Future of Work and Digital Management Journal

Article type:
Original Research

Article history:
Received 12 February 2026
Revised 02 May 2026
Accepted 09 May 2026
Initial Publish: 14 May 2026
Final Publish: 01 July 2026

Ali. Chaqazardi[1], Hamidreza. Jalilian[2*], Morteza Moradi[2]

1 Department of Public Management, Qa.C., Islamic Azad University, Qazvin, Iran
2 Department of Public Management, Payame Noor University, Tehran, Iran

Corresponding author email address: h_jalilian@pnu.ac.ir

How to cite this article:
Chaqazardi, A., Jalilian, H., & Moradi, M. (2026). Presentation and Validation of an Artificial Intelligence Application Model for Optimizing the Bank Employee Performance Evaluation System: Frameworks and Validation. *Future of Work and Digital Management Journal,* *4*(4), 1-13. https://doi.org/10.61838/fwdmj.248

Presentation and Validation of an Artificial Intelligence Application Model for Optimizing the Bank Employee Performance Evaluation System: Frameworks and Validation

ABSTRACT

The purpose of the present study was to present and validate a model for the application of artificial intelligence in optimizing the bank employee performance evaluation system: frameworks and validation. In terms of purpose, this study was applied research and was descriptive-analytical in nature. The research method was mixed-methods and was conducted in both quantitative and qualitative sections. In the qualitative section, the statistical population consisted of academic experts in the fields of human resource management and artificial intelligence, as well as experienced banking managers, of whom 13 individuals were selected using snowball sampling and the theoretical saturation criterion. The data collection instrument in the qualitative section was a semi-structured interview derived from the theoretical foundations. Data analysis in this section was conducted using grounded theory. In the quantitative section, a researcher-made questionnaire developed based on the qualitative model of the study was distributed after confirming its validity and reliability among the statistical population, which consisted of banking experts. The sample size was estimated at 213 participants using random sampling. The findings of the qualitative section indicated that the use of advanced artificial intelligence algorithms, the utilization of performance and financial data, and the need for improvement and optimization of evaluation processes were among the causal factors affecting the bank employee performance evaluation model based on artificial intelligence. The design of adaptive evaluation models, the use of artificial intelligence for simulation and prediction, personalization of evaluation criteria, and continuous feedback were identified as strategic factors influencing the bank employee performance evaluation model based on artificial intelligence. Organizational culture and innovation acceptance, organizational readiness for adopting artificial intelligence, and legal and privacy limitations were identified as intervening factors affecting the bank employee performance evaluation model based on artificial intelligence. Economic and competitive conditions, legal requirements, organizational changes, and the need for adaptation were identified as contextual factors influencing the bank employee performance evaluation model based on artificial intelligence. Improved accuracy and efficiency of evaluation, increased employee satisfaction and job motivation, enhanced productivity and organizational performance, and improved decision-making processes were identified as consequential factors influencing the bank employee performance evaluation model based on artificial intelligence. Performance indicators, skills and analysis of human results, data, algorithms and artificial intelligence technologies, and support, training, ethical considerations, and fairness in evaluation were identified as core factors influencing the bank employee performance evaluation model based on artificial intelligence. In the quantitative section of the study, the paths and causal relationships between external and internal constructs in the structural model were examined and confirmed using confirmatory factor analysis.

Keywords: Artificial Intelligence, Performance Evaluation System Optimization, Bank Employees, Human Resource Management

Introduction

The rapid expansion of digital technologies and the transition toward intelligent organizational systems have fundamentally transformed the mechanisms of human resource management in modern organizations. Among the technologies that have generated the greatest transformation in recent years, artificial intelligence has emerged as one of the most influential innovations affecting organizational decision-making, employee management, productivity enhancement, and performance evaluation systems. Artificial intelligence is increasingly being integrated into organizational structures because of its capacity to process large volumes of data, recognize patterns, provide predictive analyses, and automate complex managerial processes. In competitive industries such as banking, where accuracy, speed, transparency, and accountability are essential, organizations are increasingly attempting to employ artificial intelligence technologies to optimize managerial functions and improve employee performance evaluation systems [1, 2]. Traditional employee performance evaluation systems in banks have often been criticized for their dependence on subjective judgments, limited analytical capabilities, lack of transparency, and inability to continuously monitor employee performance indicators. Such limitations have reduced the effectiveness of human resource management practices and created challenges in identifying employee capabilities, allocating responsibilities, and enhancing organizational productivity. Consequently, organizations have turned toward intelligent systems capable of evaluating employee performance more objectively, systematically, and accurately through advanced analytical models and algorithmic approaches [3, 4].

Artificial intelligence-based evaluation systems offer organizations substantial opportunities to improve the quality and effectiveness of employee performance assessment processes. Through machine learning algorithms, predictive analytics, neural networks, and intelligent decision-support systems, organizations can identify patterns in employee behavior, evaluate work efficiency, predict future performance, and reduce managerial bias in evaluation processes. Artificial intelligence technologies enable managers to continuously monitor employee performance indicators and generate accurate reports for strategic human resource decisions. Such systems are particularly valuable in the banking sector, where employee efficiency, service quality, customer interaction, and operational precision directly affect organizational competitiveness and financial performance [5, 6]. In this regard, recent studies have demonstrated that artificial intelligence can significantly improve organizational productivity and employee retention by increasing fairness, transparency, and consistency in performance evaluation systems. Organizations that effectively integrate artificial intelligence into human resource management are more likely to achieve higher employee satisfaction, stronger organizational commitment, and improved operational efficiency [2, 4].

The application of artificial intelligence in performance evaluation is rooted in broader transformations associated with Industry 4.0 and smart organizational systems. Industry 4.0 emphasizes automation, intelligent analytics, digital connectivity, and real-time data processing, all of which require organizations to redesign traditional performance measurement systems. Smart organizations increasingly rely on artificial intelligence technologies to enhance managerial decision-making, optimize resource allocation, and support organizational adaptability in dynamic business environments. Performance evaluation systems are therefore evolving from static and periodic assessment approaches toward dynamic, continuous, and data-driven systems capable of real-time evaluation and feedback generation [7, 8]. Artificial intelligence-based performance measurement systems provide organizations with more accurate analytical frameworks for evaluating employee productivity,

competencies, innovation capabilities, and behavioral patterns. Such systems also facilitate organizational learning and strategic planning by transforming performance-related data into actionable managerial knowledge [9, 10].

In addition to operational benefits, artificial intelligence technologies contribute to organizational sustainability and strategic competitiveness. Modern organizations increasingly recognize that employee performance is influenced not only by technical competencies but also by organizational culture, innovation acceptance, psychological climate, and knowledge governance structures. Intelligent performance evaluation systems can help managers better understand these multidimensional factors by integrating qualitative and quantitative data into unified analytical models. The integration of artificial intelligence into human resource management enables organizations to personalize evaluation criteria based on employee characteristics, organizational goals, and contextual variables, thereby increasing the flexibility and fairness of evaluation systems [9, 11]. Furthermore, organizations that cultivate innovation-oriented cultures and knowledge-sharing environments are more likely to achieve successful implementation of artificial intelligence systems because employees are more willing to accept digital transformation and participate in organizational learning processes [10, 12].

The growing reliance on artificial intelligence in organizational systems has also increased academic interest in evaluating the effectiveness of intelligent algorithms across different fields. Artificial intelligence models have demonstrated significant capabilities in prediction, classification, optimization, and decision-making processes. For example, artificial intelligence has been successfully employed in intrusion detection systems, financial forecasting, medical diagnosis, and educational performance assessment, demonstrating its ability to process complex data structures and produce accurate analytical outcomes [13-15]. In organizational settings, machine learning algorithms can identify hidden relationships among employee performance variables and support predictive decision-making processes that improve organizational efficiency. Such analytical capabilities have encouraged organizations to integrate artificial intelligence technologies into strategic human resource functions, particularly performance evaluation systems where precision and objectivity are critically important [6, 8]. Moreover, intelligent evaluation systems can reduce human bias and increase consistency in managerial decisions, thereby enhancing organizational justice and employee trust in evaluation processes [3, 5].

Despite the considerable advantages associated with artificial intelligence-based evaluation systems, organizations also face significant challenges in implementing these technologies. One of the primary concerns involves legal and ethical considerations related to employee privacy, data security, and algorithmic fairness. Artificial intelligence systems often require extensive employee data to perform predictive analyses and generate evaluation outcomes. Consequently, organizations must ensure that data collection, processing, and analysis comply with ethical standards and legal regulations. Failure to address such concerns may reduce employee trust and create resistance toward artificial intelligence implementation [11, 16]. Another challenge involves organizational readiness for digital transformation. The successful implementation of artificial intelligence systems depends on technological infrastructure, managerial support, employee training, and organizational culture. Organizations lacking sufficient technological capabilities or innovation-oriented cultures may encounter difficulties in integrating intelligent evaluation systems into existing managerial structures [1, 10].

In the banking industry, these challenges are particularly important because banks operate within highly regulated and competitive environments where data confidentiality, operational precision, and customer trust are essential. Banks increasingly seek intelligent solutions that can improve operational performance while simultaneously maintaining compliance with legal and ethical standards. Artificial intelligence provides banking organizations with opportunities to

optimize employee performance evaluation by integrating financial indicators, customer service metrics, productivity measures, and behavioral analyses into comprehensive analytical systems. Such integration enables managers to make more informed decisions regarding promotions, training programs, task allocation, and workforce development [3, 5]. Moreover, artificial intelligence technologies can help banks identify high-performing employees, predict future performance trends, and improve organizational adaptability in rapidly changing financial environments [4, 9].

Another important dimension of artificial intelligence implementation in performance evaluation involves the relationship between employee motivation and evaluation transparency. Transparent and objective evaluation systems contribute to employee satisfaction because employees perceive evaluation outcomes as fair and evidence-based rather than dependent on subjective managerial judgments. Artificial intelligence systems can improve transparency by providing clear analytical criteria and consistent performance metrics. This can positively influence employee motivation, organizational commitment, and innovative behavior, all of which contribute to enhanced organizational performance [2, 12]. Additionally, continuous feedback mechanisms enabled by artificial intelligence systems allow employees to receive timely information about their strengths and weaknesses, thereby facilitating professional development and organizational learning [6, 10].

Recent studies have also emphasized the strategic importance of knowledge governance and organizational learning in improving employee performance through intelligent systems. Organizations capable of effectively managing organizational knowledge and integrating technological innovations into managerial processes are more likely to achieve sustainable competitive advantages. Artificial intelligence-based evaluation systems support knowledge governance by transforming organizational data into strategic insights that can guide managerial planning and employee development initiatives [9]. Furthermore, organizations that encourage creativity, innovation, and continuous learning among employees can maximize the benefits of intelligent evaluation systems because employees become more adaptable to technological changes and more engaged in organizational objectives [10, 12]. Such organizational environments facilitate the development of intelligent performance evaluation models that align individual employee goals with broader organizational strategies.

Although numerous studies have examined artificial intelligence applications in organizational management, employee performance evaluation, predictive analytics, and intelligent decision-making, limited research has focused specifically on developing and validating a comprehensive model for applying artificial intelligence to optimize employee performance evaluation systems in the banking industry. Existing studies have often concentrated on isolated dimensions such as technological effectiveness, employee retention, algorithmic prediction, or organizational productivity without integrating causal, contextual, strategic, intervening, and consequential factors into a unified conceptual framework [3, 5, 6]. Moreover, the banking sector possesses unique operational characteristics, regulatory requirements, and organizational complexities that necessitate the development of industry-specific models capable of addressing the multidimensional nature of employee performance evaluation through artificial intelligence technologies [4, 11].

Accordingly, the present study aimed to present and validate a model for the application of artificial intelligence in optimizing the bank employee performance evaluation system.

Methodology

In this study, the methodology was designed and implemented based on Saunders' research onion model. This model, which includes multiple layers ranging from research philosophy to data collection and analysis methods, provides a

systematic framework for conducting research. The present study employed a mixed-methods (quantitative–qualitative) approach, and in order to achieve the primary objective of the research, both qualitative and quantitative sections were used in a complementary manner.

In the qualitative section, the research had an exploratory nature and employed an interpretivist philosophy and an inductive approach to identify and deeply understand the underlying categories of the phenomenon under investigation. This section was conducted using a single-case study strategy, and the study population consisted of academic experts in the field of human resource management and senior banking managers. Sampling in this section was performed purposively, and 13 semi-structured interviews were conducted with informed and relevant individuals. The interview process continued until theoretical saturation was reached, such that no new information emerged for further analysis. The primary data collection instrument in this stage was semi-structured interviews designed based on key open-ended questions. Qualitative data were analyzed using thematic analysis. The stages of the grounded theory method included initial familiarization with the data, open coding, searching for preliminary themes, reviewing and defining final themes, which ultimately led to the extraction of the main dimensions of the study.

In the quantitative section, the research was designed and implemented based on a positivist philosophy and a deductive approach. The statistical population in this section consisted of all banking customers, and sampling was conducted using a simple random sampling method based on the Morgan table. In this section, a sample of 213 participants was selected from accessible customers using Cochran's formula. The primary data collection instrument was a researcher-made questionnaire developed based on the themes and dimensions extracted from the qualitative section. This questionnaire included items designed to measure the main variables of the study. The validity of the questionnaire was examined using the opinions of management experts and specialists, and its reliability was confirmed using Cronbach's alpha coefficient, which was above 0.70, indicating acceptable reliability of the instrument.

The quantitative data were analyzed using SPSS software. In this section, descriptive analysis was first conducted to identify the demographic characteristics of the sample, followed by inferential analyses to test the research hypotheses. In addition, confirmatory factor analysis was conducted using AMOS software in order to validate the conceptual model of the study and examine the factorial structure of the questionnaire. Confirmatory factor analysis was performed to evaluate the relationships among variables and to confirm the constructs extracted from the qualitative section. The results indicated that the proposed model demonstrated an acceptable fit with the collected data.

Findings and Results

In the first section of the study, using the grounded theory method and three-stage coding, a total of 257 open codes were initially extracted. In the next stage, axial coding was conducted as follows.

Category 1: Causal Factors:

This category consisted of 54 codes. The selected codes were classified into three main groups: "the use of advanced artificial intelligence algorithms (such as machine learning and data analytics)," "performance and financial data (employee performance and key performance indicators)," and "the need to improve and optimize employee performance evaluation processes."

Category 2: Contextual Factors:

This category included 47 codes. The codes in this section were classified into three groups: “economic and competitive conditions in the banking industry,” “legal requirements and regulations related to employee performance evaluation,” and “organizational changes and the need to adapt to new performance evaluation models in the banking industry.”

Category 3: Intervening Factors:

This category included 30 final codes. Ultimately, the codes in this section were classified into three groups: “organizational culture and acceptance of innovation among bank employees,” “organizational readiness to adopt artificial intelligence and complex algorithms in the evaluation process,” and “limitations or legal challenges related to the use of personal data and employee privacy.”

Category 4: Strategic Factors:

This category included 31 codes. Ultimately, the codes in this category were classified into four groups: “designing adaptive evaluation models based on the specific needs and conditions of each bank,” “the use of artificial intelligence for simulating evaluation processes and predicting outcomes,” “personalizing evaluation criteria based on employees’ individual characteristics and organizational needs,” and “incorporating continuous feedback to improve model performance and adapt to environmental changes.”

Category 5: Consequential Factors:

This category included 42 codes. The final codes in this category were classified into four groups: “improving the accuracy and efficiency of employee performance evaluation,” “increasing employee satisfaction and job motivation through transparent and fair evaluations,” “enhancing productivity and improving overall organizational performance through artificial intelligence-based evaluations,” and “improving decision-making processes in human resource management and task allocation based on artificial intelligence evaluations.”

Category 6: Core Factors:

This category included 53 codes. The core codes in this category were classified into three groups: “accuracy and transparency of artificial intelligence models in performance evaluation,” “the capability of models to analyze complex and dispersed data from various sources (qualitative and quantitative data),” and “the development of a data-driven evaluation culture and artificial intelligence models among employees and managers.”

In the selective coding stage, an attempt was made to place similar and concurrent categories within the main categories. Based on the conceptual commonalities among the categories, the codes were extracted in more abstract conceptual forms. After preparing and organizing the table of concepts and preliminary categories as the first step in the qualitative analysis of the interview data, the resulting concepts were grouped at a higher and more abstract level in order to identify the main themes. Following the comparison of the grouped categories, related categories were classified under overarching themes, and general titles were assigned to these themes based on concepts derived from relevant theories or the research literature.

The final factors are presented in the following table.

Table 1

Final Coding of the Research

Axial Codes	Selective Codes
Causal Factors	Use of advanced artificial intelligence algorithms (such as machine learning and data analytics)
	Performance and financial data (employee performance and key performance indicators)
	Need to improve and optimize employee performance evaluation processes
Strategic Factors	Designing adaptive evaluation models based on the specific needs and conditions of each bank
	Use of artificial intelligence for simulating evaluation processes and predicting outcomes
	Personalizing evaluation criteria based on employees' individual characteristics and organizational needs
	Incorporating continuous feedback to improve model performance and adapt to environmental changes
Intervening Factors	Organizational culture and acceptance of innovation among bank employees
	Organizational readiness to adopt artificial intelligence and complex algorithms in the evaluation process
	Limitations or legal challenges related to the use of personal data and employee privacy
Contextual Factors	Economic and competitive conditions in the banking industry
	Legal requirements and regulations related to employee performance evaluation
	Organizational changes and the need to adapt to new performance evaluation models in the banking industry
Core Factors	Performance indicators, skills, and analysis of human outcomes
	Data, algorithms, and artificial intelligence technologies
	Support, training, ethical considerations, and fairness in evaluation
Consequences	Improving the accuracy and efficiency of employee performance evaluation
	Increasing employee satisfaction and job motivation through transparent and fair evaluations
	Enhancing productivity and improving overall organizational performance through artificial intelligence-based evaluations
	Improving decision-making processes in human resource management and task allocation based on artificial intelligence evaluations

The number of participants in the quantitative section was 213 individuals. Of the respondents, 77% were male and 23% were female. In terms of age distribution, 28% of the respondents were between 30 and 40 years old, 51% were between 41 and 50 years old, and 21% were over 51 years old. The largest proportion of the sample consisted of individuals aged 41–50 years, while the smallest proportion consisted of individuals aged 51 years and above. Regarding educational attainment, 6% of the respondents held a bachelor's degree, 33% held a master's degree, and 61% held a doctoral degree. The largest proportion of the sample had doctoral degrees, whereas the smallest proportion had bachelor's degrees. In terms of work experience, 12% of the respondents had 6–10 years of service experience, 24% had 11–15 years, 22% had 16–20 years, 24% had 21–25 years, and 18% had 26–30 years of service experience. The smallest proportion of the sample had 6–10 years of work experience.

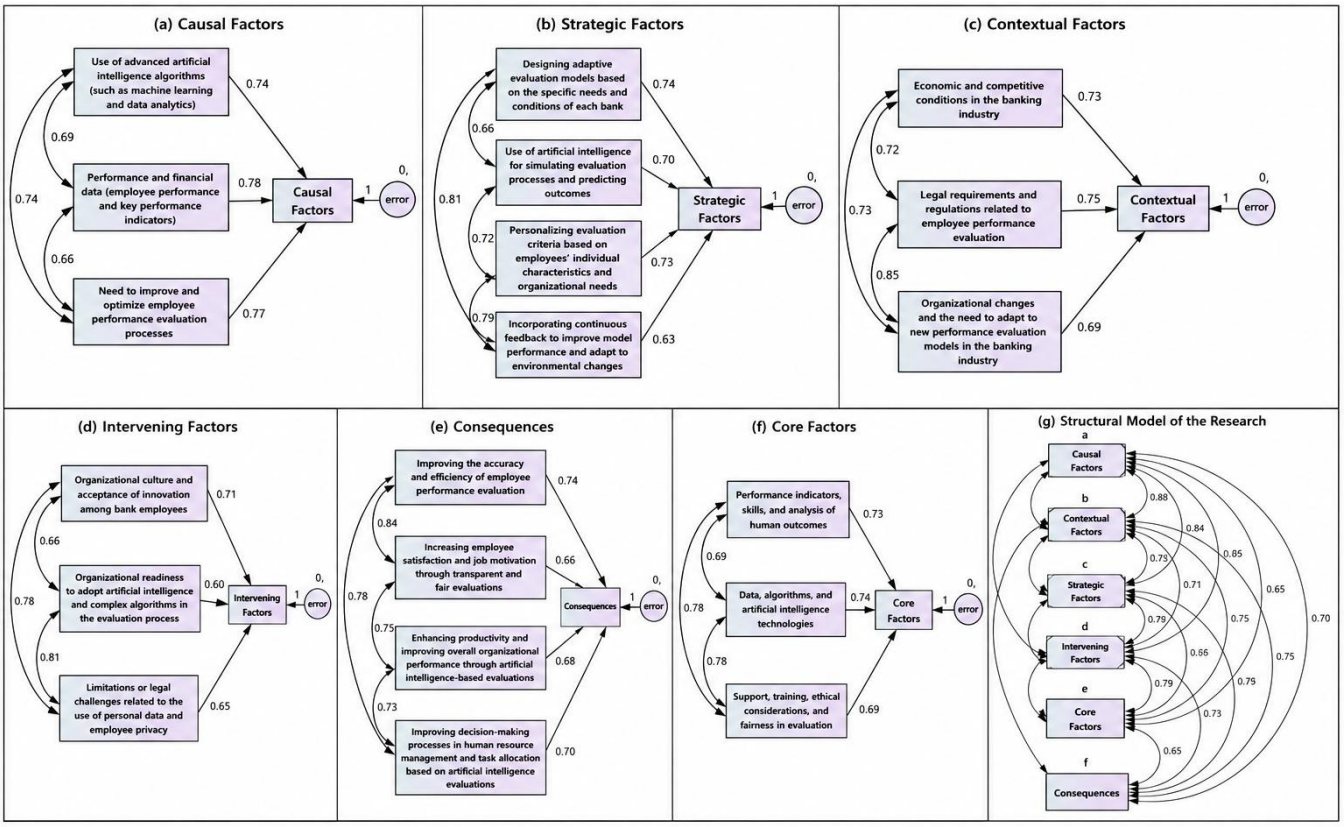
Table 2

Fit Indices of the Measurement Models and Structural Model of the Research Variables

Construct	χ^2/df	RMSEA	GFI	AGFI	CFI	NFI	Interpretation
Causal Factors	2.07	0.066	0.93	0.91	0.96	0.94	Good model fit
Strategic Factors	1.80	0.057	0.94	0.92	0.98	0.97	Good model fit
Contextual Factors	1.54	0.047	0.96	0.94	0.99	0.98	Excellent model fit
Intervening Factors	1.45	0.043	0.97	0.96	1.00	0.99	Excellent model fit
Consequential Factors	1.65	0.051	0.95	0.93	0.99	0.98	Excellent model fit
Core Factors	1.75	0.065	0.98	0.96	0.95	0.93	Good model fit
Final Structural Model	All CR values > 1.96	$p \leq 0.05$	Confirmed	Confirmed	Confirmed	Confirmed	Structural relationships confirmed

Figure 1

Confirmatory Factor Analysis and Structural Model of the Research Variables



(a) Path analysis of causal factors; (b) path analysis of strategic factors; (c) path analysis of contextual factors; (d) path analysis of intervening factors; (e) path analysis of consequential factors; (f) path analysis of core factors; and (g) structural equation modeling of the proposed model for designing the bank employee performance evaluation model using artificial intelligence.

The results of confirmatory factor analysis demonstrated that all factor loadings for the research constructs were higher than 0.60, indicating acceptable convergent validity of the measurement items. The goodness-of-fit indices for all latent constructs were within acceptable ranges. Specifically, the χ^2/df values for all constructs were below the threshold value of 5, ranging from 1.45 to 2.07, which indicates appropriate model fit. Furthermore, the RMSEA values ranged from 0.043 to 0.066, all below the acceptable threshold of 0.08, confirming satisfactory approximation of the models. The values of GFI, AGFI, CFI, and NFI for all constructs exceeded 0.90, demonstrating strong goodness-of-fit for the measurement models. Among the constructs, the intervening factors demonstrated the strongest fit indices, whereas the causal factors showed comparatively lower but still acceptable fit statistics. In the final structural model, all critical ratio (CR) values exceeded the threshold value of 1.96 and all significance levels were below 0.05, confirming the statistical significance of the causal relationships among the constructs. The standardized path coefficients indicated that core factors had the strongest effect on the design of the bank employee performance evaluation model using artificial intelligence (β = 0.59), followed by causal factors (β = 0.425), consequential factors (β = 0.361), contextual factors (β = 0.236), strategic factors (β = 0.14), and intervening factors (β = 0.12). Overall, the findings confirmed the adequacy of the proposed structural model and supported the validity of the conceptual framework developed in this study.

Discussion and Conclusion

The present study aimed to present and validate a model for the application of artificial intelligence in optimizing the employee performance evaluation system in the banking industry. The findings of the qualitative and quantitative sections demonstrated that artificial intelligence can play a significant role in redesigning performance evaluation systems by increasing evaluation accuracy, improving managerial decision-making, enhancing employee satisfaction, and strengthening organizational productivity. The results of the confirmatory factor analysis and structural equation modeling indicated that all proposed dimensions of the model, including causal factors, contextual factors, strategic factors, intervening factors, core factors, and consequences, had acceptable validity and significantly contributed to the final conceptual framework. The findings revealed that core factors had the strongest effect on the design of the artificial intelligence-based performance evaluation model, followed by causal factors and consequential dimensions. These results suggest that successful implementation of artificial intelligence in performance evaluation systems depends on both technological infrastructure and organizational readiness to adopt intelligent managerial systems.

One of the important findings of the study was the identification of advanced artificial intelligence algorithms, performance and financial data, and the need to improve evaluation processes as the primary causal factors influencing the optimization of employee performance evaluation systems. This finding demonstrates that modern organizations, particularly banks, increasingly recognize the limitations of traditional evaluation systems and seek more intelligent and analytical approaches to performance management. Artificial intelligence technologies allow organizations to process large amounts of employee-related data, identify hidden patterns in performance behavior, and generate predictive insights that improve managerial decision-making. These findings are consistent with the studies of [3] and [2], who reported that artificial intelligence significantly improves the effectiveness and objectivity of employee evaluation processes by reducing human error and subjective judgment. Similarly, [5] emphasized that intelligent performance evaluation systems positively influence employee retention and organizational efficiency by increasing transparency and fairness in evaluation outcomes. The present findings also align with the arguments of [6], who suggested that machine learning algorithms can provide more accurate employee performance predictions than traditional assessment methods.

The findings further indicated that strategic factors such as adaptive evaluation model design, the use of artificial intelligence for simulation and prediction, personalization of evaluation criteria, and continuous feedback mechanisms significantly affected the proposed model. These findings reflect the strategic role of artificial intelligence in transforming static evaluation systems into dynamic and flexible systems capable of responding to organizational and environmental changes. Adaptive evaluation systems allow organizations to consider employee characteristics, organizational goals, and environmental conditions simultaneously when evaluating performance. Continuous feedback mechanisms also contribute to employee development and organizational learning by enabling timely communication between managers and employees. These results are in agreement with [7], who argued that Industry 4.0 and smart organizational systems require intelligent performance measurement frameworks capable of real-time data analysis and continuous performance monitoring. The findings are also consistent with [9], who emphasized the importance of knowledge governance and intelligent systems in improving innovative employee performance and organizational adaptability. In addition, [10] demonstrated that organizational learning environments and knowledge management systems positively influence employee performance by enhancing organizational flexibility and employee engagement.

Another important finding of the study was the role of contextual factors, including economic and competitive conditions, legal requirements, and organizational changes in the banking industry. The findings suggest that external environmental conditions significantly influence the implementation and effectiveness of artificial intelligence-based evaluation systems. Banks operate within highly competitive and regulated environments, making it necessary for organizations to adopt intelligent systems that improve operational efficiency while maintaining compliance with legal standards and industry regulations. Organizational adaptation to technological transformation is therefore essential for successful artificial intelligence implementation. These findings are supported by [11], who emphasized that sustainable human resource performance depends on organizations' ability to adapt to environmental and technological changes. Furthermore, [1] argued that technological innovation and digital transformation require organizations to redesign traditional managerial processes and develop new capabilities aligned with intelligent technologies. The results also support the findings of [16], who highlighted the growing integration of artificial intelligence technologies into management systems as a response to changing market and technological conditions.

The present study also demonstrated that intervening factors, including organizational culture, innovation acceptance, organizational readiness, and legal and privacy limitations, significantly affected the artificial intelligence-based performance evaluation model. These findings highlight the importance of organizational and ethical dimensions in implementing intelligent managerial systems. Even though artificial intelligence technologies provide substantial advantages, organizations may encounter resistance from employees who fear technological replacement, privacy violations, or unfair algorithmic judgments. Consequently, organizational culture and employee acceptance become essential determinants of successful implementation. These findings are consistent with [12], who emphasized the role of psychological climate and employee creativity in enhancing organizational performance within technology-driven environments. Similarly, [10] reported that organizations with collaborative and innovation-oriented cultures are more likely to successfully implement intelligent systems and achieve improved employee performance outcomes. The findings also correspond with the concerns raised by [16] regarding ethical and privacy challenges associated with artificial intelligence implementation in organizational management.

The findings related to consequential factors demonstrated that artificial intelligence-based evaluation systems can improve evaluation accuracy, increase employee satisfaction and job motivation, enhance productivity and organizational performance, and improve decision-making processes in human resource management. This finding reflects the practical value of intelligent evaluation systems in modern organizations. Artificial intelligence enables managers to make evidence-based decisions regarding employee promotion, training, compensation, and task allocation, thereby reducing managerial bias and increasing organizational justice. Transparent evaluation systems also contribute to employee trust and motivation because employees perceive evaluation outcomes as fair and objective. These findings are highly consistent with the results of [4], who reported that employee performance evaluation is directly associated with organizational productivity and employee motivation. Likewise, [5] found that artificial intelligence-based evaluation systems improve employee retention and job satisfaction by increasing fairness and consistency in evaluation practices. The findings further support the arguments of [3], who concluded that intelligent performance evaluation systems improve organizational effectiveness by enhancing the precision and speed of evaluation processes.

The findings also revealed that core factors, including performance indicators, analytical capabilities, artificial intelligence technologies, support systems, training, ethical considerations, and fairness in evaluation, had the strongest effect on the proposed model. This result demonstrates that technological infrastructure alone is insufficient for successful implementation of artificial intelligence in performance evaluation. Organizations must also invest in employee training, managerial support, ethical frameworks, and transparent evaluation standards to maximize the effectiveness of intelligent systems. The emphasis on ethical considerations and fairness is particularly important because artificial intelligence systems may unintentionally reinforce biases if algorithms are not carefully designed and monitored. These findings align with [8], who emphasized the importance of accurate classification models and reliable artificial intelligence systems in decision-making processes. The findings are also supported by [13], who demonstrated that artificial intelligence systems achieve higher levels of performance when evaluation criteria and analytical structures are appropriately designed. Furthermore, [14] highlighted the importance of optimization algorithms in improving prediction accuracy and reducing analytical errors in intelligent systems.

The results of the present study additionally support the broader literature emphasizing the growing role of artificial intelligence in analytical and predictive systems across different fields. Artificial intelligence technologies have demonstrated substantial effectiveness in fields such as financial prediction, medical diagnosis, and educational evaluation because of their ability to analyze complex and multidimensional data structures. For example, [15] demonstrated the high diagnostic accuracy of artificial intelligence systems in detecting COVID-19 and community-acquired pneumonia using medical imaging data. Although the context differs from organizational management, the underlying analytical capability of artificial intelligence systems is comparable because both contexts require processing large volumes of complex information to generate accurate predictions and decisions. Similarly, the application of artificial intelligence in sports management and performance assessment reported by [17] supports the present findings regarding the ability of intelligent systems to evaluate performance indicators more objectively and efficiently than traditional methods.

The confirmatory factor analysis and structural equation modeling results further demonstrated that all dimensions of the proposed model had acceptable fit indices and statistically significant relationships. The values of RMSEA, CFI, GFI, AGFI, and NFI indicated strong model fit, confirming the validity and reliability of the conceptual framework developed in this study. The significance of the path coefficients also demonstrated that the proposed dimensions collectively explain the structure of artificial intelligence-based performance evaluation systems in the banking industry. These findings indicate that performance evaluation optimization is a multidimensional process influenced by technological, organizational, strategic, contextual, and ethical factors simultaneously. Consequently, banks seeking to implement intelligent evaluation systems should adopt integrated approaches that consider both technological capabilities and organizational conditions.

One limitation of the present study was that the data were collected from banking experts and managers within a limited organizational and geographical context, which may restrict the generalizability of the findings to other industries or countries. Another limitation involved reliance on self-report questionnaires in the quantitative section, which may have been influenced by respondents' subjective perceptions or social desirability bias. Additionally, because artificial intelligence technologies continue to evolve rapidly, some technological dimensions examined in this study may change over time, requiring continuous revision and adaptation of the proposed model.

Future research is recommended to examine the proposed model in different organizational contexts and industries in order to evaluate its generalizability and comparative effectiveness. Researchers may also investigate the role of organizational culture, digital leadership, employee technological literacy, and ethical governance as moderating variables influencing artificial intelligence implementation in performance evaluation systems. Longitudinal studies could provide deeper insights into the long-term organizational effects of artificial intelligence-based evaluation systems on employee performance, organizational commitment, innovation, and productivity. In addition, future studies may compare different artificial intelligence algorithms and predictive models to determine which approaches provide the highest evaluation accuracy and fairness.

From a practical perspective, banking organizations should invest in technological infrastructure, employee training programs, and ethical governance frameworks to support the successful implementation of artificial intelligence-based performance evaluation systems. Managers should ensure transparency in algorithmic decision-making processes and provide employees with continuous feedback regarding evaluation outcomes in order to increase trust and organizational acceptance. Organizations should also develop clear legal and ethical guidelines regarding employee data privacy and algorithmic fairness. Furthermore, policymakers and banking executives should encourage innovation-oriented organizational cultures that support digital transformation and continuous learning to maximize the strategic benefits of artificial intelligence technologies in human resource management and organizational performance evaluation.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

References

[1] A. Nader, "The Application of Artificial Intelligence in Teaching and Learning Based on a Systematic Literature Review," *Dynamic Management and Business Analysis*, vol. 1, no. 1, pp. 59-71, 2023, doi: 10.22034/dmbaj.2024.2023006.1022.

[2] A. Dwianto, "Artificial Intelligence in Performance Evaluation (Case Study of PT. Pos Indonesia Employees)," *Bit-Tech*, vol. 7, no. 2, pp. 348-356, 2024, doi: 10.32877/bt.v7i2.1817.

[3] R. Hejazi, A. Mohammadi, and Z. Safari, "Improving the employee performance evaluation process using artificial intelligence models," *Iranian Journal of Management Sciences*, vol. 18, no. 2, pp. 95-120, 2023. [Online]. Available: https://civilica.com/doc/1949454/.

[4] A. Pandy and E. Capour, "Employee performance evaluation as key to productivity," *Journal of Asian Finance, Economics and Business*, vol. 8, no. 1, pp. 187-198, 2024.

[5] S. Durairaj, "The Effect of AI (Artificial Intelligence) in Employee Performance Evaluation on Employee Retention in the Information Technology Sector," pp. 88-108, 2024, doi: 10.2991/978-94-6463-433-4_8.

[6] D. R.S and P. Sujatha, "A New Perspective to Evaluate Machine Learning Algorithms for Predicting Employee Performance," pp. 134-147, 2024, doi: 10.2174/9789815179514124010013.

[7] S. S. Kamble, A. Gunasekaran, A. Ghadge, and R. Raut, "A performance measurement system for industry 4.0 enabled smart manufacturing system in SMMEs- A review and empirical investigation," *International Journal of Production Economics*, vol. 229, p. 107853, 2020/11/01/ 2020, doi: 10.1016/j.ijpe.2020.107853.

[8] S. Shaghaghi Shahri, "Evaluation and Comparison of Classification Model Performance in Predicting Corporate Credit Ratings Using Artificial Intelligence: A Case Study of the Tehran Stock Exchange," *Transactions on Data Analysis in Social Science*, vol. 6, no. 2, pp. 31-44, 2024. [Online]. Available: https://www.transoscience.ir/article_200776.html.

[9] X. Ye, N. Wang, and Y. Han, "Knowledge Governance and Innovative Employee Performance," *Management Decision*, 2025, doi: 10.1108/md-05-2024-1015.

[10] C. H. I. Xinjia and W. Thongsiri, "The Influence of Work Environment and Knowledge Management on Employee Performance: A Case of Sunshine Asset Management CO., LTD," *Procedia of Multidisciplinary Research*, vol. 3, no. 4, p. 5, 2025. [Online]. Available: https://so09.tci-thaijo.org/index.php/PMR/article/view/6252.

[11] H. Rajabi Farjad and N. Toranian, "Identifying Factors Affecting the Performance of Sustainable Human Resources in the Insurance Industry," *Dynamic Management and Business Analysis*, vol. 2, no. 4, pp. 33-52, 2024, doi: 10.22034/dmbaj.2024.2022329.1015.

[12] H. Zafar, J. H. Cheah, J. A. Ho, Y. Suseno, and F. Tian, "How green servant leadership influences organizational green performance? The roles of employee green creativity, voluntary pro-environmental behavior and green psychological climate," *Personnel Review*, vol. 54, no. 4, pp. 971-995, 2025, doi: 10.1108/PR-10-2023-0843.

[13] M. Chattopadhyay, "Modelling of intrusion detection system using artificial intelligence-evaluation of performance measures," in *Studies in Fuzziness and Soft Computing*, vol. 319, 2015.

[14] K. Mousavi and M. Gholami, "Evaluating the Performance of Artificial Intelligence Optimization Algorithms in Predicting Negative Stock Returns," *Journal of Financial and Investment Research*, vol. 10, no. 2, pp. 98-112, 2021.

[15] L. Li *et al.*, "Using Artificial Intelligence to Detect COVID-19 and Community-acquired Pneumonia Based on Pulmonary CT: Evaluation of the Diagnostic Accuracy," (in eng), *Radiology*, vol. 296, no. 2, pp. E65-e71, Aug 2020, doi: 10.1148/radiol.2020200905.

[16] K. G. Nalbant and S. Aydın, "Literature review on the relationship between Artificial Intelligence Technologies with Digital Sports Marketing and Sports Management," *Indonesian Journal of Sport Management*, vol. 2, no. 2, pp. 135-143, 10/24 2022, doi: 10.31949/ijsm.v2i2.2876.

[17] H. N. Jawoosh, D. A. Dakhil, M. A. Muhammed, and M. H. Gizar, "Using Artificial Intelligence to Evaluate Skill Performance of Some Karate Skills," *Modern Sport*, vol. 21, no. 1, p. 0001, 2022, doi: 10.54702/msj.2022.21.1.0001.