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The Impact of Applying Artificial Intelligence on Human Resources Management in Jordanian Banks

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Abstract

The study aims to investigate artificial intelligence (expert systems, knowledge representation and reasoning, automatic learning and effectiveness) on human resources management in Jordanian banks. The descriptive analytical method was used by developing a digital questionnaire that was distributed to a purposive sample of the study population, which includes employees of directors of human resources departments and workers in the human resources department. To answer the study's questions and hypotheses, the data was analyzed using the SPSS program. It was found that artificial intelligence variables (expert systems, knowledge representation and reasoning, automatic learning, and effectiveness) are associated with a positive, statistically significant relationship with training and development. It was also found that artificial intelligence variables (expert systems, knowledge representation and reasoning, automatic learning, and effectiveness) are associated with a positive, statistically significant relationship with selection and appointment. Finally, the results concluded that artificial intelligence explains a large portion of the variance in incentives, which indicates a positive and statistically significant relationship. The study recommended that the expanding the use of artificial intelligence techniques in human resources management, and conduct more future studies about the relationship between the use of artificial intelligence technologies and other human resources practices such as: (performance evaluation, wages and compensation, talent management).

Keywords: Expert Systems, Knowledge Representation and Reasoning, Automatic Learning, Effectiveness, Human Resources Management

1. Introduction

In today's fast-paced technological environment, the incorporation of artificial intelligence (AI) into various industries has become a driving force for innovation. One area where AI is having a big impact is human resources (HR) (Alqahatani, 2022). By using AI technology, organizations can improve their HR practices, improve decision-making processes and increase productivity (Yawalkar, 2019).

The human resources management function is considered one of the crucial aspects of any economic institution, as it is concerned with managing the human element or employees who are considered one of the most important assets of the organization, as it is concerned with appointing

appropriate employees, developing and training them, managing their wages and incentives, evaluating their performance, and managing their practical relationships and aspects other related (Murugesan et al., 2023). Effective human resources management can help the organization. By hiring the proper people, work efficiency and product quality improve. When personnel are well-developed and trained, they become more efficient and skilled at their responsibilities and difficulties, and their pay are fairly managed, their contentment and stability in the organization increase (Alsaif & Aksoy, 2023).

With the rapid advancement of technology, digital transformation has become inevitable for institutions and companies in all sectors. Digital transformation involves using digital technology and modern technologies to transform traditional processes and businesses into more effective and efficient digital formats. Artificial intelligence improves computer intelligence by learning, adapting, and interacting like people. Developing models and algorithms allows computer systems to absorb, analyze, and apply information to make good judgements (Alos-Sánchez et al., 2022). Artificial intelligence can improve efficiency, productivity, and strategic decision-making in various management functions, including human resources management, which is crucial for banks. All institutions need it to organize and develop their workers to attain their goals.

Thus, artificial intelligence can revolutionize human resources management and provide various benefits. This study examines how artificial intelligence applications improve human resources management activities. This will be achieved through the following objectives:

1- Investigate impact of AI on Selection and recruitment for banks in Jordan
2- Investigate impact of AI on training and development for banks in Jordan.
3- Investigate impact of AI on incentives for banks in Jordan.
4- Investigate impact of AI on Performance evaluation for banks in Jordan.

1.1 Study Hypotheses

To achieve the objectives of the study, the following main and sub-hypotheses were formulated
Main hypotheses:
H1: There is no statistically significant effect at the level ($\alpha \leq 0.05$) of AI on Human resources management practices for banks in Jordan.
Sub-Hypotheses:

- **Ho1:** There is no statistically significant effect at the level ($\alpha \geq 0.05$) of artificial intelligence on Selection and recruitment for banks in Jordan
- **Ho2:** There is no statistically significant effect at the level ($\alpha \geq 0.05$) of artificial intelligence on training and development for banks in Jordan.
- **Ho3:** There is no statistically significant effect at the level ($\alpha \geq 0.05$) of artificial intelligence on incentives for banks in Jordan.

2. Theoretical Background

In the era of technology and rapid developments, artificial intelligence is emerging as one of the most important tools that revolutionize various areas of work, including human resources management (Yawalkar, 2019). The use of artificial intelligence in this field has improved the efficiency of operations and increased productivity, and has also helped make smarter and more accurate decisions (Rekhadi & Devi, 2023).

2.1 Artificial Intelligence

Herbert Simon, Allen Newell, and John Shaw's 1955 software "Theoric Theorist" used artificial intelligence to "imitate human problem-solving skills" (logic) (Khalifa et al., 2022). This program has

helped other AI advancements grow over the past 20 years. As scientists improved their understanding of computers and increased their storage capacity, they were able to eliminate the need to sift through enormous volumes of data daily in their professions, making this technology very simple (Giles, 2019). Artificial intelligence (AI) has revolutionized information technology. Computer science's AI subfield develops intelligent gadgets and systems that behave like people (Kamble & Shah, 2018). It refers to the scientific discipline that aims to give robots reasoning, planning, learning, and perception abilities (Shaw et al., 2019). While it mostly applies to "machines," it can also include "any form of sentient intelligence." Thus, artificial intelligence can include creativity, emotional understanding, and self-awareness (Perez et al., 2018). Computer science's artificial intelligence division creates and studies intelligent computer systems. Systems can think, draw inferences, and learn new concepts and activities. It can grasp auditory language, see a scene, and execute other intelligent tasks. Given humans' ability to intend, think, and conclude, artificial intelligence involves studying concepts to create robots that can mimic human responses (Shukla & Vijay, 2013). Al-Sedrah (2017) defines it as the study of machine learning like humans and artificial intelligence's ability to respond to certain actions. Poola (2017) definition: the creation of advanced, complicated systems that can outperform humans in several ways.

Artificial intelligence (AI) Dimensions:

Expert Systems: Expert systems (ESs) are computer-based systems that mimic human decision-making. (ESs) can use their knowledge base to make decisions and accomplish tasks in a way that meets the user's goal (Frank et al., 2019).They can integrate with information systems to improve their accuracy and performance (Asemi, & Nowkarizi, 2021). It is mainly applied in human resource planning, compensation, recruitment and labor management (Palos-Sanchez et al., 2022).

Machine learning: it is one of the branches of artificial intelligence that is concerned with making the computer able to learn on its own from any previous experiences or experiences, which makes it able to predict and make the appropriate decision quickly, and this is done through developing algorithms that allow such a thing. (Rąb-Kettler & Lehnervp, 2019).

Representing knowledge and reasoning: Contemporary data-intensive systems have come to require intelligent data processing, as they are based on the basic knowledge representation and logic that such systems use in interpretation and analysis tasks (Rajanam & Annamalai, 2016). Knowledge representation and logical deduction are crucial components in the domain of artificial intelligence. This field is concerned with the symbolic representation and automated processing of knowledge using cognitive programs. Cognitive science is a branch of artificial intelligence that focuses on the study of thinking and its role in intelligent action. Moreover, it illustrates how knowledge representation and logic enable the linkage between human knowledge and its representation in programming languages utilized in computers (Brachman & Levesque, 2004).

2.2 Human resource management

Before discussing AI's impact on HR, one must define HR. Organizations use human resource management to strategically manage and enhance their personnel (Alsaleh, 2022). It involves hiring, onboarding, training, performance management, incentives, employee relations, and workforce planning. Human resources aims to maximize employee value as assets to boost organizational productivity and competitiveness (Guerguet & Attia, 2023).

Human Resources Management Functions:

Selection and Recruitment: is an ongoing process that requires the organization to determine its needs for a workforce that is able, willing, and available to work, and to search for elements and encourage them to work in the organization, so that the best candidates are selected (Ramadan & Misbah, 2018).

Training and Development: it means systematic practices and efforts made by organizations to provide workers with the skills and knowledge that enable them to improve their performance and accomplish it efficiently and effectively (Hasnain, 2019).

Performance Evaluation: it is the process by which the performance of employees in the organization is measured according to standards related to performance, some of which are quantitative and some are qualitative, with the aim of identifying strengths to strengthen them and identifying weak points to address them, which determines the trends of development and progress in the employees' performance of their tasks (Al-Mohammadi, 2019).

Incentive Systems: it means determining the incentive or fair replacement for outstanding performance, in addition to the type of incentive that is available with the skills and motivations of employees, and motivating teamwork performance (Al-Kalalda, 2019).

2.3   The rise of artificial intelligence (AI) in human resources

In recent years, AI has gained significant attention for its potential to revolutionize HR practices (Chen, 2022). AI systems can analyze vast amounts of data, identify patterns and make predictions, enabling HR teams to make more informed, data-driven decisions. By integrating AI into HR, organizations can streamline operations, enhance efficiency, and improve the overall employee experience (Rekhadi & Devi, 2023).

2.4   Adopting artificial intelligence in human resources

Artificial intelligence has revolutionized the business world and has profoundly impacted human resource management (Aloqaily & Rawash, 2022). With the continuous progress in artificial intelligence technology, it has become possible to automate many processes that used to require significant human effort and a long time (Alsaif & Aksoy, 2023). Artificial intelligence helps improve the accuracy of human resources analyzes and the speed of decision-making, by providing systems capable of learning and developing independently. It also affected the ways of recruiting talented people and developing employee skills, which indicates a future full of innovations that will change the traditional perspective of human resources management (Chen, 2022). (AI) is increasingly being integrated into human resources (HRM) practices, offering a variety of benefits including increased efficiency and effectiveness in recruiting, worker optimization, performance monitoring and selection (Sucipto, 2024).

2.5   Previous Studies

Despite the recent topic of the study, there are many studies that have dealt with The Impact of Applying artificial intelligence on human resources management in Jordanian Banks.In a study prepared by Abu Saad (2024), which I sought identify the impact of artificial intelligence on improving human resources management. Survey questionnaires were designed and distributed to a sample of 377 individuals from employees of the National Bank of Egypt. The results revealed the existence of a statistically significant relationship between the dimensions of artificial intelligence (human capabilities, material capabilities, technical techniques), and improving human resources management at the National Bank of Egypt. Based on the field study conducted by the researcher in the bank under study, a set of recommendations were reached. The most important of which is enhancing the effectiveness and efficiency of all human resources management functions by adopting technologies.   Another study (Maryam et al., 2024) examines how AI in HRM practices affects employee retention in organizations. Design/methodology/approach: A systematic literature review (SLR) was done to achieve the stated aims. Findings: The report highlights the significance of solving these issues and the role of AI in improving HR processes to boost employee retention. AI approaches like machine learning and big data analysis can forecast staff attrition, optimize recruitment, increase engagement, and analyze sentiment. The study (Abdelraouf, 2024) investigated the impact of AI on recruiting and selection in Egypt's HRM business. This study uses a quantitative research methodology with an empirical and descriptive focus. Data was acquired from 109 participants using

cluster random sampling in an online survey. The study highlights the impact of AI on selection and recruitment.

This study offers practical advice for HR professionals in Egyptian organizations. In a 2024 study by Alnsours et al., AI was used in the recruitment and selection process to examine its impact on HRM efficiency and OD effectiveness in Jordanian commercial banks. The research model was created after a thorough literature evaluation. The survey included HR Managers and Employees from all Jordanian commercial banks, using a census method to collect 177 responses.AI use in the recruitment and selection process has a considerable positive impact on HR efficiency, which in turn improves OD effectiveness. This study reveals the importance of using AI tools in recruitment to enhance HR efficiency and organization effectiveness. The Al Saleh (2022) study examined the impact of AI approaches on the effectiveness of human resource management processes (recruitment and selection) in small and medium-sized firms. We employed a descriptive survey method and a questionnaire instrument. Results indicate a positive correlation between AI approaches and recruitment and selection effectiveness.

3. Research Methodology

To achieve the objectives of the study and answer its questions, the descriptive method was used.

3.1 *Study population and sample*

The researcher published a digital questionnaire via Google Drive using a simple random sample and received 103 statistically valid questionnaires after 45 days from an estimated 215 senior management employees, 13 of whom were in the Jordan banking sector.

The final version of the questionnaire consisted of (37) items divided into (21) items to measure artificial intelligence, divided into four dimensions :Expert systems consisting of (5) items, Knowledge representation and reasoning consists of (10) items, Automatic learning consists of (6) items, Effectiveness consists of (6) items, and (16) items to measure Human Resource Management. divided into three dimensions: Training and development consists of (5) items, Selection and recruitment consists of (5) items, Incentives consists of (5) items.

A five-point Likert scale was included in the questionnaire to provide participants more latitude to answer. From 1 to 5, the scale shows strongly agree (5), agree (4), neutral (3), no Agree (2), and strongly disagree (1). Participants could accurately measure study variables. The study's arithmetic averages are: (3.67-and-above: high), (2.34-3.66: medium), (2.33-and-below: low).

3.2 *The Statistical Methods Used*

The Statistical Analysis Program (SPSS) for Social Sciences was used to analyze and process data through a number of statistical processing methods, as follows:

1- Cronbach's alpha coefficient to measure reliability and coefficient of self-honesty to measure the validity.
2- Descriptive statistics: Arithmetic means and standard deviations of the study sample's responses
3- Variance Inflation Factor (VIF) and Tolerance to ensure that there is no high correlation (multi-Collinearity) between the independent variables.
4- Multiple linear regression analysis: to test the effect between the study variables.

A committee of experienced, competent, and specialized academic referees assessed the study tool's fitness for the scale and the paragraphs' quantity, diversity, correctness, clarity, and any other pertinent remarks they considered required, whether by amendment, alteration, or correction. The proposed changes were examined and some clarified terminology and corrected linguistic problems. The validity and reliability results are in Table (1). Validity and reliability in statistical analysis assist

researchers check their findings and decide if they apply to the entire study population. Questionnaire variables had 72% to 91% Cronbach's alpha, whereas self-honesty coefficients were 85% to 95%. A 97% Cronbach's alpha value and 98% self-reliability coefficient were achieved for the full questionnaire. Thus, the study instrument is reliable, data is suitable for quantifying variables, and values are subject to significant dependability. All of them exceed the minimum acceptable reliability requirement of 60%.

Table 1. Validity and reliability:

Variables	Number of items	Cronbach's Alpha	coefficient of self-validity
Expert systems	5	0.86	0.93
Knowledge representation and reasoning	10	0.90	0.95
Automatic learning	6	0.88	0.94
Effectiveness	6	0.87	0.83
Training and development	5	0.90	0.95
Selection and recruitment	6	0.91	0.95
Incentives	5	0.72	0.85
entire questionnaire	43	0.97	0.98

Table (2) shows descriptive statistics related to the dimensions of (artificial intelligence). Ratings represent participants' strong agreement with the questions asked.

Table 2. The Compare between the mean of the variables of the dimensions of (artificial intelligence dimension

variable	mean	SD	Evaluation
Expert systems	4.23	0.50	high
Knowledge representation and reasoning	4.10	0.48	high
Automatic learning	4.12		
Effectiveness	4.11	0.50	high
general mean	4.14	0.50	high

The mean scores for Expert systems (4.23), Automatic learning (4.12), and Effectiveness (4.11) are slightly higher than Knowledge representation and reasoning (4.10.0), indicating a higher perception of effectiveness in these areas of artificial intelligence. However, all three variables are rated "high," indicating a positive view of their contribution to bank AI.

Table 3. Mean, Standard deviations and Evaluation of the responses of the study sample members to the Expert systems variable:

N	item	Mean	SD	Evaluation
1	Expert systems are designed by using human expertise in processing events	4.29	0.800	high
2	Expert systems help managers in the thinking process, not only provide them with information.	4.40	0.809	high
3	Expert systems help acquire knowledge from the knowledge bases stored in the systems in many areas that support the capabilities of senior management.	4.15	0.692	high
4	Expert systems are used as a consultant to improve the decision-making process through information stored in knowledge bases.	4.13	0.652	high
5	Expert systems rely on advanced databases that can be used by information systems to develop solutions to various problems.	4.16	0.826	high
	General mean	4.23		high

The study examined the responses of the sample members regarding their evaluation of expert systems. The mean scores for each item ranged from 4.13 to 4.40, indicating a generally positive perception of expert systems within the sample. Specifically, respondents expressed agreement or strong agreement with statements such as "Expert systems help managers in the thinking process, not only provide them with information" (Mean = 4.40, SD = 0.809) and "Expert systems are designed by using human expertise in processing events" (Mean = 4.29, SD = 0.800). The sample also strongly supported expert systems, since the overall mean score was 4.23. These findings imply that sample members value expert systems for assisting decision-making and knowledge acquisition across disciplines, particularly in senior management. The consistently high assessments across all items suggest that expert systems may improve organizational decision-making and problem-solving. Positive impressions may affect organizational adoption and execution of expert systems, emphasizing the need for more research.

Table 4. Mean, standard deviations and evaluation of the responses of the study sample members to the Knowledge representation and reasoning variable

N	item	Mean	SD	Evaluation
1	The bank's artificial intelligence is characterized by the ability to adapt to its cognitive environment.	4.19	0.864	high
2	The bank's symbolic and inferential knowledge is characterized by the ability to extract information from complex and inaccurate data.	4.11	0.753	high
3	Artificial intelligence allows symbolic knowledge to be represented clearly, such as graphs, semantic networks, and texts.	4.08	0.837	high
4	Artificial intelligence allows symbolic knowledge to be represented clearly as data graphics networks and texts.	4.20	0.797	high
5	Artificial intelligence allows knowledge to be stored quickly and sufficiently	4.07	0.744	high
6	Knowledge and inferences are represented according to criteria defined by the bank	3.96	0.753	high
7	Knowledge and inferences are kept securely to protect them from tampering.	4.14	0.742	high
8	Artificial intelligence is characterized by the ability to adapt to its cognitive environment in the organization.	4.19	0.897	high
9	Enables workers to easily access knowledge when they need it.	4.00	0.897	high
10	Obtaining new ideas as a result of applying artificial intelligence.	4.02	0.980	high
	General mean	4.10		high

The study examined sample members' assessments of knowledge representation and reasoning in the bank's AI systems. The mean scores for each item ranged from 3.96 to 4.20, demonstrating a positive view of AI's ability to represent and reason using organizational knowledge. Respondents agreed or strongly agreed that "The bank's artificial intelligence is characterized by the ability to adapt to its cognitive environment" (Mean = 4.19, SD = 0.864) and "Artificial intelligence allows symbolic knowledge to be represented clearly as data graphics networks and texts" (Mean = 4.20, SD = 0.797). Furthermore, the general mean score across all categories was 4.10, demonstrating strong support for artificial intelligence in knowledge representation and reasoning activities throughout the business. These findings show that sample members value artificial intelligence for extracting, representing, and storing knowledge and making it easier to access when needed. Positive ratings of artificial intelligence's security of knowledge and inferences and idea production show its potential to improve organizational decision-making and innovation. Positive impressions may affect corporate adoption and use of artificial intelligence systems, underlining the need for more research and development.

Table 5. Mean, standard deviations and evaluation of the responses of the study sample members to the Automatic learning variable

N	item	Mean	SD	Evaluation
1	The bank's department automatically keeps a copy of the data in the event of a sudden disruption to the bank's network.	4.07	0.832	high
2	The bank's internal systems undergo periodic and automatic updates.	4.17	0.810	high
3	The bank's system has the capability to autonomously address any issues it may encounter.	4.11	0.827	high
4	The bank's systems are interconnected in a synchronized and cohesive manner, allowing for seamless communication and interaction.	4.04	0.740	high
5	The bank's systems handle logical and programmed errors.	4.17	0.841	high
6	The bank's systems are characterized by the automatic ability to detect any manipulation with them.	4.15	0.912	high
	General mean	4.12		high

The study evaluated sample members' views on bank system automated learning. The mean scores for each item varied from 4.04 to 4.17, reflecting a positive view of the organization's autonomous learning capabilities. "The bank's systems handle logical and programmed errors" and "The systems within the bank themselves update periodically and automatically" were agreed upon by respondents. The general mean score across all items was 4.12, demonstrating high support of the bank's autonomous learning functions. These findings imply that sample members view the bank's systems as robust and adaptive, able to automatically handle disruptions, update themselves, handle difficulties, retain connectivity, and identify manipulations.

Positive reviews show that autonomous learning methods can improve organizational resilience, efficiency, and security. These impressions may also affect the organization's strategic decisions about adopting and integrating autonomous learning technology, underlining the need for greater research and development to maximize its potential for organizational success.

Table 6. Mean, standard deviations and evaluation of the responses of the study sample members to the Effectiveness variable

N	item	Mean	SD	Evaluation
1	Artificial intelligence applications contribute to evaluating the effectiveness of the decisions used.	3.98	0.907	high
2	Artificial intelligence technologies can diagnose problems and develop alternatives.	4.07	0.973	high
3	Artificial intelligence systems are an effective tool that helps in reaching correct and accurate results.	4.18	0.872	high
4	Artificial intelligence applications contribute to the acquisition of knowledge.	4.07	0.770	high
5	Artificial intelligence systems are effective in their ability to predict risks and problems	4.14	0.875	high
6	The use of artificial intelligence helps to evaluate performance very effectively	4.19	0.817	high
	General mean	4.11		high

Sample members were asked to rate the effectiveness of AI applications in the organization. AI technologies' efficacy in various organizational functions was consistently rated as positive, with mean values ranging from 3.98 to 4.19. "Artificial intelligence systems are an effective tool that helps in reaching correct and accurate results" (Mean = 4.18, SD = 0.872) and "The use of artificial intelligence helps to evaluate performance very effectively" (Mean = 4.19, SD = 0.817) were agreed upon by respondents. Additionally, the general mean score across all items was 4.11, further

confirming a high level of endorsement for the effectiveness of AI applications within the organization.

These findings suggest that the sample members perceive AI technologies as valuable assets for decision-making, problem diagnosis, knowledge acquisition, risk prediction, and performance evaluation. Such positive evaluations underscore the potential of AI to enhance organizational efficiency, accuracy, and competitiveness. Furthermore, these perceptions may influence the organization's strategic decisions regarding the integration and utilization of AI technologies across various departments and functions. The consistently high ratings across all items indicate a robust confidence in the effectiveness of AI applications, highlighting the importance of further research and investment in AI-related initiatives to capitalize on its full potential for organizational success. Table (7) shows descriptive statistics related to the dimensions of (Human Resources Management). Ratings represent participants' strong agreement with the questions asked.

Table 7. The Compare between the mean of the variables of the dimensions of Human Resources Management dimension

Variable	Mean	SD	Evaluation
Selection and recruitment	4.12	0.50	high
Training and development	4.16	0.48	high
Incentives	3.86	0.50	high
General mean	4.15	0.50	high

In Human Resources Management, Selection and recruitment (4.12) and Training and development (4.16) have slightly higher mean scores than Incentives (3.86), indicating a stronger perception of effectiveness in these areas. All three variables are rated "high", indicating a positive view of their contribution to bank HR management.

Table 8. Mean, standard deviations and evaluation of the responses of the study sample members to the Training and development variable

N	Item	Mean	SD	Evaluation
1	The bank uses specialized centers to develop employee performance	4.13	0.860	high
2	The bank determines the training needs of employees based on the performance gap between achieved and required.	4.21	0.859	high
3	The bank follows up on the employees' performance after they complete the training to ensure its effectiveness.	4.19	0.875	high
4	Training at the bank encourages employees' self-confidence, which contributes to changing their behavior trends.	4.10	0.880	high
5	The company implements a systematic plan to train employees at different job levels within its specific objectives.	4.19	0.793	high
	General mean	4.16		high

The study assessed the responses of the sample members regarding their evaluation of training and development practices within the bank. The mean scores for each item ranged from 4.10 to 4.21, indicating a consistently positive perception of the bank's efforts in employee training and development. Respondents expressed agreement or strong agreement with statements such as "The bank determines the training needs of employees based on the performance gap between achieved and required" (Mean = 4.21, SD = 0.859) and "The bank follows up on the employees' performance after they complete the training to ensure its effectiveness" (Mean = 4.19, SD = 0.875). Additionally, the general mean score across all items was 4.16, further confirming a high level of endorsement for the effectiveness of training and development initiatives within the organization.

These findings suggest that the sample members perceive the bank's training and development practices as comprehensive, strategic, and impactful. The bank's focus on specialized centers for performance development, identification of training needs based on performance gaps, follow-up on training effectiveness, encouragement of self-confidence, and implementation of systematic training plans received positive evaluations. Such practices are likely to contribute to enhancing employee skills, knowledge, and performance, ultimately benefiting organizational outcomes. The consistently high ratings across all items indicate a robust confidence in the effectiveness of the bank's training and development efforts, highlighting the importance of continued investment in employee development initiatives to foster a culture of learning and growth within the organization.

Table 9. Mean, standard deviations and evaluation of the responses of the study sample members to the Selection and recruitment variable

N	Item	Mean	SD	Evaluation
1	The bank relies on studying the labor market and its various sources to attract workers.	4.29	0.882	high
2	The bank uses multiple selection methods to measure the individual characteristics and specifications of applicants for vacant positions.	4.17	0.806	high
3	The bank relies on job analysis when carrying out the recruitment process.	4.05	0.890	high
4	Bank employees are appointed according to pre-established criteria.	4.10	0.846	high
5	The Bank relies on the results of the multiple stages of the selection process when making the hiring decision.	4.07	0.783	high
6	Employees are selected and appointed according to their experience and competencies without bias.	4.06	0.790	high
	General mean	4.12		high

The study analyzed the responses of the sample members regarding their evaluation of the Selection and recruitment procedures within the bank. The mean scores for each item ranged from 4.05 to 4.29, indicating a consistently positive perception of the bank's practices in attracting and appointing workers. Respondents expressed agreement or strong agreement with statements such as "The bank relies on studying the labor market and its various sources to attract workers" (Mean = 4.29, SD = 0.882) and "The bank uses multiple selection methods to measure the individual characteristics and specifications of applicants for vacant positions" (Mean = 4.17, SD = 0.806). The general mean score across all criteria was 4.12, demonstrating significant endorsement of the bank's selection and recruitment processes.

These findings indicate that sample members view the bank's selection and recruitment processes as fair, thorough, and merit-based. The bank's reliance on studying the labor market, utilizing multiple selection methods, conducting job analysis, adhering to pre-established criteria, and making hiring decisions based on the results of the selection process received positive evaluations. Moreover, the perception that employees are selected and appointed based on their experience and competencies without bias underscores the importance of fairness and equality in the recruitment process. Such practices are likely to contribute to building a skilled and diverse workforce, ultimately benefiting organizational performance and outcomes. The consistently high ratings across all items indicate a robust confidence in the effectiveness of the bank's Selection and recruitment practices, highlighting the importance of continued adherence to best practices in talent acquisition and management.

Table 10. Mean, standard deviations and evaluation of the responses of the study sample members to the Incentives variable

N	item	Mean	SD	Evaluation
1	The bank is updating the incentive system to suit the competitive environment.	3.54	0.668	medium
2	The bank links actual performance to the quality of incentives offered	4.16	0.826	high
3	The bank gives high incentives to employees who are distinguished by their creative abilities.	4.01	0.934	high
4	The bank relies on performance evaluation reports to determine the incentives that employees deserve.	4.05	0.759	high
5	The bank has an integrated system that enables employees to achieve their various desires and needs.	3.56	0.763	medium
	General mean	3.86		high

The study examined the responses of the sample members regarding their evaluation of the Incentives provided by the bank. The mean scores for each item ranged from 3.54 to 4.16, indicating varying levels of perception regarding the effectiveness of the bank's incentive system. While items such as "The bank links actual performance to the quality of incentives offered" (Mean = 4.16, SD = 0.826) and "The bank relies on performance evaluation reports to determine the incentives that employees deserve" (Mean = 4.05, SD = 0.759) received high evaluations, others like "The bank is updating the incentive system to suit the competitive environment" (Mean = 3.54, SD = 0.668) and "The bank has an integrated system that enables employees to achieve their various desires and needs" (Mean = 3.56, SD = 0.763) garnered medium evaluations.

Overall, the bank's incentives scored 3.86, which is positive but average. While the bank's incentive system is evaluated positively for linking performance to incentives and employing performance evaluation reports, it may need to be modified to fit the competitive landscape and create an integrated system to suit employees' expectations. These findings imply the bank may benefit from assessing and maybe upgrading its incentive system to better match the dynamic market environment and employees' diverse needs and aspirations. Addressing these issues may improve staff motivation, engagement, and performance, making the bank more competitive and successful.

4. Findings and Analysis

SPSS was used to examine this study's hypotheses. The model, research method, data, and hypotheses were tested for accuracy and stability using validity tests such the multiple linear correlation test for multicollinearity and Cronbach's alpha.

Table 4. The table shows independent variable variance inflation factor (VIF) and tolerance levels. These measures assess multicollinearity among independent variables, which might impair regression analysis reliability. The tolerance value for the "Expert systems" variable is 0.352, meaning that independent variables do not explain 35.2% of its variance. The VIF is 2.842, indicating moderate multicollinearity.

The tolerance value for the "Knowledge representation and reasoning" variable is 0.279, suggesting that the other independent variables do not explain 27.9% of its variance. Moderate multicollinearity is indicated by the VIF of 3.590. In the case of the "Automatic learning" variable, the tolerance value is 0.342, indicating that 34.2% of the variance in this variable is not explained by the other independent variables. The VIF value of 2.927 suggests moderate multicollinearity. Finally, for the "Effectiveness" variable, the tolerance value is 0.417, indicating that 41.7% of the variance in this variable is not explained by the other independent variables. The VIF value of 2.397 suggests moderate multicollinearity. Overall, no degree of multicollinearity among the independent variables, it is not severe enough to invalidate the regression analysis.

Table 11. Results of the (Multicollinearity) test.

Variable	Tolerance	VIF
Expert systems	0.352	2.842
Knowledge representation and reasoning	0.279	3.590
Automatic learning	0.342	2.927
Effectiveness	0.417	2.397

Table 12 presents the results of a multiple regression analysis assessing the impact artificial intelligence (Expert systems, Knowledge representation and reasoning, Automatic learning and Effectiveness) on Training and development.

Ho1 was tested with "Multiple Linear Regression". Table (12) shows the multiple regression analysis of AI's impact on training and development. The model fits well, with an adjusted R-squared value of 0.753, explaining a lot of training and development variance. The model fits the data well, since the F-statistic of 78.561 is significant (p < 0.001).

Each of the artificial intelligence variables—expert systems, knowledge representation and reasoning, automatic learning, and effectiveness—shows a statistically significant positive relationship with training and development. Specifically, for every one-unit increase in expert systems, there is a 0.306 increase in training and development (p = 0.003). Similarly, a one-unit increase in knowledge representation and reasoning corresponds to a 0.171 increase in training and development (p = 0.004), while a one-unit increase in automatic learning results in a 0.199 increase in training and development (p = 0.012). Moreover, a one-unit increase in effectiveness is associated with a 0.212 increase in training and development (p = 0.002).

These results suggest that artificial intelligence, as represented by expert systems, knowledge representation and reasoning, automatic learning, and effectiveness, has a significant positive impact on training and development within the bank. This underscores the importance of leveraging various aspects of artificial intelligence to enhance employee learning, skill development, and overall organizational performance.

Table 12. Results of multiple regression analysis of the effect of artificial intelligence on Training and development

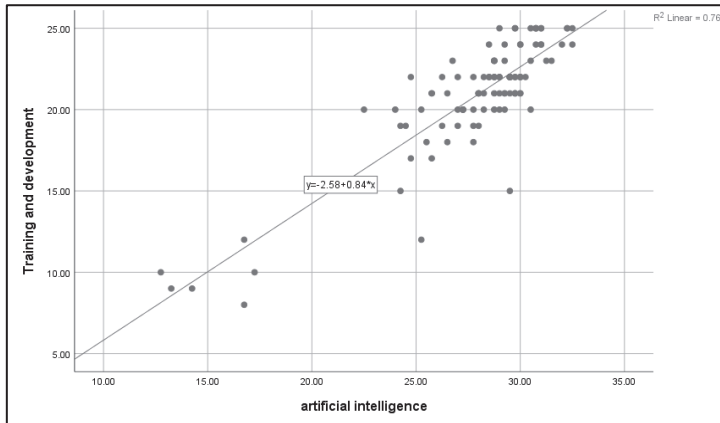| R	Adjusted R²	F	SIG
0.873	0.753	78.561	0.000
artificial intelligence	B	T	SIG
(Constant)	-2.764	-2.042	0.044
Expert systems	0.306	3.073	0.003
Knowledge representation and reasoning	0.171	2.988	0.004
Automatic learning	0.199	2.551	0.012
Effectiveness	0.212	3.159	0.002

Figure 1: The relationship between artificial intelligence and Training and development

Table (12) shows the multiple regression analysis of AI's impact on training and development. The model's modified R-squared value of 0.753 shows that it explains a lot of training and development outcome variability. Significant F-statistic (78.561, p < 0.001) indicates a strong model fit for the data.

Each of the artificial intelligence variables—expert systems, knowledge representation and reasoning, automatic learning, and effectiveness—shows a statistically significant positive relationship with training and development. Specifically, for every one-unit increase in expert systems, there is a 0.306 increase in training and development (p = 0.003). Similarly, a one-unit increase in knowledge representation and reasoning corresponds to a 0.171 increase in training and development (p = 0.004), while a one-unit increase in automatic learning results in a 0.199 increase in training and development (p = 0.012). Moreover, a one-unit increase in effectiveness is associated with a 0.212 increase in training and development (p = 0.002).

These results suggest that artificial intelligence, as represented by expert systems, knowledge representation and reasoning, automatic learning, and effectiveness, has a significant positive impact on training and development within the bank. This underscores the importance of leveraging various aspects of artificial intelligence to enhance employee learning, skill development, and overall organizational performance.

The H02 was tested using the "Multiple Regression" test. Table (13) presents the results of a multiple regression analysis examining the effect of artificial intelligence on Selection and recruitment processes within the organization. The overall model fit statistics indicate that the model explains a significant portion of the variance in Selection and recruitment outcomes, with an adjusted R-squared value of 0.714. The F-statistic of 64.784 is statistically significant (p < 0.001), indicating that the model as a whole is a good fit for the data.

Each of the artificial intelligence variables—expert systems, knowledge representation and reasoning, automatic learning, and effectiveness—shows a statistically significant positive relationship with Selection and recruitment. Specifically, for every one-unit increase in expert systems, there is a 0.303 increase in Selection and recruitment (p = 0.014). Similarly, a one-unit increase in knowledge representation and reasoning corresponds to a 0.162 increase in Selection and recruitment (p = 0.023), while a one-unit increase in automatic learning results in a 0.344 increase in Selection and recruitment (p < 0.001). Moreover, a one-unit increase in effectiveness is associated with a 0.182 increase in Selection and recruitment (p = 0.029).

These results suggest that artificial intelligence, as represented by expert systems, knowledge representation and reasoning, automatic learning, and effectiveness, has a significant positive impact on Selection and recruitment processes within the banks. This underscores the importance of

leveraging various aspects of artificial intelligence to enhance the efficiency, accuracy, and fairness of the selection and recruitment procedures, ultimately contributing to the o bank's overall success.

Table 13. Results of multiple regression analysis of the effect of artificial intelligence on Selection and recruitment:

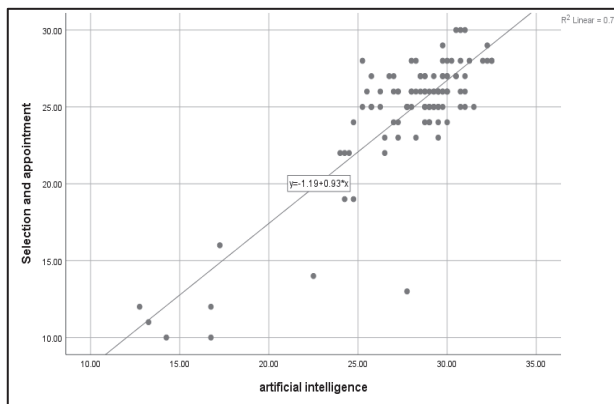| R	Adjusted R²	F	SIG
0.852	0.714	64.784	0.000
artificial intelligence	**B**	**T**	**SIG**
(Constant)	-1.275	-0.770	0.443
Expert systems	0.303	2.492	0.014
Knowledge representation and reasoning	0.162	2.312	0.023
Automatic learning	0.344	3.607	0.000
Effectiveness	0.182	2.219	0.029

Figure 2: The relationship between artificial intelligence and Selection and appointment

The H03 was tested using "Multiple Regression". A multiple regression analysis of artificial intelligence and organizational incentives is shown in Table 14. The modified R-squared value of 0.681 suggests that the model explains a large part of Incentives outcomes. The model fits the data well, as the F-statistic of 55.345 is significant ($p < 0.001$).

Among the artificial intelligence variables, expert systems show a particularly strong and statistically significant positive relationship with Incentives. For every one-unit increase in expert systems, there is a 0.368 increase in Incentives ($p < 0.001$). On the other hand, knowledge representation and reasoning, automatic learning, and effectiveness show weaker and less statistically significant relationships with Incentives. Specifically, a one-unit increase in automatic learning corresponds to a 0.153 increase in Incentives ($p = 0.023$), while a one-unit increase in effectiveness is associated with a 0.124 increase in Incentives ($p = 0.032$). However, knowledge representation and reasoning do not show a statistically significant relationship with incentives ($p = 0.260$).

These results suggest that expert systems within artificial intelligence have a significant positive impact on incentives within the banks. This underscores the importance of leveraging expert systems to enhance motivation, engagement, and satisfaction among employees. While other aspects of artificial intelligence may also contribute to Incentives, their effects appear to be less pronounced compared to expert systems.

Table 14. Results of multiple regression analysis of the effect of artificial intelligence on Incentives:

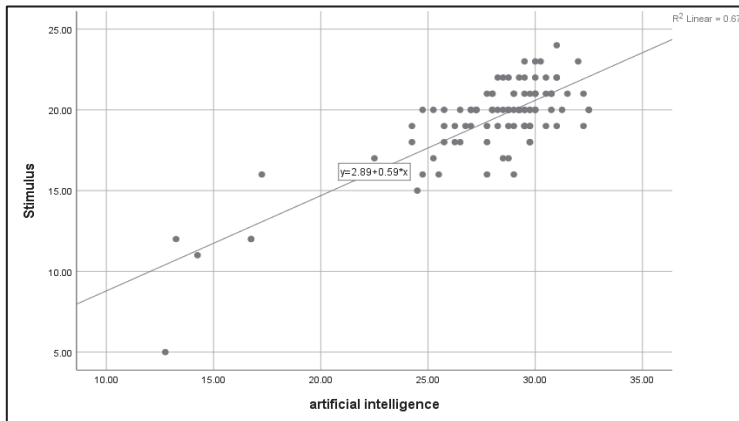| R	Adjusted R²	F	SIG
0.833	0.681	55.345	0.000
artificial intelligence	**B**	**T**	**SIG**
(Constant)	2.452	2.134	0.035
Expert systems	0.368	4.358	0.000
Knowledge representation and reasoning	0.055	1.134	0.260
Automatic learning	0.153	2.314	0.023
Effectiveness	0.124	2.182	0.032

Figure 3: The relationship between artificial intelligence and Incentives.

5. Discussion

After collecting and analyzing data, several results emerged regarding the level of importance of artificial intelligence in Jordanian banks. The survey results indicated that the dimensions of artificial intelligence are of great importance in the banking sector in Jordan, with an average ranging between (4.23 - 4.10). Expert systems achieved the highest average value of (4.23) among the dimensions of artificial intelligence, while knowledge representation and reasoning achieved the lowest average value of (4.10). Which indicates that Jordanian banks rely on artificial intelligence to process and extract their data.

In addition, the results showed the validity of the main hypothesis, as artificial intelligence affects human resources management by making various administrative processes flexible and accurate. It was also found that artificial intelligence (expert systems, knowledge representation and reasoning, automatic learning, and effectiveness) are associated with a positive, statistically significant relationship with training and development. Artificial intelligence constantly improves employee profiles by learning from their behavior and creating customized learning strategies for effective development.

By analyzing trainees' data, artificial intelligence comprehensively assesses employees' technical skills and suggests customized training courses. Natural language processing quickly interprets the trainee's opinions, and artificial intelligence extracts basic concepts from this content, which helps the organization understand employees' needs. Better and design appropriate customized training courses.

The results also found that artificial intelligence (expert systems, knowledge representation and reasoning, automatic learning, and effectiveness) is associated with a positive, statistically significant

relationship with selection and appointment. Artificial Intelligence (AI) is emerging as a powerful tool in the field of selection and recruitment, offering decision support systems that excel at identifying ideal candidates for specific job roles while significantly reducing the time required for recruitment activities. Artificial intelligence provides a valuable ability to seamlessly match professional profiles to job positions.

Finally, the results concluded that artificial intelligence explains a large portion of the variance in incentives, which indicates a positive and statistically significant relationship. The incentive system is considered a pivotal aspect of human resources management, and is complexly linked to employee performance. It includes setting employee incentives based on pre-defined guidelines and policies. An elaborate incentive system has the ability to enhance individual and group performance. The integration of artificial intelligence technologies can play a role in ensuring fairness in compensation administration. By utilizing extensive data as input, artificial neural networks can be formulated as intelligent decision support systems, creating a fair framework for evaluating compensation.

6. Conclusion and Recommendations

This study examined how artificial intelligence affects human resources management in Jordanian banks. Human resources management was the dependent variable and artificial intelligence the independent variable. First, the Cronbach alpha test and self-honesty coefficient verified the study tool's validity and reliability. Tolerance and variance inflation factor (VIF) testing indicated that the dependent variables were not linearly related. The study hypotheses were tested using multiple regression. After analyzing the data, results emerged that confirmed the validity of the hypotheses imposed by the study, and the study questions were answered.

This study concluded that artificial intelligence directly affects human resources management (selection and recruitment, training and development, incentives).

According to the study, the AI-based HR tools can analyses, anticipate, and diagnose, making them a valuable resource for any organization despite their lack of human-like emotional and cognitive capacities, It is crucial to use artificial intelligence techniques in human resources management and modernize and develop them, especially with the advancements in technology and digital transformation policies, to achieve the desired impact on HR practices. Develop an AI strategy and integrate it into the bank's future strategies and objectives. These results contribute to growing knowledge about the applications of artificial intelligence and its ability to improve human resources management functions. As organizations continue to navigate the evolving technology landscape, these insights can inform decision-makers and practitioners in leveraging AI to enhance human resource management in Jordanian banks and beyond.

7. Further Recommendations

- Conduct more future studies about the relationship between the use of artificial intelligence technologies and other human resources practices such as: (performance evaluation, wages and compensation, talent management).
- Conducting future studies that include new dimensions other than those used in this study, with the aim of understanding aspects of the impact of applying artificial intelligence on human resources management in Jordanian banks.

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