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The role of banking information technology in enhancing banking efficiency an analytical study of the opinions of a sample of workers in the commercial banks in Al-Basra governorate

دور تكنولوجيا المعلومات المصرفية في تعزيز كفاءة العمل المصرفي دراسة تحليلية لاراء عينة من العاملين في المصارف التجارية بمحافظة البصرة

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Abstract: This study primarily aims to clarify the role of banking information technology and its dimensions—time, content, and form—as key pillars of banking operations. It examines the extent to which these technologies support bank performance, enhance banking efficiency, improve service quality, and enable banks to streamline procedures in order to deliver high-quality services aligned with modern financial practices. The researcher adopted a descriptive-analytical approach to investigate the various aspects of banking information technology and banking efficiency. The study hypothesis was tested through a questionnaire administered to employees of the participating banks, with a total of 250 questionnaires distributed. The collected data were analyzed using SPSS and SMART PLS V.3. The research problem centers on identifying the impact of the independent variable, banking information technology, on enhancing banking efficiency. The study concluded that the application of banking information technology concepts and principles plays a significant role in achieving high levels of banking efficiency. It also presented a number of recommendations, the most important of which was the need to attract human resources with specialized expertise in banking and technology, as this would contribute to enhancing banking efficiency.

المستخلص :

تهدف هذه الدراسة بشكل أساسي إلى توضيح دور تكنولوجيا المعلومات المصرفية وأبعادها (الزمن، والمحتوى، والشكل) باعتبارها ركائز أساسية للعمليات المصرفية. وتدرس مدى دعم هذه التقنيات لأداء البنوك، وتعزيز كفاءتها، وتحسين مستويات الخدمة، وتمكينها من تبسيط الإجراءات لتقديم خدمات عالية الجودة تتماشى مع الممارسات المالية الحديثة. وقد استخدم الباحث منهجًا وصفيًا تحليليًا لدراسة مختلف جوانب تكنولوجيا المعلومات المصرفية وكفاءة العمل المصرفي. تم اختبار فرضية الدراسة من خلال استبيان وُزّع على موظفي البنوك المشاركة، وبلغ عدد الاستبيانات 250 استبيانًا. تم تحليل البيانات باستخدام برنامج الإحصائي (SMART PLS V.3) (spss) تكمن مشكلة البحث في تحديد أثر المتغير المستقل، وهو تكنولوجيا المعلومات المصرفية، على تعزيز كفاءة العمل المصرفي. وخلصت الدراسة إلى أن تطبيق مفاهيم ومبادئ تكنولوجيا المعلومات المصرفية يلعب دورًا هامًا في تقديم بنوك عالية الكفاءة. كما توصل البحث إلى عدد من التوصيات، أهمها العمل على استقطاب الكفاءات البشرية المتخصصة في مجالي العمل المصرفي والتكنولوجيا، مما يُسهم في تعزيز كفاءة العمل المصرفي

Keywords Banking information technology, banking efficiency, commercial banks,time, Banking performance

الكلمات المفتاحية: تكنولوجيا المعلومات المصرفية، الكفاءة المصرفية، المصارف التجارية، الوقت، الأداء المصرفي.

1. Introduction:

Banks seek to respond to the competitive environment by increasing their focus on delivering banking services that meet the needs and expectations of customers while keeping pace with developments in the banking sector. Moreover, these institutions are becoming increasingly committed to providing high-quality banking services in order to retain existing customers and attract new ones (Almashhadani et al., 2022, p. 19). One of the most important alternatives in this regard is the use of technology in service delivery, as it reduces many of the routine procedures involved in obtaining services. Accordingly, banking information technology is essential to the continuous operation of banks because it processes administrative data in a manner that aligns with customer needs and ensures that services reach beneficiaries at the appropriate time. This, in turn, contributes to the provision of high-quality services, addresses various administrative obstacles that hinder banking operations, and supports the implementation of fundamental reforms in administrative processes to ensure sound performance and enhance banking efficiency (Hani et al., 2026, p. 778). The study is organized into four sections. The first section addresses the study methodology, the second is devoted to the theoretical framework of banking information technology and banking efficiency, the third presents the empirical aspect of the study, and the fourth sets out the conclusions and recommendations.

2. Research Problem:

n light of competition among financial institutions within an evolving business environment, these institutions are required to implement administrative reforms that are consistent with the needs and characteristics of individuals seeking banking services. Traditional services are no longer adequate for the contemporary financial landscape, which places banks under increasing pressure to simplify procedures and eliminate bureaucratic practices. Moreover, the adoption of banking information

technology facilitates the delivery of high-quality services, enabling institutions to maintain their competitiveness in the market and enhance their efficiency. Accordingly, the research problem can be formulated through the following question:

How does banking information technology affect the enhancement of banking efficiency?

Research Importance:

1 .The importance of this research lies in the pivotal role that commercial banks play in meeting the growing needs of their customers and in providing banking services tailored to their preferences.

2 .Banks seek to implement continuous administrative reforms grounded in the principles of banking information technology. This enables management to introduce fundamental administrative changes that address various financial and administrative challenges, thereby improving banking services and offering service models that respond to evolving needs.

3 .This study represents a valuable contribution to the academic literature and may serve as a strong incentive for researchers to undertake further studies in this important field.

Research Objectives:

1. To explain the role and importance of banking information technology in banking operations.
2. To explain the role and importance of banking efficiency and the ways in which it can be enhanced.
3. To analyze the extent to which commercial banks have responded to the implementation of banking information technology as a means of enhancing banking efficiency.
4. To examine and analyze the relationship of influence and correlation between the study variables.

Research Hypotheses:

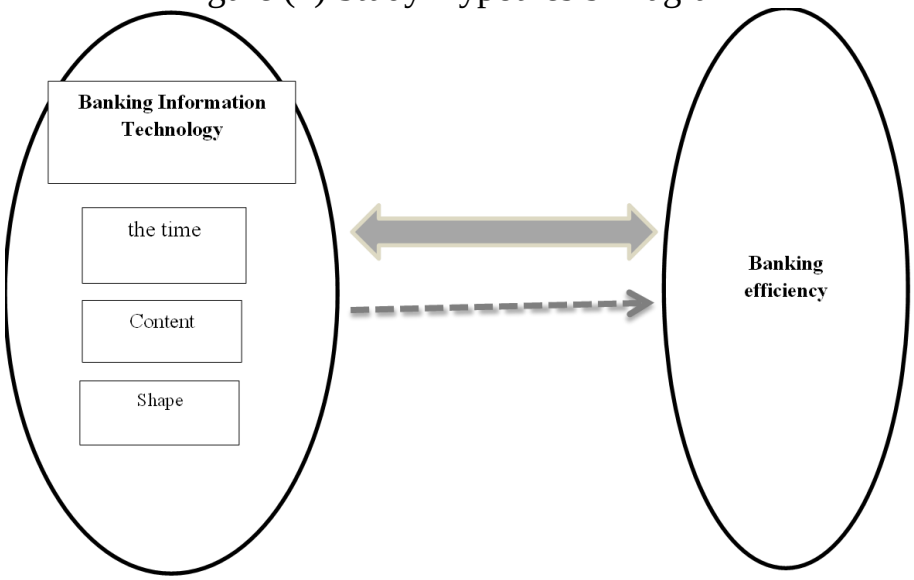
The main study hypotheses were formulated in accordance with the research problem as follows:

First Main Hypothesis: There is a statistically significant effect of the dimensions of the independent variable, banking information technology, on the enhancement of banking efficiency as the dependent variable.

Second Main Hypothesis: There is a statistically significant correlation between the dimensions of the banking information technology variable and the enhancement of banking efficiency as the dependent variable.

Search framework:

Figure (1) Study Hypothesis Diagram



Source: Prepared by the researcher

Methods of collecting data and information:

1. Theoretical Framework Tools: The researcher relied on scientific journals, periodicals, research, and studies related to the study variables, in addition to the use of internet sources.
2. Fieldwork Tools: The researcher used a questionnaire to assess the readiness of banking information technology and its role in enhancing banking efficiency.

The limits of the study:

Spatial Boundaries: Six commercial banks were selected as the study sample: Baghdad Bank, Al-Mansour Bank, Gulf Bank, Ashur International Bank, Babylon Bank, and the Trade Bank of Iraq.

Temporal Boundaries: The research was conducted during the period 2025–2026.

Banking Information Technology

Technology is defined as the set of means that individuals use to control the environmental variables surrounding them. In order to satisfy human needs, it must be embodied in inventions, innovations, or creations in the form of goods, services, means, and processes. Knowledge applied to scientific problems related to service provision is considered one aspect of technology (Ahnert et al., 2025, p. 31). It is also defined as a set of interrelated components that work together in an integrated manner within certain boundaries and under specific constraints in order to achieve a common goal or set of goals in a given environment. For this purpose, it accepts inputs, performs processes, produces outputs, and allows for feedback (Shetty et al., 2022, p. 639).

It also refers to a manager's use of a personal computer as an aid in analyzing information obtained from a system that collects data related to internal activities within the organization and its external environment, and then transforms these data into usable information for decision-makers (Okonogbe et al., 2023, p. 312). This term further encompasses all forms of technology used in creating, collecting, processing, transmitting, disseminating, presenting, and using information in its various forms, including business data, voice conversations, and still and moving images, as well as information that may not otherwise be easily discovered or known (Kumari et al., 2022, p. 12).

It is likewise understood as the set of devices, equipment, software, and human skills used to process and convert data into information, as well as to store, transmit, and distribute that

information to beneficiaries in a manner that ensures its availability to all relevant parties in terms of quantity, quality, and appropriate timing (Varma et al., 2022, p. 186). It is also defined as encompassing all tools, from hardware and software to operations management and information systems, in addition to the necessity of possessing the skills required to apply these tools for the production of information and the development of both the information system and the processes of management and control (Core et al., 2023, p. 45).

In addition, it is defined as an entity or framework that contains a group of interacting and interdependent subsystems which together form a unified and organized whole whose outputs exceed those of each subsystem considered separately within that total entity (Harguem et al., 2022, p. 12). It is also described as a subsystem within the organization that consists of several interrelated, coordinated, and mutually supportive subsystems, with the aim of providing historical, current, and future financial and non-financial information to all parties concerned with the organization in a manner that contributes to the achievement of its goals (Rani et al., 2015, p. 29).

Dimensions of banking information technology

The time dimension measures the interval between the availability of data and the need for information. This dimension includes the following characteristics (Cavus et al., 2015, p. 69):

1. Timing: Information should be available when needed and provided as quickly as possible. Information obtained too early may be of little value when it is actually needed, and the same applies if it arrives too late. This means that information should be made available to the decision-maker at the appropriate time for effective use.
2. Frequency: Frequency means that information should reflect current conditions and indicate the point at which it is obtained. It should also be available at regular intervals, such as daily, weekly, monthly, or annually. The frequency

and continuity of information availability enable decision-makers to make appropriate decisions at the right time.

3. Time span: Information should cover the appropriate time span. For example, sales forecasting requires information on past, present, and projected levels of performance, thereby ensuring that the user is aware of past, present, and future conditions.

Content Dimension:

A. Accuracy and relevance: Information should accurately reflect the events of interest to the user. Information that contains errors is of limited value, whereas accurate information has a positive impact on decision-making. Information should also be relevant to the user's needs and directly related to the problem being addressed.

B. Integration: Conflicting information may undermine other information qualities, such as scope and accuracy. Information should therefore be sufficiently integrated to enable the decision-maker to properly assess different situations and arrive at an appropriate decision.

C. Detail and conciseness: Information should achieve an appropriate balance between detail and brevity. The level of detail should be tailored to the user's needs, as some users may require detailed information while others may need only concise summaries. Although information should be presented concisely whenever possible, it must also be detailed enough to reflect the depth of the situation requiring a decision. Excessive detail and fragmentation may confuse the user. In some cases, concise information may be clearer; for example, sales figures are often presented in graphical rather than textual form.

D. Scope: The scope of information must be appropriate to the user's needs. These needs determine whether the information should focus on a specific situation or provide a general overview. They also determine the quantity of information required and its level of detail. Accordingly, the information should be comprehensive and cover all variables relevant to the decision-making process.

The format dimension: This dimension refers to the method of presenting information to the user and includes the following characteristics (Heindel et al., 2023, p. 684):

i. Clarity: Information must be presented in a manner that is understandable to the user; that is, it should be accurate, complete, and free from errors and ambiguity.

ii. Presentation and display method: Information must be presented in a form that is appropriate for the user in order to ensure accuracy and clarity. For example, graphs or tables should be used to illustrate numerical information, and the information must be presented in the correct format. Official information, for instance, should be presented in printed reports.

Banking efficiency

Banking efficiency is of considerable interest to economists and policymakers as a means of evaluating the performance of financial institutions in general and banks in particular. It serves as a tool for assessing the efficiency and capacity of financial institutions to utilize their resources appropriately in order to ensure optimal performance. In general, the efficiency of banks lies in their ability to attract financial resources from various sources at the lowest possible cost and direct them toward the development of different sectors. Therefore, banking efficiency does not differ conceptually from that of other financial institutions, particularly in terms of the principle of achieving

optimal utilization of financial resources (Licerán et al., 2025, p. 32).

Banks are often considered superior in this regard, and this is attributed to the quality of their organization, which enables them to improve the management of financial flows and transactions. These banks are technically efficient because of their control over the technical aspects of financial intermediation, which allows them to provide the maximum number of banking services on the basis of a given level of available resources (Ayadi et al., 2025, p. 1038). Efficiency is defined as the economic relationship between available resources and achieved results, realized either by maximizing output on the basis of a given quantity of inputs or by reducing the quantity of inputs used to achieve a certain level of output (Li et al., 2025, p. 43). It has also been defined as achieving the greatest possible accomplishment of defined objectives while continuously improving or developing them as needed and in line with future vision, using the fewest possible available resources and minimizing energy waste without compromising product quality (Elmahdy et al., 2025, p. 62). Furthermore, it has been defined as the bank's ability to achieve the greatest possible output or financial service within the limits of available resources (Abdeljawad et al., 2026, p. 579).

In light of the above, banking efficiency may be defined as the extent to which banks are capable of utilizing their financial inputs effectively in order to achieve the best possible outputs that meet customers' needs and ensure the highest financial returns (Say et al., 2026, p. 354). Banking efficiency is also frequently defined as a bank's ability to maximize output using a given level of input, with emphasis on the idea that the effective and efficient use of resources is essential to the bank's success (Hughes et al., 2022, p. 38). It has likewise been defined as the ability of banks to direct their available economic resources toward achieving the highest possible financial returns at the lowest possible financial cost. This implies successful control

over material and human resources, the achievement of optimal scale, and the provision of a wide range of financial products (Say et al., 2026, p. 349).

The importance of banking efficiency lies in its role as a fundamental element within the planning strategies adopted by any bank. It contributes to providing the information necessary for efficient management, which helps in reviewing current performance, identifying weaknesses, and allocating resources appropriately, with the aim of improving operations and ensuring the best use of available resources (Afandi et al., 2025, p. 18). Moreover, banking efficiency is of paramount importance to the banking industry because it contributes to measuring bank performance. It serves as an indicator of a bank's financial strength by providing information on its level of performance, potentially enhancing its competitiveness in the market and thereby leading to overall efficiency improvements. This, in turn, contributes to maximizing shareholder wealth and increasing institutional efficiency. Accordingly, bank performance and banking efficiency are closely linked, and banks with lower levels of efficiency are more likely to face higher levels of risk exposure, which constitutes one of the primary causes of bank failure (Abdeljawad et al., 2026, p. 579).

In this context, some of the key concepts related to banking efficiency may be reviewed through the understanding that it refers to the optimal utilization of various financial and human resources in order to achieve the maximum possible output from those resources or to attain a given output at the lowest possible cost.

The importance of banking efficiency

The importance of banking efficiency is reflected in several key aspects, including the following (Urinov et al., 2026, p. 317):

a. Maintaining an appropriate adequacy ratio in order to mitigate risks.
b. Adhering to the lending standards established by monetary authorities.

c. Ensuring efficient management that works to reduce operating expenses.
d. Directing funds toward their optimal uses.
e. Seeking new investment opportunities for available funds.
f. Striving to reduce the cost of services provided while maintaining a high level of quality.

The third axis (the practical side):

Impact Hypothesis Testing

This study identifies the impact coefficient (Beta), the coefficient of determination (R^2), and the significance of both by determining the calculated value of t and its significance, as well as the calculated value of F and its significance through comparison with their tabulated values. The study adopts the first main hypothesis, which states that there is a statistically significant effect relationship between the independent variable, banking information technology, and the dependent variable, banking efficiency. The SMART PLS application program was used to extract the results, which are presented in the figure and tables as follows.

First Main Hypothesis: The researcher assumes that there is a statistically significant relationship between the dimensions of banking information technology—time, content, and form—and banking efficiency. This indicates that the dependent variable is a true function of the dimensions of the independent variable, banking information technology, and that an increase in the dimensions of the independent variable leads to an increase in the dependent variable. The SMART PLS V.3 application program was used to extract the results of the multiple regression analysis. The analysis begins by estimating the effect relationship and its significance, as shown in Figure (2). Table (1) presents a number of important statistics, including the coefficient of determination (R^2), which explains the extent to which the dimensions of the independent variable account for variance in the dependent variable. The coefficient of determination was tested by

extracting the calculated value of F and comparing it with its tabulated value. If the calculated value exceeds the tabulated value, the explanatory power of the model is accepted. The results of the analysis are presented as follows:

:As shown in Figure (2) and Table (1), they are as follows

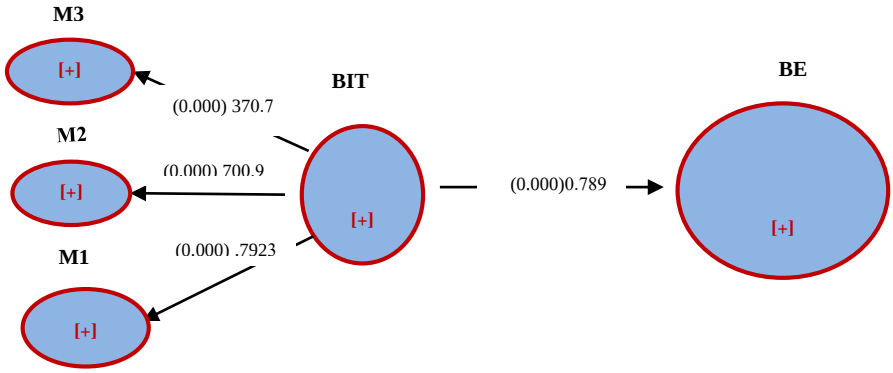


Figure (2) Impact Factor of Banking Information Technology Dimensions on Banking Efficiency

Source: Prepared by the researcher using the SMART PLS program

Table (1) Statistics on the impact of financial information technology dimensions on banking efficiency

Source: Prepared by the researcher using the SMART PLS program

independent variable	dependent variable		Banking efficiency		
	B slope	T Calcula	R^2	F Calcul	P.Value Morale level

		ted		ated	
the time	0.44	5.022	0.59	71.23	0.000
Content	0.21	2.064			0.019
Shape	0.54	6.972			0.000

It is evident from Table (1) that the coefficient of determination (R^2) reached 0.59, indicating that the dimensions of banking information technology explain the variance in the banking efficiency variable. This represents an acceptable proportion, as supported by the calculated F value of 71.23, which is greater than the tabulated value of 3.60.

Table (2) Path analysis of the impact relationship of banking information technology on banking efficiency

The impact of banking information technology on banking efficiency	Impact on banking efficiency	Standard Deviation	value (t)	and maximum limits of trust	Minimum
path a	Indirect Effect	SE	t-value	Bootstrapped Confidence Interval	
0.58	0.42	0.0401	10.41	95%LL	95%UL
				0.339004	0.496196

Source: Prepared by the researcher using the SMART PLS program

Table (2) indicates that the indirect effect of path (a), which represents the relationship between the independent variable, banking information technology, and the dependent variable, banking efficiency, reached 0.58, and this effect is statistically significant at the 0.05 significance level. As for the effect of banking information technology on banking efficiency, it reached 0.42. The calculated T value for the indirect effect was 10.41, which is statistically significant in comparison with the tabulated

value of 1.96. On the basis of these results, this hypothesis is accepted within the context of the present study.

The second main hypothesis: The researcher assumes the existence of a statistically significant correlation between the dimensions of banking information technology—time, content, and form—and banking efficiency.

The aim is to test the main hypothesis, which states that there is a statistically significant correlation between banking information technology and banking efficiency in the banks under study, as illustrated in Table (3).

Table (3) The relationship between banking information technology and banking efficiency

Dependent variable / Independent variable		Banking efficiency
Banking Information Technology	Degree of correlation	**0.72
	Level of significance (sig)	000
	Sample size	250

Source: Prepared by the researcher using the SMART PLS program

Table (3) indicates a strong positive correlation between banking information technology and banking efficiency, amounting to 0.72, at a significance level of 0.01. This correlation is positive and statistically significant, meaning that any change in the banking information technology variable is associated with a change in the same direction in banking efficiency. Accordingly, every increase in the independent variable leads to an increase in the dependent variable, and vice versa. The value of this relationship reflects the importance of adopting banking information technology in the banks under study, as it contributes to enhancing banking efficiency.

Conclusions and Recommendations

Conclusions:

- A sound administrative vision is one of the most important elements of bank success, as it contributes to enhancing banking efficiency.
- Assigning the provision of banking services to skilled individuals strengthens the technical aspects of service delivery and thereby improves banking efficiency.
- The statistical results demonstrated clear acceptance among the study sample with respect to all the questions presented.
- The statistical results confirmed the existence of a strong correlation between the study variables, namely financial information technology and banking efficiency.
- The results also demonstrated the prominent role of the methods used in banking operations in influencing and enhancing banking efficiency and stability, as well as in supporting progress toward the achievement of the objectives of commercial banks.

Recommendations:

- Attracting qualified personnel with specialized expertise in banking and technology in order to enhance banking efficiency.
- Continuously developing and strengthening human resources within banks through the application of banking technology in commercial banks.
- Making use of suggestions provided by knowledgeable and specialized service experts in order to improve banking efficiency.
- Developing human capital through continuous training and professional development, with a particular focus on the

use of banking information technology to strengthen banking expertise and competencies.

- Advancing commercial banks through the adoption of modern technologies and the modernization of electronic payment systems.

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