the indicators of artificial intelligence in the development of human resources include 3 components (intelligentization of human resources, performance management of digital human resources and human resources architecture) and 9 concepts (advancement and promotion of intelligent human resources, intelligentization of strategic planning of human resources, cultural development of human resources based on artificial intelligence, training and empowerment of human resources based on artificial intelligence, use of artificial intelligence tools in performance evaluation, technologicalism, organizational learning, intelligentization, knowledge management and digital talent management) and 45 codes are extracted. These results are in agreement with the research findings of Akbari and Tahmasabi (2023), Hashmad and Kurdi (2022), Rostami (2022), Achak et al. (2022), Alinghian et al. (2021), Zamaniyan et al. (2021), Zargaran Khozani et al. 2021), Vrontis et al (2022), Jaiswal et al (2022), Pan et al (2022), Votto et al (2021) agree. Based on these findings, it can be said that in a

competitive situation, the human resources department of organizations has been able to develop greatly. Human resource development is one of the challenges in human resource management. To increase the speed of doing things, most organizations use modern technologies. Most researchers and experts also encourage the human resources department of organizations to use artificial intelligence tools and digital technologies. Artificial intelligence and machine language are used by many organizations in the field of human resources and artificial intelligence plays an important role in recruitment, selection, performance analysis, collecting employee-related data, providing real-time information and providing accurate information. On the other hand, artificial intelligence plays a positive role in various business functions and can help reduce workload and work pressure on employees. Also organizations can learn about their current and daily performance by using artificial intelligence system. As business pressures have increased so managers are realizing the importance of artificial intelligence in the workplace. Today, artificial intelligence has entered the general system of organizations, one of its fields is the human resources department. In this department, all tasks such as candidate screening and recruitment are performed using the artificial intelligence system that has replaced humans.

Overall, artificial intelligence is a real advancement in business management and has a profound impact on how employees work, especially in human resources and recruiting. Artificial intelligence technologies affect human resources management in a different way. For example training and development programs for each employee are designed based on big data or data analysis related to real-time recruitment methods. The use of artificial intelligence in a practical and effective way facilitates the performance of human resource management tasks (such as recruitment, performance evaluation and measurement, human resource planning, employee training needs, job evaluation, labor market forecasting, labor market needs and indicators and etc.) becomes In fact artificial intelligence plays a vital role in changing the functions of human resources to enter the digital age. Undoubtedly, the increase in the use of information technology within the organization has caused the transformation of all types of jobs and the skills required for them. Therefore if organizations want to survive in today's global economy, they must look for ways to use artificial intelligence in human resources transactions regarding the decision-making process. Also organizations should rely on artificial intelligence to perform administrative tasks to make human resources departments more efficient. Such human resources professionals can focus more on strategic planning at the organizational level.

Offers

Based on the results of this research, the following suggestions are made

- Managers of the organization should make a proper definition of digital identity and determine their position in the digital space and focus on digital organizational-human assets at a strategic level so that they can realize the intelligentization of human resources development.
- The managers of the organization should widely follow the design patterns of intelligent thinking and how to learn intelligent systems in order to be able to use artificial intelligence in human resource development processes and create the required context.
- Human resource managers should support the application of digital approaches in the organization.
- Human resources managers of the organization encourage employees to accept the requirements of the digital age.

- On the topic of training, needs to be identified to adapt to artificial intelligence tools and digital tools.
- Organizations can start using artificial intelligence in human resource development processes in a basic way. Considering that the evolution of the system requires a lot of time so organizations can carry out the initial stages of human resource development such as empowerment, optimization of human resources and measuring their skills using artificial intelligence.

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