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Research Article

The Reflection of Artificial Intelligence Technologies on Improving the Quality of Financial Reports in Commercial Banks

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ABSTRACT

Received: 30 Dec 2024 Revised: 15 Feb 2025 Accepted: 28 Feb 2025 This research aims to examine the impact of artificial intelligence (AI) technologies on the quality of financial reporting by analyzing their role in enhancing the accuracy of financial data, reducing accounting errors, and promoting transparency in report preparation. The research problem centers on the lack of clarity regarding the extent to which AI tools influence the quality of financial reports and their contribution to improving the accuracy and reliability of financial disclosure. The study sample consists of ten commercial banks representing the commercial banking sector that provides services to individuals and businesses and adopts modern banking technologies. The sample included heads of departments (accounting, auditing, credit), department managers, senior management personnel, and other staff within the banks' organizational structure. The researcher employed statistical analysis, using a questionnaire as the main data collection tool. The sample members received 116 questionnaires overall, of which 103 were valid for study. The results showed a direct and statistically significant positive link between artificial intelligence technologies and financial report preparation, so stressing the helpful function of these instruments in improving the accuracy and efficiency of financial data inside banking institutions. These findings confirm that using AI helps to increase the degree of openness and raise the caliber of financial disclosure. Therefore, the researcher advises the broad use of these technologies in the banking industry as they help to improve the financial reporting system and support decision-making procedures depending on correct and dependable information.

Keywords: Artificial Intelligence Technologies, Financial Reporting, Commercial Banks.

INTRODUCTION:

In recent years, there has been a notable shift in technology adoption, particularly artificial intelligence (AI), which has become a pivotal force in improving operational efficiency within financial institutions, especially in banking. As financial activities expand in volume and complexity, there is a heightened necessity to enhance the quality of financial reporting, due to its essential function in assessing financial performance and facilitating decision-making. AI significantly improves the quality and dependability of financial reporting by processing and analyzing extensive data sets, detecting accounting mistakes, and reducing potential for manipulation, thereby boosting transparency and bolstering financial integrity. However, the use of these technologies presents several obstacles, mostly with information security and data protection, owing to the sensitive nature of financial reporting that necessitates utmost accuracy and secrecy. Furthermore, the increasing dependence on AI for report generation prompts inquiries regarding the ongoing requirement for human supervision to guarantee the integrity of outcomes. The expenses related to the implementation of these technologies and the readiness of the financial infrastructure to adequately accept and integrate them are significant barriers to this digital revolution.

1. Research Significance:

A. The importance of this study stems from Iraqi banks' increasing propensity to use contemporary technology in their accounting and financial operations in order to strengthen their support of the country's economy.

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- B. By analyzing vast amounts of data, identifying mistakes and accounting irregularities, lowering the possibility of manipulation, and boosting the credibility of financial information, the study emphasizes how artificial intelligence (AI) technologies can enhance the quality of financial reporting.
- C. In addition, the study highlights how AI may be used to automate financial report creation, which speeds up audit procedures, increases transparency, and reduces the risks involved with human involvement in accounting operations..

2. Research Objectives:

The following goals are the focus of this study:

- A. To determine the type of link that exists between artificial intelligence (AI) technology and the systems that banking institutions use to prepare their financial reports.
- B. To evaluate how much AI applications affect the correctness, dependability, and efficiency of financial report components and dimensions.
- C. To investigate how AI might improve data accuracy, decrease accounting mistakes, and encourage greater openness in financial disclosure to raise the caliber of financial reporting.

3. Research Problem

With the goal of increasing operational efficiency and performance, the banking industry is rapidly changing toward the use of artificial intelligence (AI) technology. The degree to which these technologies affect financial reporting quality, namely in terms of accuracy, openness, and the capacity to reduce accounting mistakes and manipulations, is still up for debate. One of the major issues that needs careful examination is the uncertainty around how AI might improve adherence to international accounting rules.

As a result, the main research challenge is to investigate the nature of the connection between the quality of financial reporting and the use of AI tools, as well as whether or not these tools successfully enhance the dependability, accuracy, and transparency of financial disclosures. Inn light of the above, the research problem can be formulated through the following questions:

- A. Is there a statistically significant relationship between artificial intelligence tools and the quality of financial reporting in banks?
- B. To what extent do artificial intelligence tools directly influence the preparation and disclosure of financial reports in banking institutions?

4. Research Hypotheses

- A. There is a statistically significant correlation between artificial intelligence tools and financial reporting.
- B. Artificial intelligence tools have a direct and statistically significant impact on the preparation and disclosure of financial reports within banking institutions.

5. Research Methodology

The descriptive-analytical method was adopted as the methodological framework for this study, due to its effectiveness in providing an accurate description of the research phenomenon and analyzing its various dimensions. This approach aims to understand the relationships between variables and interpret the influencing factors, in order to derive scientific conclusions that contribute to achieving the study's objectives and answering its research questions. It relies on applying a set of analytical procedures to the data and facts collected from the research sample, which are then analyzed statistically to reach scientifically generalizable results.

6. Research Sample:

The research sample was selected from ten commercial banks representing a sector that provides services to individuals and businesses and adopts modern banking technologies, including artificial intelligence techniques. Along with department managers, top management officials, and other staff members inside the banks' organizational structure, the sample comprised heads of departments including credit, accounting, and auditing. These banks were selected because of their growing dependence on artificial intelligence technologies in their financial and accounting systems, which fit the suitable setting for analyzing the degree to which these technologies

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are reflected in the quality of financial reports, especially in terms of accuracy, transparency, and accounting standard compliance.

FIRST REQUIREMENT: ARTIFICIAL INTELLIGENCE

The global economy has recently undergone a fundamental transformation due to the rapid advancements in information and communication technologies (ICT), which combine modern communication tools with advanced computing techniques. This change is no more only a technical one; it is now a fundamental part of the global economic system, which is progressively turning toward the acceptance of digital and technology solutions in its several operations and activity. Consequently, economic entities have been pushed to embrace current technology in order to improve their efficiency and effectiveness in handling jobs, thereby substituting for conventional hand approaches..

1.1 The Concept of Artificial Intelligence

The goal of artificial intelligence (AI), a branch of computer science, is to create machines that can learn from data, see patterns, make choices, and interact with people and their surroundings in a natural way—tasks that normally require human intellect. Deep neural networks that replicate intricate brain processes are among these systems, as are basic algorithms..

According to (Poola, 2017:27) ,AI can develop complex systems that surpass human capabilities in certain areas, enhancing human abilities through intelligent and advanced tools.

According to the Financial Stability Board (FSB), artificial intelligence (AI) is a collection of ideas and techniques that allow computer systems to carry out activities like speech recognition, text interpretation, and visual perception in a variety of circumstances that normally require human intellect. In some cases, these systems can even enhance human cognitive abilities (Fernández, 2019:1).

Similarly, (Nasr Allah, 2021:5) describes AI as the use of machines or robots capable of imitating intelligent human behavior, including problem-solving, decision-making, speech recognition, translation, and other advanced tasks. In this context, AI is not merely a tool for replacing humans but rather an enabler, allowing us to push beyond our natural limitations and achieve unprecedented advancements.

1.2 The Importance of Artificial Intelligence

Artificial intelligence (AI) is one of the most significant and widespread innovations of our time, playing a crucial role across various fields, including humanities, education, and advanced technologies. AI has been integrated into economic units to enhance their performance by supporting various tasks, such as monitoring employee efficiency, assisting management in making informed decisions, and measuring key indicators through data analysis to provide precise results that more accurately reflect economic unit performance compared to traditional systems. Additionally, AI mimics human intelligence by learning new information and solving problems, enabling its application and execution on computers (Al-Muqeeti, 2021:13).

The importance of AI can be highlighted through several key aspects, as outlined by (Shenbi, 2016: 157-158):

AI plays a vital role in critical fields such as disease diagnosis and prescription recommendations, providing legal and professional consultations, interactive education, as well as security and military defense.

- A. Intelligent systems contribute to precise, autonomous, and objective decision-making, reducing the likelihood of errors, biases, and discrimination while minimizing external interference and preconceived judgments.
- B. AI-powered machines alleviate risks and psychological stress for humans, allowing individuals to focus on more meaningful and humanitarian tasks.
- C. AI helps preserve accumulated human expertise by transferring knowledge to intelligent machines, ensuring its continuity and efficient utilization.

1.3 Objectives of Artificial Intelligence

Artificial intelligence (AI) seeks to comprehend human intellect by developing computer programs that can replicate intelligent human behavior, hence allowing them to address a diverse array of challenges. (Sheli, 2023, p. 86). The objectives of AI can be summarized as follows (Al-Atel et al, 2021:36):

- A. Analyzing higher cognitive processes that occur within the human mind.
- B. Developing computer programs with the ability to learn from past experiences and solve problems effectively.
- C. Enhancing the use of computers and maximizing their benefits by facilitating problem-solving processes, thereby improving training and education through efficient and cost-effective methods.

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- D. Providing innovative solutions for a wide range of tasks.
- E. Additionally, (Abu Al-Nasr,2022:28) states that the primary goal of AI is to create systems that think and operate in a logical and rational manner, similar to human cognition.

Researchers agree that AI objectives vary depending on the intended application of its technologies, serving multiple fields such as technology, industry, agriculture, medicine, education, and marketing. Despite this diversity, all AI objectives align within a unified framework aimed at benefiting humans and facilitating their daily lives across various sectors. (Al-Asatl et al, 2021: 747)

SECOND REQUIREMENT: FINANCIAL REPORTS

Financial reports are essential tools for evaluating the financial performance of banking institutions, providing accurate and reliable information to various stakeholders, including investors, regulatory authorities, and senior management. The quality of these reports depends on data accuracy, disclosure transparency, and the integrity of accounting processes. With the ongoing digital transformation in the financial sector, financial reports must adapt to rapid changes in the economic and technological environment.

2.1 Concept of Financial Reports

In accordance with generally accepted accounting principles (GAAP) and international accounting standards, financial reports are defined as a collection of financial statements that illustrate an entity's financial position, performance, and cash flows over a specified period in the Conceptual Framework for Financial Reporting, published by the International Accounting Standards Board (IASB, 201822:). Financial reports are the following: Statement of Financial Position, Statement of Comprehensive Income, Statement of Changes in Equity, Statement of Cash Flows, and Notes to the Financial Statements, all of which are included in the International Financial Reporting Standards (IFRS) framework. Additionally, Setyowati (2021:181) defines financial reporting as a set of interconnected components that acquire, assess, archive, and disseminate data to facilitate organizational governance and decision-making..

Financial reports furnish essential data on operational outcomes, financial standing, and cash flows, allowing stakeholders to make educated decisions. Due to the challenges of manually monitoring extensive financial data, there is a growing necessity to minimize the time and effort needed for decision-making by shareholders and investors. Therefore, AI-driven methodologies provide significant potential to autonomously extract meaningful insights from unstructured financial records (Vanetik et al, 2022).:

2.2 Importance of Financial Reports

Financial reports are an integral part of any organization's accounting system, providing an accurate and comprehensive representation of its financial position. These reports play a crucial role in facilitating well-informed economic and managerial decision-making. The significance of financial reports is multidimensional and includes the following aspects: (Kieso et al. 2020:6)

- A. Providing Information to Investors: Financial reports help investors evaluate a company's financial performance, enabling them to make informed investment decisions based on profitability and financial efficiency.
- B. Enhancing Managerial Decision-Making: Financial reports provide precise data on revenues, expenses, assets, and liabilities, enabling management to make strategic decisions such as expansion, investment, or entering new markets.
- C. Promoting Transparency: Financial reports play a key role in increasing transparency within the organization and with external parties such as shareholders, regulatory bodies, and banks, thereby minimizing opportunities for financial manipulation.
 - D. By providing a framework for tax filings and financial reporting in line with internationally recognized accounting standards, these reports enable companies to ensure legal compliance.
 - E. Financial Risk Management: By means of their identification and analysis of possible financial hazards, financial reports help companies to better control these risks and guard against financial crises..

Section Three: Test Results

1. Reliability of the Research Instrument

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Table (1): Cronbach's Alpha Coefficient of Reliability

Dimension or axis	Number of items	reliability coefficient
		Cronbach's alpha
Machine Learning	5	0.77
Expert Systems	5	0.82
Natural Language Processing Capabilities	5	0.81
Artificial Neural Networks	5	0.86
Chatbots with customers	5	0.88
Artificial intelligence tools	25	0.94
Financial Reporting	10	0.89
Total	35	0.96

Source: Prepared by the researcher based on the results of SPSS software, version 24

The data in the table demonstrate elevated dependability, with all coefficient values surpassing the acceptable threshold of 0.7. The aggregate Cronbach's Alpha for the 35 questionnaire questions was 0.96, indicating a good level of internal consistency of the assessment instrument. The elevated Cronbach's alpha values enable the researcher to trust the survey results and extrapolate these findings from the sample to the broader population..

2. Exploratory Analysis of AI Tools (AIT)

Table (2): KMO Test Results for AI Tools

KMO and Bartlett's Test							
Kaiser-Meyer-Olkin Meas	.872						
Bartlett's Test of	Approx. Chi-Square	1475.867					
Sphericity	Df	300					
	Sig.	.000					

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24

The table above indicates that the Kaiser-Meyer-Olkin (KMO) test score is 0.872, which is deemed extremely high, signifying that the dataset is suitable for factor analysis. Furthermore, the significant value of Bartlett's Test of Sphericity, which was 0.000, necessitates the rejection of the null hypothesis positing that the correlation matrix among variables is an identity matrix. Thus, this outcome indicates the existence of statistically significant correlations across the dimensions of the Artificial Intelligence Tools construct. Consequently, factor analysis is considered a suitable approach for examining the dataset in question.

• Explained Variance of Factors and Variable Loadings

Table (3): Eigenvalues and Explained Variances of Artificial Intelligence Tools.

Total Variance Explained											
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings				
		% of	Cumulative		% of	Cumulative		% of	Cumulative		
Component	Total	Variance	%	Total	Variance	%	Total	Variance	%		
1	10.105	40.422	40.422	10.105	40.422	40.422	3.829	15.315	15.315		
2	1.953	7.813	48.235	1.953	7.813	48.235	3.622	14.489	29.804		

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3	1.730	6.922	55.156	1.730	6.922	55.156	2.676	10.706	40.509		
4	1.233	4.932	60.088	1.233	4.932	60.088	2.630	10.521	51.030		
5	1.155	4.621	64.709	1.155	4.621	64.709	2.377	9.508	60.538		
6	1.015	4.061	68.770	1.015	4.061	68.770	2.058	8.232	68.770		
	Extraction Method: Principal Component Analysis.										

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24

Based on the above results, six eigenvalues (latent roots) were identified, indicating the presence of six factors. The first factor exhibited the highest variance explanation, accounting for 40.422% of the total explained variance before rotation and 15.315% after rotation. The results also indicate a decrease in the explanatory power of the first eigenvalue and an increase in the explanatory power of the second eigenvalue. This shift is attributed to the reassignment of an item to a different factor, thereby enhancing the interpretive strength of the items associated with the Artificial Intelligence Tools dimensions.

The total explained variance across the six eigenvalues amounted to 68.770% of the total variance, both before and after rotation, while the remaining variance is attributed to other variables not included in this study.

Since the first factor had the highest explanatory power, its loadings, along with the loadings of each item within the Artificial Intelligence Tools dimensions, will be considered. These loadings represent the extent to which each item contributes to the explained variance within its respective dimension.

Table (4): Factor Loadings Before Rotation for Each Item in the Artificial Intelligence Tools Dimension.

	Factor Loadings Before Rotation								
	ML	ES	NLPC	ANN	CWC				
ML1	.595								
ML2	.473								
ML3	.556								
ML4	.581								
ML5	.596								
ES1		.691							
ES2		.601							
ES3		.655							
ES4		.714							
ES5		.638							
NLPC1			.663						
NLPC2			.590						
NLPC3			.692						
NLPC4			.729						
NLPC5			.637						
ANN1				.663					
ANN2				.619					

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ANN3				.687				
ANN4				.688				
ANN5				.673				
CWC1					.675			
CWC2					.650			
CWC3					.643			
CWC4					.698			
CWC5					.593			
E	Extraction Method: Principal Component Analysis.							

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24

The results indicate that the factor loadings were high, suggesting that the items for each dimension indeed correspond to their respective dimensions within the Artificial Intelligence Tools, as proposed by the researcher in the questionnaire.

The loadings after performing the rotation process using the Varimax method are presented in Table (5).

Table (5): Factor Loadings After Rotation for Each Item in the Artificial Intelligence Tools Dimension.

	Factor Loadings After Rotation									
	1	2	3	4	5					
ML1	·534									
ML2	.822									
ML3	.646									
ML4	.717									
ML5	.619									
ES1		.590								
ES2		.739								
ES3		.614								
ES4		.655								
ES5		.561								
NLPC1			.425							
NLPC2			.676							
NLPC3			.735							
NLPC4			.560							
NLPC5			.597							
ANN1				.799						
ANN2				.661						
ANN3				.584						

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ANN4				.695			
ANN5				.586			
CWC1					.711		
CWC2					·745		
CWC3					.772		
CWC4					.790		
CWC5					.765		
Ex	traction Me	thod: Princi	pal Compor	nent Analysi	s.		
Rotation Method: Varimax with Kaiser Normalization.							
	a. Rotat	tion converg	ged in 9 itera	ations.			

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24

The table above shows that the rotation process resulted in increased accuracy in determining the correct factor assignment for each item. It is evident from the higher factor loadings after rotation that the items are more accurately assigned to their respective factors, confirming the researcher's proposition that these items belong to their corresponding dimensions.

3. Exploratory Analysis of Financial Reports (FR)

Table (6): KMO Test Results for Financial Reports.

KMO and Bartlett's Test								
Kaiser-Meyer-Olkin Measure o	.853							
Bartlett's Test of Sphericity	Approx. Chi-Square	498.089						
	Df	45						
	Sig.	.000						

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24

The table indicates a high KMO test value of 0.839, and the significant value of Bartlett's test, equal to 0.000, confirming the data's suitability for factor analysis. Therefore, the null hypothesis, which posits that the correlation matrix among the variables inside the factor is an identity matrix, is rejected. This indicates the existence of statistically significant connections among the variables associated with the banking operations component. Consequently, factor analysis is a suitable technique for examining the data in question.

• Clarified the Explained Variance of Factors and Variable Loadings

The exploratory factor analysis identified a single factor with an Eigenvalue over 1..

Table (7): Eigenvalues and Explained Variances for Financial Reports.

Total Variance Explained										
	Initial Eigenvalues			Extraction Sums of Squared Loadings						
Component	Total % of Variance Cumulative %			Total	% of Variance	Cumulative %				
1	5.149 51.491 5		51.491	5.149	51.491	51.491				
	Extraction Method: Principal Component Analysis.									

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24

The analysis revealed the presence of a single eigenvalue (one latent factor), indicating the existence of one factor before rotation. Since there is only one factor without dimensions, no rotation process was applied, as

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rotation occurs between factors. This factor explained 51.491% of the total variance, with the remaining variance attributed to other variables not included in this study.

Table (8): Factor Loadings for Each Item in the Financial Reports Dimension.

Factor Loadings Before Rotation						
	AIFR					
FR1	.667					
FR2	.704					
FR3	.705					
FR4	.720					
FR5	.739					
FR6	.770					
FR7	.728					
FR8	.828					
FR9	.718					
FR10	.568					
Extraction Method: Principal Component Analysis.						

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24 It is evident that the factor loadings are high, indicating that the items belong to the Financial Reports factor.

Hypotheses Testing:

1. There is a statistically significant correlation between artificial intelligence tools and financial reporting.

The analysis of the strength and significance of the relationship between the dimensions and factors requires calculating the correlation values and testing their significance. The following table presents the correlations between Artificial Intelligence Tools and Financial Reports, based on the results from the SPSS v.24 statistical software:

Table (9): Correlation Coefficients Between Artificial Intelligence Tools and Financial Reports.

	Correlations									
	ML ES NLPC ANN CWC AI									
FR	Pearson Correlation	.489**	•741**	.694**	.641**	·732**	.814**			
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000			
	N	103	103	103	103	103	103			
	**. Correlation is sig	nifican	t at the	e 0.01 le	evel (2-	tailed)	•			

Source: Prepared by the researcher based on the outputs of the SPSS program, version 24

The primary hypothesis for evaluating the importance of the relationship between financial reports and artificial intelligence tools, The following is the primary premise for evaluating the importance of the relationship between financial reports and artificial intelligence tools:

Null Hypothesis (Ho): Financial reports and artificial intelligence tools do not statistically significantly correlate. Alternative Hypothesis (H1): Financial reports and artificial intelligence tools have a statistically meaningful relationship.

The table above displays the correlation coefficient, which is 0.814 and indicates a substantial positive association at the 5% significance level between Artificial Intelligence Tools and Financial Reports. This suggests that there is

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a strong positive link between financial reports and artificial intelligence tools, confirming the adoption of the alternative hypothesis.

2. The creation and dissemination of financial reports in banking institutions are directly and statistically significantly impacted by artificial intelligence instruments..

Table (10): The Direct Effect of the Artificial Intelligence Variable on the Financial Reporting Variable According to the t-Test.

			Estimate	S.E.	T test	Sig.	R ²
FR	<	AI	.814	.064	14.136	***	.662
FR	<	ML	.489	.091	5.667	***	.239
FR	<	ES	.741	.066	11.142	***	.549
FR	<	NLPC	.694	.070	9.738	***	.482
FR	<	ANN	.641	.064	8.445	***	.412
FR	<	CWC	.732	.051	10.842	***	.535

Source: Prepared by the researcher based on the results of AMOS software.

The results reveal that, at the 5% significance level, Artificial Intelligence (AI) technologies have a positive and statistically significant direct impact on the Financial Reporting (FR) variable. With a t-test result of 14.136 and a coefficient of determination (R2) of 0.662, the overall effect size was 0.814, therefore suggesting a notable correlation and influence of the deployed artificial intelligence technology.

Examining the different aspects of artificial intelligence, the research turned out the following:

With an impact size of 0.489, a t-test value of 5.667, and a R² of 0.239, Machine Learning (ML) clearly showed a substantial beneficial influence on financial reporting.

With an impact size of 0.741, a t-test value of 11.142, and a R² of 0.549, Expert Systems (ES) also showed a really notable positive effect.

With an effect size of 0.694, a t-test value of 9.738, and a R² of 0.482 Natural Language Processing Capabilities (NLPC) revealed a statistically significant beneficial influence.

With an effect size of 0.641, a t-test value of 8.445, and a R² of 0.424, Artificial Neural Networks (ANN) had a really evident beneficial impact.

With an impact size of 0.732, a t-test value of 10.842, and a R² of 0.535, Customer Web Chatbots (CWC) also showed a really noteworthy positive effect.

These findings underline the significant and positive contribution of artificial intelligence elements in improving the accuracy and efficiency of financial reporting in financial organizations..

CONCLUSIONS:

- 1. The findings of the internal consistency test (Cronbach's Alpha) showed high values, thus verifying the usage of the questionnaire results to support the study hypotheses and generalize them to the larger research population and so indicating a great dependability of the research instrument.
- 2. The exploratory factor analysis revealed that the questionnaire questions were prepared using a strict scientific procedure, therefore increasing the robustness of the measuring instruments and their capacity to appropriately represent the target variables.
- 3. The results show a statistically significant beneficial correlation between artificial intelligence tools and financial reporting, therefore suggesting that the development of AI technologies will raise the quality and accuracy of financial data.
- 4. The results show a significant and direct positive influence of artificial intelligence tools on financial reporting, therefore stressing the need of including these technologies inside the banking sector to improve transparency and accuracy in the production of financial reports..

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RECOMMENDATIONS:

- 1. Citing their positive impact on the accuracy and quality of financial reporting, the researcher supports the further application of artificial intelligence technologies and approaches in banking organizations.
 - 2. To maximize the benefits of artificial intelligence tools and increase operational efficiency, banking employees must be taught and certified in their competent application.
- In order to guarantee efficient integration between artificial intelligence technologies and accounting and financial systems, efforts should be directed on developing and improving information systems inside banks.
- Development of supportive policies and procedures for contemporary financial reporting helps to prepare the internal banking environment for the acceptance of artificial intelligence solutions..

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