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Impact of Digital Transformation on Reducing Money Laundering

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ARTICLE INFORMATION	ABSTRACT
<i>Section</i> Research Results Articles	Digital transformation has become an important strategy for improving banking efficiency, transparency, and risk management. Meanwhile, money laundering remains a major challenge that threatens financial system stability. This study examines the impact of digital transformation on reducing money laundering in government and private banks in Babylon Governorate, Iraq. A quantitative descriptive-analytical approach was applied using questionnaire data collected from 100 bank employees. Data were analyzed using SPSS through descriptive analysis, one-sample t-test, and Pearson correlation analysis. The results indicate that digital transformation implementation has reached a significant level and contributes positively to reducing money laundering activities. The findings highlight the importance of digital infrastructure, employee capabilities, and technology-based monitoring systems in strengthening anti-money laundering practices in banking institutions.
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INTRODUCTION

The rapid development of information technology has significantly transformed organizational activities across various sectors, including the financial industry. Digital transformation has encouraged institutions to adopt advanced technologies to improve service quality, operational efficiency, and decision-making processes (Hai, Van and Tuyet, 2021; Verhoef *et al.*, 2021). In the banking sector, digital transformation has changed traditional banking practices through the implementation of digital platforms, automated systems, data analytics, and technology-based financial services (Shanti, Avianto and Wibowo, 2022).



Digital transformation is not merely the adoption of new technologies but represents a fundamental organizational change involving business processes, employee capabilities, and institutional strategies (Tang, 2021). According to Kraus *et al.* (2021), digital transformation involves the integration of digital technologies that enable organizations to improve performance, create new value, and adapt to changing environments. Similarly, Abdallah-Ou-Moussa *et al.* (2025) emphasize that technology innovation contributes to organizational transformation by influencing behavioral commitment and improving institutional capabilities.

Along with technological advancement, financial institutions face increasing risks related to illegal financial activities, particularly money laundering. Money laundering involves attempts to conceal the origin of illegally obtained funds and integrate them into legitimate financial systems. This phenomenon creates significant economic and regulatory challenges because it can weaken financial stability, increase corruption, and reduce public trust in financial institutions (Michael and Peter, 2006).

Banks play a critical role in preventing money laundering because they manage large volumes of financial transactions. However, traditional monitoring mechanisms are often insufficient to identify increasingly complex laundering techniques. Therefore, digital transformation provides opportunities to strengthen anti-money laundering (AML) systems through automated transaction monitoring, data analysis, customer identification systems, and real-time risk detection (Subbagari, 2024).

Although digital transformation has been widely discussed in financial service improvement, studies examining its contribution to reducing money laundering activities remain limited, particularly in developing banking environments. Therefore, this study investigates whether digital transformation contributes significantly to reducing money laundering in government and private banks in Babylon Governorate. The research question addressed in this study is:

1. Does digital transformation have a significant impact on reducing money laundering in banking institutions?

Based on this research question, the objective of this study is to analyze the relationship between digital transformation implementation and money laundering reduction in banking institutions.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Digital Transformation

Digital transformation refers to the process of integrating digital technologies into organizational activities to improve efficiency, service quality, and value creation (Hai, Van and Tuyet, 2021). Unlike simple technological adoption, digital transformation requires changes in organizational processes, employee competencies, and institutional strategies (Tang, 2021).

In banking institutions, digital transformation enables the development of digital payment systems, electronic banking services, data-driven decision-making, and automated monitoring mechanisms (Shanti, Avianto and Wibowo, 2022). These technologies allow banks to process large amounts of financial data more efficiently and identify unusual transaction patterns. According to Abdallah-Ou-Moussa *et al.* (2025), technology innovation plays an important role in supporting organizational transformation by improving adaptability and strengthening institutional capabilities. Digital transformation also requires adequate technological infrastructure and employee readiness to ensure successful implementation. The implementation of digital transformation in banking can be reflected through several important aspects, including (Baskerville, Capriglione and Casalino, 2020; Diener and Špaček, 2021):

- 1) Digital Operations: Digital operations involve the use of technology to improve banking processes, reduce manual activities, and increase service efficiency.
- 2) Technology Infrastructure: Technology infrastructure includes hardware, software, databases, and digital systems that support organizational activities.
- 3) Innovation Capability: Innovation capability refers to the ability of institutions to develop new solutions and adapt to technological changes.
- 4) Employee Digital Capability: Employee digital capability represents employees' ability to utilize digital technologies effectively in performing their duties.

These components demonstrate that digital transformation is a comprehensive process involving technology, people, and organizational processes.

Money Laundering Reduction

Money laundering is a financial crime involving the concealment, transfer, or conversion of funds obtained from illegal activities to make them appear legitimate (Michael and Peter, 2006). The banking sector is particularly vulnerable because financial transactions provide opportunities for criminals to disguise illegal sources of income. Banks implement anti-money laundering mechanisms through various approaches, including customer identification, transaction monitoring, suspicious transaction reporting, and regulatory compliance. However, increasing transaction complexity requires more advanced technological solutions. Digital technologies can support AML activities by improving (Yeoh, 2020; Thommandru and Chakka, 2023):

- 1) Transaction Monitoring: Automated systems can analyze transaction patterns and identify suspicious activities more quickly.
- 2) Customer Identification and Verification: Digital identification systems improve the accuracy of customer information and reduce identity-related risks.
- 3) Data Analysis Capability: Advanced data processing enables financial institutions to detect unusual transaction behavior.
- 4) Compliance Management: Technology-based compliance systems assist banks in meeting regulatory requirements.

Therefore, digital transformation has the potential to strengthen banking institutions' ability to prevent and reduce money laundering activities.

Hypothesis Development

Digital transformation provides financial institutions with technological capabilities to improve transparency, monitoring effectiveness, and risk management (Diener and Špaček, 2021; Hai, Van and Tuyet, 2021; Tang, 2021). Through automated systems and advanced data analytics, banks can detect suspicious transactions more effectively and respond to potential money laundering activities (Yeoh, 2020; Thommandru and Chakka, 2023; Subbagari, 2024).

Previous studies indicate that technology innovation contributes to improved organizational capabilities and operational effectiveness (Diener and Špaček, 2021; Hai, Van and Tuyet, 2021; Abdallah-Ou-Moussa *et al.*, 2025). Therefore, implementing digital transformation is expected to enhance anti-money laundering mechanisms within banking institutions. Based on this argument, the following hypothesis is proposed:

H₁: Digital transformation has a positive and significant impact on reducing money laundering in banking institutions.

RESEARCH METHODS

This study employed a quantitative approach using a descriptive-analytical research design to examine the relationship between digital transformation and the reduction of money laundering

in the banking sector. The study was conducted in government and private banks located in Babylon Governorate, Iraq, during the period from January to April 2026.

The study population consisted of employees working in government and private banks. A total of 100 department heads were selected through simple random sampling as the research respondents. Department heads were chosen because they are directly involved in banking operations and are familiar with the implementation of digital technologies and anti-money laundering practices. Data were collected using a structured questionnaire comprising two constructs. The digital transformation construct was adopted from previous research and consisted of 20 measurement items covering digital operations, innovation, information technology infrastructure, and employees' digital capabilities. The money laundering reduction construct consisted of 10 items measuring the effectiveness of anti-money laundering practices in banking institutions.

The validity of the research instrument was assessed through expert judgment involving ten academic experts, and all questionnaire items were considered appropriate for measuring the intended constructs. Instrument reliability was evaluated using the split-half method with the Spearman-Brown correction. The digital transformation scale obtained a reliability coefficient of 0.785, while the money laundering reduction scale achieved a reliability coefficient of 0.769, indicating acceptable internal consistency. Responses were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The collected data were analyzed using IBM SPSS Statistics (IBM, no date). Descriptive statistics were employed to describe respondents' perceptions, one-sample t-tests were conducted to evaluate the level of each variable, and Pearson correlation analysis was performed to examine the relationship between digital transformation and money laundering reduction. Statistical significance was determined at the 5% significance level ($\alpha = 0.05$).

Table 1. Research Design

Item	Description
Research approach	Quantitative
Research design	Descriptive-analytical
Research location	Government and private banks in Babylon Governorate, Iraq
Data collection period	January–April 2026
Population	Employees of government and private banks
Sample	100 department heads
Sampling technique	Simple random sampling
Data collection	Questionnaire
Data analysis	Descriptive statistics, One-sample t-test, Pearson correlation
Software	IBM SPSS Statistics
Significance level	$\alpha = 0.05$

Table 2. Measurement of Research Variables

Variable	Number of Items	Source	Reliability (Spearman-Brown)
Digital Transformation	20	Adapted from previous study	0.785
Money Laundering Reduction	10	Developed by the researcher	0.769

DATA ANALYSIS RESULTS & DISCUSSION

Digital Transformation

The one-sample t-test was conducted to examine the implementation level of digital transformation in government and private banks. As presented in Table 3, the mean score of

digital transformation was 72.46, exceeding the hypothetical mean of 60. The calculated t-value (17.34) was significantly higher than the critical value (1.94) at the 0.05 significance level.

Table 3. One-Sample t-Test for Digital Transformation

Variable	Mean	SD	Hypothetical Mean	t-value	Sig.
Digital Transformation	72.46	13.25	60	17.34	0.05

The findings indicate that digital transformation has been implemented at a relatively high level in the surveyed banks. This suggests that banking institutions have adopted digital technologies to improve operational efficiency, service quality, and internal processes. The result is consistent with the argument of Abdallah-Ou-Moussa et al. (2025), who emphasized that digital transformation enhances organizational capability and supports innovation through technology adoption.

Money Laundering Reduction

The effectiveness of money laundering reduction was also evaluated using a one-sample t-test. Table 4 shows that the mean score (37.00) exceeded the hypothetical mean (30), while the calculated t-value (11.40) was greater than the critical value (1.94), indicating statistical significance.

Table 4. One-Sample t-Test for Money Laundering Reduction

Variable	Mean	SD	Hypothetical Mean	t-value	Sig.
Money Laundering Reduction	37.00	6.20	30	11.40	0.05

These findings indicate that the participating banks have implemented anti-money laundering practices at a satisfactory level. However, continuous improvement is still required, particularly in strengthening employee competencies and maximizing the utilization of digital technologies for transaction monitoring and fraud detection.

Relationship between Digital Transformation and Money Laundering Reduction

Pearson correlation analysis was performed to examine the relationship between digital transformation and money laundering reduction. As shown in Table 5, the correlation coefficient was 0.794, indicating a strong positive relationship between the two variables.

Table 5. Correlation Analysis

Variables	Pearson Correlation (r)	Sig.
Digital Transformation → Money Laundering Reduction	0.794	0.05

The correlation coefficient of 0.794 indicates that higher levels of digital transformation are associated with greater effectiveness in reducing money laundering. Therefore, Hypothesis 1 (H_1) is supported.

Discussion

The findings demonstrate that digital transformation plays a significant role in strengthening anti-money laundering (AML) practices within banking institutions. The adoption of digital technologies enhances transaction monitoring, customer verification, and risk identification, enabling banks to detect suspicious financial activities more efficiently. These findings support

the view of Hai, Van and Tuyet (2021), who argued that digital transformation improves organizational effectiveness and enables institutions to respond more effectively to increasingly complex operational challenges. In the banking sector, digital transformation facilitates greater transparency and operational efficiency, both of which are essential for preventing financial crimes.

The present findings are also consistent with previous studies emphasizing the strategic importance of digital transformation in financial institutions. Verhoef *et al.* (2021) argued that digital transformation involves organizational and process innovation rather than merely adopting new technologies. Similarly, Diener and Špaček (2021) highlighted that successful digital transformation in banks depends on technological infrastructure, strategic leadership, regulatory compliance, and employee readiness. Furthermore, Thommandru and Chakka (2023) suggested that emerging technologies such as blockchain and digital Know Your Customer (KYC) systems can strengthen AML compliance by improving transaction transparency and reducing opportunities for illicit financial activities. Therefore, continuous investment in digital technologies is essential for enhancing both banking performance and the effectiveness of money laundering prevention.

CONCLUSION

This study found that digital transformation has a significant positive relationship with money laundering reduction in government and private banks in Babylon Governorate. The correlation analysis ($r = 0.794$, $p < 0.05$) supports the proposed hypothesis, indicating that stronger digital transformation contributes to more effective anti-money laundering (AML) practices. These findings highlight the importance of digital technologies in improving transaction monitoring, customer verification, and regulatory compliance.

This study is limited to 100 respondents from government and private banks in Babylon Governorate, which may restrict the generalizability of the findings. In addition, the cross-sectional design does not capture changes over time. Future research should involve larger samples, broader geographical coverage, and additional variables related to digital transformation and AML implementation.

Banking institutions should strengthen digital infrastructure, enhance employee digital competencies, and adopt advanced technologies such as artificial intelligence, big data analytics, and digital Know Your Customer (KYC) systems to improve anti-money laundering performance. Regulators are also encouraged to support technology-based AML frameworks and continuous employee training to enhance financial security and regulatory compliance.

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