



Integration Between Artificial Intelligence and Financial Budgets to Achieve Financial Control in Insurance Companies: An Applied Study at Al-Rasheed Bank

Fadhel Allah Ahmed Abed

AL-Furat Al-Awsat Technical University

*Correspondence: Fadhel Allah Ahmed Abed

Email: fadhel_allah@atu.edu.iq

Received: 08-02-2026

Accepted: 08-03-2026

Published: 08-04-2026



Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

Abstract: The aim of this study was to demonstrate the impact of the integration between artificial intelligence and financial budgets in maintaining financial controls for insurance companies, using the method of the applied study with Al-Rasheed bank as a case study. The study was done on the basis of descriptive-analytical methodology using the opinions of some employees in the fields of finance, budgeting, auditing, controlling, and information technology at the bank as well as using some data related to finance and budget reports. The study examined the reality of the budgets in the traditional financial system in comparison with the budgets based on the support provided by AI methods, including those based on predictive analytics and machine learning tools for estimating revenues and expenses, as well as detecting financial deviations. The findings included a considerable decline in the rates of financial deviations under the budgets with AI support when they moved from high levels under the traditional budgets to low levels. At the same time, the results revealed an improvement in financial performance indicators, particularly in terms of report preparation speed, estimation accuracy, and improvement in the preventive control process as well as concurrent control, which is significant to financial decision-making. The study concluded that the integration of AI in the process of preparing financial budgets in insurance companies and banks is an effective tool to improve financial control, reduce financial risks, and enhance financial performance efficiency in those institutions.

Keywords: Artificial Intelligence, Financial Budgets, Financial Control.

Introduction

The world has witnessed significant developments in the financial business environment as a result of advanced technological advancements, particularly artificial intelligence (AI) technologies, which have become a cornerstone in financial data mining and accounting within various institutions. These advancements have contributed to enhancing the ability of financial institutions to analyze big data, predict risks, and consequently, make informed decisions. This, in turn, has a clear impact on the efficiency of financial management and resource management. In this context, the importance of integrating AI tools with planning systems, such as budgeting, becomes evident, given its

role in supporting the process. AI is also used in establishing financial resources within financial institutions, particularly in the insurance sector.

Despite the increasing number of studies addressing AI applications in the financial and banking sector, many of these studies have focused on technical or service aspects without adequately addressing the integration of AI with financial planning systems, such as budgeting as a tool for financial control. Similarly, studies addressing the insurance sector have often focused on risk analysis or improving insurance services using AI, without examining the complementary relationship between these technologies and the financial control systems within financial institutions. Therefore, a research gap exists due to the limited number of studies that have addressed this integration in an applied manner within Arab financial institutions, particularly in the Iraqi context.

Based on this research gap, this study seeks to achieve several objectives, most notably: identifying the nature of the integration between artificial intelligence (AI) technologies and financial budgeting in supporting financial control, and demonstrating the role of this integration in improving the efficiency of financial planning and monitoring financial performance within financial institutions. The study also aims to analyze the extent to which the application of AI technologies contributes to enhancing the accuracy of financial information, reducing human error, and supporting the supervisory decision-making process in insurance companies, with a practical application to Al-Rasheed Bank, a prominent financial institution in the Iraqi context.

The importance of this research stems from the significance of its subject matter, which combines two key pillars of modern financial management: artificial intelligence and financial budgeting. This integration represents a contemporary trend in developing financial control systems within financial institutions. Furthermore, the application of AI technologies contributes to improving the accuracy of financial data analysis and predicting potential financial deviations, thus assisting senior management in making more efficient and effective financial decisions. This research also highlights the importance of digital transformation in developing financial control systems and enhancing the efficiency of financial performance in financial institutions.

Therefore, this research is both scientifically and practically significant. Scientifically, it enriches the literature on artificial intelligence applications in financial control and planning. Practically, it provides a practical framework for how AI technologies can be employed to support financial budgeting systems and achieve effective financial control within financial institutions. Furthermore, its findings can help financial institutions and insurance companies develop their control systems and enhance their ability to meet the financial challenges of the contemporary business environment.

Research Method

Research Problem

Financial institutions and insurance companies are currently facing increasing challenges in financial control due to the complexity of financial operations and the growing volume of accounting and financial data. This necessitates the use of modern tools and technologies capable of improving the efficiency of financial planning and control. Financial budgets are among the most important traditional tools used in planning and control within institutions. However, their effectiveness can be affected by human error or slow analysis of financial data, which may limit their ability to detect financial deviations in a timely manner. With rapid technological advancements, artificial intelligence (AI) technologies have emerged as a modern solution that can contribute to improving the efficiency of financial systems through big data analysis, predicting financial deviations, and supporting decision-making. Nevertheless, the application of these technologies in financial planning and control through budgets remains limited in many financial institutions, especially in developing environments, creating a gap between available technological capabilities and their actual implementation in financial systems.

Furthermore, financial institutions, including insurance companies and banks, need more efficient and flexible financial control systems that enable them to continuously monitor financial performance and detect deviations in budget execution at an early stage. However, relying on traditional methods for preparing and analyzing budgets may not provide the accurate and timely information necessary to support effective financial oversight. This necessitates exploring the potential of artificial intelligence (AI) technologies to enhance integration with financial budgeting systems. Hence, the study's central question is: To what extent does the integration of AI technologies with financial budgeting contribute to enhancing the effectiveness of financial oversight in insurance companies, specifically at Al-Rasheed Bank?

This central question leads to several sub-questions, most notably:

- What is the level of AI technology use in Al-Rasheed Bank's financial systems?
- How effective are the financial budgeting systems used in achieving financial oversight within insurance companies?
- Does the integration of AI with financial budgeting contribute to improving the accuracy of financial information and detecting financial irregularities?
- What is the impact of using AI technologies on supporting the financial oversight process and financial decision-making in financial institutions?

Importance of the Research

1. The importance of this study stems from the significance of its subject matter: the integration of artificial intelligence (AI) technologies with financial budgeting systems to achieve effective financial control in insurance companies and financial institutions.
2. The study also gains importance from highlighting a modern trend in financial and accounting management: the application of AI technologies in developing financial

control tools. The integration of AI with financial budgeting systems can contribute to improving the accuracy of financial data analysis, reducing human error, and accelerating the preparation and analysis of financial reports. This, in turn, helps senior management in financial institutions make more accurate and effective financial decisions.

3. The study's scientific importance lies in its contribution to enriching the literature on the use of AI technologies in the financial and accounting fields, particularly in financial planning and control. Furthermore, it aims to fill a research gap concerning the integration of AI with financial budgeting systems in achieving financial control, especially in the Arab and Iraqi contexts, where studies in this area remain relatively limited.
4. From a practical standpoint, the findings of this study can provide financial institutions and insurance companies with a practical framework for leveraging artificial intelligence technologies to enhance their financial budgeting systems and improve the effectiveness of financial oversight. Furthermore, the study's results can assist Al-Rasheed Bank and other financial institutions in adopting modern methods for analyzing financial data and predicting potential financial challenges, thereby contributing to improved financial performance and more efficient use of financial resources.

Research Objectives

1. Understanding the concept of artificial intelligence (AI) and its role in developing financial and accounting systems within financial institutions and insurance companies.
2. Analyzing the nature of financial budgets as a fundamental tool for financial planning and control in financial institutions. Demonstrating the level of AI technology use in financial and control operations within Al-Rasheed Bank.
3. Defining the nature of the complementary relationship between AI and financial budgets and their role in improving the efficiency of financial control.
4. Measuring the impact of integrating AI and financial budgets on improving the accuracy of financial information and the early detection of financial irregularities.
5. Analyzing the role of AI technologies in supporting financial decision-making and enhancing the efficiency of financial planning within insurance companies and financial institutions.

Presenting a set of recommendations that contribute to developing financial control systems by employing AI technologies in the preparation and analysis of financial budgets within financial institutions.

Research Variables

Independent Variable: Artificial Intelligence (AI)

It refers to the set of intelligent technologies and systems adopted by the institution to analyze financial data, conduct forecasting, and support the preparation of budgets and financial control.

Dimensions of the Independent Variable (Artificial Intelligence):

1. Intelligent financial data analysis systems: big data analysis, pattern extraction, and support for financial forecasting.
2. Intelligent predictive models: forecasting revenues, expenses, and insurance risks.
3. Automation of financial processes: automation of budget preparation, financial reporting, and real-time monitoring.
4. Financial decision-making support: providing accurate and timely information to decision-makers.

Mediating Variable: Financial Budgets

They represent the tool through which artificial intelligence technologies are employed in financial planning and in translating objectives into quantitative figures and control standards.

Dimensions of the Mediating Variable (Financial Budgets):

Accuracy of financial budget preparation, Flexibility of budgets and their responsiveness to changes, Comprehensiveness of financial budgets and Integration between budgets and financial reports.

Dependent Variable: Financial Control

It refers to the procedures and methods that are adopted by the institution to ensure sound financial performance, compliance with budgets, and reduction of financial deviations.

Dimensions of the Dependent Variable (Financial Control):

Early detection of financial deviations, Efficiency of preventive and corrective control, Quality of control reports and Enhancement of financial compliance and governance.

Control Variables

Size of the institution, Level of technical qualification of human resources, Technological infrastructure and Level of managerial support.

Research Hypotheses**Main Hypothesis****Null Hypothesis (H0):**

There is no statistically significant relationship between the integration of artificial intelligence and financial budgets and the achievement of financial control in insurance companies (an applied study at Al-Rasheed Bank).

Alternative Hypothesis (H1):

There is a statistically significant relationship between the integration of artificial intelligence and financial budgets and the achievement of financial control in insurance companies (an applied study at Al-Rasheed Bank).

Sub-Hypotheses

First Sub-Hypothesis

- **H0₁:**

There is no statistically significant relationship between the use of artificial intelligence techniques and the accuracy of preparing financial budgets in insurance companies.

- **H1₁:**

There is a statistically significant relationship between the use of artificial intelligence techniques and the accuracy of preparing financial budgets in insurance companies.

Second Sub-Hypothesis

- **H0₂:**

Artificial intelligence does not make a statistically significant contribution to enhancing the efficiency of financial control through the early detection of financial deviations.

- **H1₂:**

Artificial intelligence makes a statistically significant contribution to enhancing the efficiency of financial control through the early detection of financial deviations.

Third Sub-Hypothesis

- **H0₃:**

There is no statistically significant relationship between the integration of artificial intelligence and financial budgets and the quality of financial information used in control.

- **H1₃:**

There is a statistically significant relationship between the integration of artificial intelligence and financial budgets and the quality of financial information used in control.

Fourth Sub-Hypothesis

- **H0₄:**

The use of artificial intelligence models does not make a statistically significant contribution to improving financial forecasting and reducing financial risks in insurance companies.

- **H1₄:**

The use of artificial intelligence models makes a statistically significant contribution to improving financial forecasting and reducing financial risks in insurance companies.

Fifth Sub-Hypothesis

- **H0₅:**

There is no statistically significant relationship between the application of artificial intelligence in financial budgets and the rationalization of financial decisions within Al-Rasheed Bank.

- **H1₅:**

There is a statistically significant relationship between the application of artificial intelligence in financial budgets and the rationalization of financial decisions within Al-Rasheed Bank.

Previous Studies on Artificial Intelligence Applications in the Financial and Insurance Sectors

1. Studies on Artificial Intelligence Applications in the Financial and Insurance Sector

A. A Survey on AI Implementation in Finance, (Cyber) Insurance and Financial Controlling

This study constitutes a systematic review of the scientific studies regarding the role of artificial intelligence in:

- The financial and banking sector
- Insurance companies
- Financial control and the various controlling units

Key points of the study:

- The research revealed the potential of artificial intelligence in the integration of financial analysis, risk forecasting, automation, and financial control.
- It emphasized financial controlling and overseeing as key aspects in which AI would be used in modern business environments.
- It includes supporting the verification of the role of artificial intelligence in developing control systems in insurance companies.

2. Arabic and Applied Studies Related to the Research Topic

B. The Use of Artificial Intelligence Algorithms to Develop the Performance of Financial Institutions – An Applied Study in the Iraqi Insurance Company

Source: Iraqi Journal of Economic Sciences

The research aims to investigate the applicability of artificial intelligence algorithms in the analysis of the financial information of an Iraqi insurance company.

Main findings:

- Artificial intelligence helped in the analysis of the company's financial performance over the mentioned period (2014-2022).
- AI also helped in identifying the best algorithms in analyzing financial performance indicators, which could lead to better practices in budgeting and controlling.

3. Studies on Artificial Intelligence and Financial Control

C. The Use of Artificial Intelligence in Implementing Supervisory Tasks

Source: Academic research on using artificial intelligence techniques in controlling

This research does elaborate on how artificial intelligence can be used to carry out supervisory roles within financial institutions, including handling big data analytics and minimizing errors while also increasing audit efficiency.

Key aspects:

- Clarification of the mechanisms for the implementation of intelligent technologies in the control systems of institutions.
- Emphasis on the significance of adequate training and information for supervisory personnel for the successful utilization of these technologies.

4. Studies Related to Artificial Intelligence in Financial Decision-Making and Budgeting

D. How AI is Shaping the Future of Financial Decision Making

The subject of this research was to address the role of artificial intelligence in:

- Budget forecasting
- Risk assessment
- Financial fraud detection

It also explained the ways in which these capabilities contribute to strategic financial decisions in firms.

Key discussions:

- Integrating artificial intelligence into financial planning and budgeting models.
- Its relationship with financial reporting and precise financial control.

Artificial Intelligence

The Concept of Artificial Intelligence

Artificial Intelligence is defined as that department of computer science which researches methods by which systems and programs can be designed, capable of simulating intelligent human behavior in learning, thinking, analysis, decision making, and problem solving, based on algorithms big data.

Objectives of Artificial Intelligence

1. Simulating the human intelligence in thinking and analytical aspects.
2. Improving the quality of decision-making using proper data analysis.
3. Increasing operational efficiency and reduction of time and efforts:
4. Predicting a future event based on historical data.
5. Eliminate or reduce human errors in operations that require sensitivity.
6. Supporting supervision and continuous monitoring within institutions.
7. Adapting to environmental and economic changes.

Third: Applications of Artificial Intelligence

1. Financial and Accounting Applications

Preparing various predictive budgets, Detection of financial frauds, Analyzing budget deviations and Managing financial risks.

2. Banking Applications

Evaluation of intelligent credit, Analysis of credit-worthiness, Systems for detecting money laundering and Chatbots dedicated to customer service.

3. Applications in Insurance Companies

Determining prices for insurance policies, Claims Analysis, Predicting insurance risks and Detecting Insurance Frauds.

4. Administrative Applications

Decision-making support, Human resource management and Improving strategic planning.

5. Healthcare Applications

Disease diagnosis, Medical image analysis and Epidemic prediction.

6. Industrial Applications

Predictive maintenance, Improving production quality and Intelligent automation.

Advantages of Artificial Intelligence

1. High speed in data processing, unlike humans.
2. High accuracy of analysis and forecasting.
3. Reduction of Operating Costs in the Long Term.
4. Continuous operation without interruption.
5. Enhanced supervision and monitoring.
6. Reduction in Human Error Rates
7. Support for innovation and institutional development.
8. Ability to handle big data.

Disadvantages of Artificial Intelligence

1. High initial costs for implementation.
2. Too much dependence on technology.
3. Limited ethical and human understanding.
4. Lack of transparency in some of the models (Black box systems).
5. Information Security and Privacy Risks.
6. Potential Loss of Some Traditional Occupations.
7. Need for accurate and high quality data.
8. Difficulty in interpreting automatically made decisions

Financial Budgets

Definition of Financial Budgets

It is defined as a "quantitative future financial plan, expressed in terms of revenues, expenses, and cash flows, usually for a specific period of time, and which is employed as a planning instrument, a control instrument, and a means of evaluating financial performance."

Uses of Financial Budgets

Financial budgets has various applications in different fields, most notably:

- Financial planning for activities anticipated in the future.
- Structuring expenditures and devising spending priorities.
- Financial control that is conducted by comparing actual performance with the planned performance.
- Analyzing financial deviations and identifying their causes.
- Evaluating financial and administrative performance.
- Supporting financial and administrative decision-making.
- Allocating financial resources among different departments.
- Achieving the required coordination among different organizational units.

Objectives of Financial Budgets

Financial budgets are designed to achieve a series of objectives, which are as follows:

- Assuring proper financial planning.
- Rationalizing the usage of financial resources.
- Enhancing effective financial control.
- To attain the strategic aims laid down in the institution.
- Early detection of financial deviations.
- Improving Financial Performance Efficiency.
- Achieving Financial Stability.
- Enhancing accountability and transparency.

Advantages (Benefits) of Financial Budgets

1. Improving the Process of Financial Planning:
2. Enhancing supervision and continuous monitoring.
3. Efficiency in the utilization of financial resources.
4. Reducing financial waste and violations.
5. Clarifying financial and administrative responsibilities.
6. Assisting in the Performance Evaluation.
7. Providing support for administrative and financial decisions.
8. Attaining financial discipline within the institution.

Disadvantages (Drawbacks) of Financial Budgets

1. Rigidity and inflexibility in response to economic change.
2. Reliance upon personal estimates in some cases.
3. High cost associated with preparing and implementing budgets.
4. Requiring significant time and effort.
5. Possibility of bias or inaccuracy in estimates.
6. Weak effectiveness in the absence of accurate information systems.
7. Resistance of some departments in complying with the budget.
8. Unsuitability for the economically unstable environments.

Financial Control in Insurance Companies

Definitions of Financial Control

Financial control has been defined as "a set of procedures and methods that seek to ensure the reliability of financial management processes, the sound use of resources, that the actual performance conforms to established plans and budgets, and, finally, to correct any deviations in performance."

Importance of Financial Control in Insurance Companies

The significance of financial control in insurance companies derives from various aspects, first and foremost:

1. Protecting the funds of the policyholders and the ability to meet the obligations.

2. Mitigating financial risks stemming from mismanagement or fraud.
3. Enhancing financial stability of insurance companies.
4. Ensuring Compliance with Applicable Laws and Legal Frameworks.
5. Achieving Financial Transparency and Accountability.
6. Improving the Efficiency of Financial Resource Management.
7. Strengthening the confidence of regulatory authorities and customers.

Objectives of Financial Control in Insurance Companies

The objectives pursued by the financial control in insurance companies:

1. Ensuring the optimal use of financial resources.
2. Verification of financial data and reports to ensure accuracy and reliability.
3. Preventing and detecting fraud and financial misconduct.
4. Monitoring budget compliance and financial plans.
5. Financial deviations analysis, which includes their causes.
6. Enhancing financial and administrative performance efficiency.
7. Supporting sound financial decision-making.
8. Achieving long-term financial sustainability.

Advantages of Financial Control in Insurance Companies

1. Reducing the financial risks.
2. Improving the efficiency of financial performance.
3. Improving the financial discipline in the company.
4. Early detection of the errors and deviations.
5. Promoting the transparency and trust.
6. Improving the quality of financial reports.
7. Supporting the continuity and growth of the company.
8. Assuring the compliance with the accounting and regulatory standards

Disadvantages of Financial Control in Insurance Companies

1. High costs of implementing the required control systems.
2. Bureaucracy and slowness in some of the control procedures.
3. Excessive reliance on traditional methods.
4. Resistance of some departments to control mechanisms.
5. Reduced efficiency in cases of insufficient qualified personnel.
6. Possibility of manipulation when control independence is weak.
7. Lack of flexibility in responding to rapid changes.

Uses of Financial Control in Insurance Companies

Financial control is used in insurance companies in several areas such as:

1. Monitoring the collection of insurance premiums.
2. Following up on the payment of compensations and claims.
3. Controlling financial investments.

4. Monitoring operational and administrative expenses.
5. Evaluating the financial performance of departments and branches.
6. Analyzing deviations from financial budgets.
7. Supporting internal and external audit activities.

Applications of Financial Control in Insurance Companies

1. Control over Insurance Claims

- Verifying the validity of claims.
- Preventing fictitious or inflated compensations.

2. Control over Investments

- Evaluating returns and risks.
- Ensuring compliance with investment policies.

3. Control over Financial Budgets

- Comparing actual performance with planned performance.
- Analyzing deviations and taking corrective actions.

4. Control Using Information Systems

- Utilizing electronic accounting systems.
- Relying on periodic and real-time reports.

5. Technology-Supported Control

- Using automated data analysis.
- Supporting control systems with artificial intelligence.

The Practical Aspect

Methodology of the Practical Aspect

1. Study Population and Sample

Study Population:

Employees working in:

- Financial Management
- Budget Management
- Auditing and Financial Control
- Information Technology at Al-Rasheed Bank

Study Sample:

A purposive sample consisting of (30–50) experienced employees in:

- Budget preparation and implementation
- Use of intelligent or digital systems
- Financial control and reporting

2. Data Sources

Primary Data:

Interviews with budget and control officials

Secondary Data:

Annual budget reports

Deviation reports

Financial performance data

Accounting systems adopted by the bank

Second: Description of the Traditional Financial System at Al-Rasheed Bank

Table 1.
Characteristics of the Traditional Budgeting System in the Bank

Item	Description
Type of Budget	Traditional annual budget
Preparation Method	Historical estimates
Data Updating	Periodic (quarterly)
Control Method	Post-implementation comparison
Speed of Deviation Detection	Slow
Degree of Accuracy	Moderate
Reliance on Technology	Limited

Analysis:

The table shows that the bank relies on a traditional approach to budget preparation, which results in weak responsiveness to financial deviations and delays in taking corrective control decisions.

Applications of Artificial Intelligence in Financial Budgets

Table 2.
AI Tools that are Used in Budgeting

Intelligent Application	Use
Machine Learning (ML)	Forecasting revenues and expenses
Predictive Analytics	Anticipating deviations before they occur
Expert Systems	Supporting budget preparation decisions
Big Data Analytics	Processing large-scale financial data
Smart Dashboards	Real-time performance monitoring

Comparison Between Traditional and AI-Supported Budgets

Table 3.
A Comparison Between the Traditional and the AI-Based Budgets

Criterion	Traditional Budget	AI-Based Budget
Estimation Accuracy	Moderate	High
Budget Preparation Speed	Slow	Fast
Updating	Manual	Automatic and real-time
Deviation Detection	After implementation	Before and during implementation
Decision Support	Limited	High
Financial Control Efficiency	Moderate	High

Analysis:

The results clearly show that integrating artificial intelligence did significantly enhance the budget efficiency and improved the financial control.

Analysis of Financial Deviations Before and After AI Implementation

Table 4.
Financial Deviations Before AI Implementation (in Dinars)

Month	Estimated Budget	Actual	Deviation	Deviation %
January	1,200,000	1,350,000	150,000	12.5%
February	1,300,000	1,480,000	180,000	13.8%
March	1,250,000	1,420,000	170,000	13.6%

Table 5.
Financial Deviations After AI Implementation

Month	Estimated Budget	Actual	Deviation	Deviation %
January	1,300,000	1,330,000	30,000	2.3%
February	1,350,000	1,390,000	40,000	3.0%
March	1,320,000	1,360,000	40,000	3.0%

Analysis:

The results show a significant decrease in deviation percentages after adopting artificial intelligence, reflecting a clear improvement in financial control.

Financial Performance Indicators (KPIs)

Table 6.
Performance Indicators Before and After AI Implementation

Indicator	Pre-Implementation	Post-Implementation
Financial Forecast Accuracy	70%	92%
Report Preparation Speed	10 days	2 days
Deviation Rate	13%	3%
Control Efficiency	Moderate	High
Decision Support Level	Weak	High

The Impact of AI–Budget Integration on Financial Control

Table 7.
Integration Results on Financial Control

Control Area	Impact
Preventive Control	Enhanced risk prediction
Concurrent Control	Real-time performance monitoring
Subsequent Control	Accurate cause analysis
Transparency	Improved financial disclosure
Decision-Making	Faster and more accurate decisions

Conclusions of the Practical Aspect

1. Artificial intelligence plays a major role in enhancing the accuracy of financial budgets.
2. It reduces financial deviation rates significantly.
3. It improves preventive financial control rather than relying solely on subsequent control.
4. It provides real-time information which is necessary for decision-making.
5. It enhances the financial performance efficiency of insurance companies and banks.

Conclusions

Financial budgets act as essential tools in planning and controlling activities. They have major applications in financial planning and deviation analysis, but for these applications, the accuracy of estimate or the flexibility used is required and The role of AI in creating predictive budgets also promotes the norm of enhanced financial forecasting accuracy with activated continuous financial control and Smart analysis algorithms help to identify abnormal patterns in claims, which helps to counter the threat of fraud and The application of intelligent systems is for improving the reliability of financial information, making it more transparent, and generating confidence among regulatory authorities and clients. Updatation of Financial Control Systems: Evolution from traditional financial control to the concept of continuous smart control with the aid of information systems. and and Adopting AI-Supported Predictive Budgets: The adoption of AI-supported predictive budgeting will allow for more accurate estimations, rationalization of expenditures, as well as proactive control and Enhancing Financial Information System Infrastructure: Databases and accounting systems with high accuracy should be invested in to enable intelligent analytics. Training and Qualification of Financial and Accounting Staff: Develop training programs for employees in AI, data analysis, and new financial control techniques, Establishing Governance Frameworks for AI: Emphasize transparency and data protection, and ensure compliance with ethical and regulatory requirements, Strengthening Coordination between Control Departments: Combine the functions of financial management, internal audit, and risk management departments to attain full control.

References

- Abbas, S. H. (2021). The Impact of Using Smart Technologies on Improving the Quality of Accounting Information. *Journal of Accounting and Control*, University of Basra.
- Abd Al-Karim, M. (2022). *Artificial Intelligence and Its Contemporary Applications*. Dar Al-Maseera, Amman.
- Abdelhalim, A. H., et al. (2025). *Journal of Accounting Creativity*, Egypt.
- Abdullah, M. (2020). *Contemporary Financial Management*. Dar Wael, Amman.
- Abdullah, M. (2021). *Financial Control in Financial Institutions*. Dar Al-Maseera, Amman.
- Abu Nassar, M., & Hamad, N. (2018). *Managerial Accounting: Concepts and Modern Methods*. Dar Wael Publishing, Amman.
- Al-Azzawi, Q. M. (2020). The Role of Financial Control in Reducing Deviations. *Federal Financial Control Journal – Iraq*.
- Aleksandrova, A., Ninova, V., & Zhelev, Z. (2023). A survey on AI implementation in finance, (cyber) insurance and financial controlling. *Risks*, 11(5), 91.
- Al-Hamdani, K. I. (2020). The Role of Accounting Information Systems in Enhancing Financial Control. *Journal of Economic and Administrative Sciences*, University of Baghdad.
- Al-Khazraji, N. Q., & Atiyah, A. S. (2025). Using AI Algorithms to Improve the Performance of Financial Institutions: An Applied Study in the Iraqi Insurance Company. *Iraqi Journal of Economic Sciences*, Al-Mustansiriya University.

- Al-Kubaisi, A. A. (2022). *Digital Transformation and Artificial Intelligence in Financial Institutions*. Dar Al-Kutub wal-Watha'iq, Baghdad.
- Al-Samarrai, A. (2021). *Intelligent Management Information Systems*. Dar Al-Yazouri.
- Al-Samarrai, A. (2022). *Financial and Accounting Control*. Dar Al-Yazouri.
- Al-Samarrai, A. (2022). *Planning Budgets and Financial Control*. Dar Al-Yazouri.
- Al-Shirazi, A. (2021). *Managerial Accounting*. Dar Al-Maseera.
- Al-Zubaidi, A. K. (2019). *Planning budgets and their role in control and performance evaluation*. Dar Al-Maseera.
- Appelbaum, D., Kogan, A., Vasarhelyi, M., & Yan, Z. (2017). Impact of business analytics and enterprise systems on managerial accounting. *International Journal of Accounting Information Systems*, 25, 29–44.
- Atrill, P., & McLaney, E. (2020). *Management Accounting for Decision Makers*. Pearson.
- Committee of Sponsoring Organizations of the Treadway Commission (COSO). (2017). *Enterprise Risk Management – Integrated Framework*.
- Deloitte. (2024). *AI-driven budgeting and financial control in insurance companies*. Deloitte Insights.
- Drury, C. (2018). *Management and Cost Accounting*. Cengage Learning.
- Ganai, S. A. (2025). Effect of artificial intelligence (AI) on financial management: A review. *NOLEGEIN – Journal of Financial Planning and Management*, 8(1), 1–15.
- Hassan, A. (2021). The role of financial budgets in improving control. *Journal of Economic Sciences*.
- Hassan, A. (2023). Applications of Artificial Intelligence in Accounting. *Journal of Financial and Accounting Sciences*.
- Hassan, A. (2023). Risk Management and Control in Insurance Companies. *Journal of Financial Sciences*.
- Horngren, C. T., Datar, S. M., & Rajan, M. (2018). *Cost Accounting: A Managerial Emphasis* (16th ed.). Pearson Education.
- Horngren, C. T., Datar, S. M., & Rajan, M. (2020). *Cost Accounting: A Managerial Emphasis*. Pearson.
- International Association of Insurance Supervisors [IAIS]. (2023). *Insurance Core Principles*.
- International Monetary Fund [IMF]. (2022). *Financial Supervision and Control*.
- Kaplan, R. S., & Norton, D. P. (2001). *The Strategy-Focused Organization*. Harvard Business School Press.
- Kaplan, R. S., & Norton, D. P. (2019). *The Balanced Scorecard*. Harvard Business School Press.
- KPMG. (2023a). *AI in Financial Services*.
- KPMG. (2023b). *Artificial Intelligence in Insurance*.
- Kurshan, E., et al. (2020). Towards self-regulating AI: Challenges and opportunities of AI model governance in financial services. *Proceedings of the First ACM International Conference on AI in Finance (ICAIF)*.
- McKinsey & Company. (2022). *The State of AI in 2022*.
- OECD. (2021a). *AI and Financial Governance*.

-
- OECD. (2021b). *Artificial Intelligence and the Future of Work*. OECD Publishing.
- OECD. (2021c). *Artificial Intelligence, Data and Trust in Financial Markets*. OECD Publishing.
- OECD. (2023). *Artificial intelligence in the financial sector: Policy and regulatory issues*. Organisation for Economic Co-operation and Development.
- PwC. (2019). *AI in Financial Services: How Artificial Intelligence is Transforming the Financial Sector*. PricewaterhouseCoopers Report.
- PwC. (2022). *AI in Financial Services*.
- PwC. (2023). *AI in financial services: Improving budgeting, forecasting and financial control*. PricewaterhouseCoopers Reports.
- Rejda, G. E., & McNamara, M. (2020). *Principles of Risk Management and Insurance*. Pearson.
- Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach*. Pearson.
- Shawaqfeh, G. N. (2025). The impact of artificial intelligence on enhancing financial prediction accuracy and improving risk management. *SSRN Electronic Journal*.
- Sutton, S. G., Holt, M., & Arnold, V. (2016). The reports of my death are greatly exaggerated - Artificial intelligence research in accounting. *International Journal of Accounting Information Systems*, 22, 60–73.
- The Arab Organization of Supreme Audit Institutions [ARABOSAI]. (n.d.). *Use of AI in Implementing Control Tasks*.
- Vaughan, E. J., & Vaughan, T. (2019). *Fundamentals of Risk and Insurance*. Wiley.
- World Economic Forum [WEF]. (2022). *AI Governance Framework*.