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THE ROLE OF MODERN TECHNOLOGIES IN ENHANCING BANKS PROFITABILITY

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A B S T R A C

Purpose: This study aims to explore the extent to which modern technologies contribute, both as independent and dependent variables, towards enhancing the profitability of banks. Design/Methodology/Approach: In order to address the research problem, find solutions, achieve its objectives, and test its hypotheses, several branches of Rafidain and Rashid banks operating in Misan Province were selected. A purposeful sample of 25 employees from these banks at various managerial levels was chosen. Data collection was conducted using a questionnaire, and the collected data were processed and the study's hypotheses were tested using various statistical methods, including SPSS and Excel. Results and Recommendations: The research results indicate a significant impact relationship between modern technologies as an independent variable and bank profitability as a dependent variable at a significance level of 0.05. The research recommends giving greater attention to and incorporating modern technologies into banking operations as they are considered an important means of increasing bank profitability, enhancing competitiveness, and securing a larger market share.

K E Y W O R D S

Modern Technologies; Banks Profitability; Iraqi Banks.

Introduction

The rapid technological advancement stands as a pivotal factor for the banking sector, which plays a significant role in economic activities. With the emergence of banking competition, new patterns, tools, and banking technologies have surfaced, leading to a decline in traditional approaches. Banks, being among the most tech-savvy institutions, have harnessed information and communication technology to

enhance their operations and services, ultimately increasing the efficiency and effectiveness of banking activities. This, in turn, has positively impacted the overall performance of banks. To distinguish themselves from competitors and achieve high levels of profitability, banks have resorted to employing modern services and technologies.

In this context, the utilization of these modern tools and technologies has become of utmost importance for decision-makers in Iraqi banks. With the advent of electronic banking and the transition to knowledge and information societies, coupled with extensive use of information and communication technology, the banking industry has witnessed the emergence of new technologies characterized by their speed in task completion. Notably, the utilization of modern technologies, including electronic banking and payment methods (Awad & Mohammed, 2017), has directly influenced the profitability, liquidity, and competitive capabilities of banks. This transformation has shifted the focus from waiting in long queues at bank branches to utilizing modern tools such as ATMs, point-of-sale terminals, online platforms, and mobile phones. Consequently, this has resulted in an increase in the number of users of these services and modern technologies, reshaping the landscape of communication and technology in the banking sector.

Research Problem:

The research seeks to emphasize how the adoption of contemporary banking tools and technologies can boost the profits of Iraqi banks under study. The research problem stems from the fact that certain Iraqi banks still use outdated tools and technologies, which negatively impact their profitability. As a result, the Iraqi government has been working diligently since the early 20th century to keep up with swift technological advancements. They have achieved this by incorporating modern technologies like electronic banking for credit cards, thanks to privatization efforts and banking sector development programs aimed at strengthening Iraq's capabilities. The research problem can be succinctly captured by the following questions:

- Do modern technologies play a role in enhancing the profitability of the researched banks?
- What is the significance of the impact of using modern banking technologies on the profitability of the researched banks?

Significance of the Research:

The importance of the research can be summarized as follows:

1. Disseminating financial literacy to promote financial inclusion and reach a larger number of customers through electronic operations.
2. Understanding the current status of the researched Iraqi banks concerning their utilization of modern technologies.
3. Recognizing the opinions of employees, management, and departments within the mentioned banks regarding the significance of deepening the use of modern banking tools and its relation to profitability performance.

Research Objectives:

The current research seeks to accomplish the following objectives:

- To assess the role of contemporary technologies in enhancing the profitability of the banks under investigation.

- To determine the significance of the impact resulting from the adoption of modern banking technologies on the earnings of the researched banks.
- To provide a theoretical and analytical perspective on developments pertaining to modern banking technologies and their influence on banking performance.

Research Hypotheses:

In order to address the questions posed by the research problem, several hypotheses have been formulated:

1. There is a statistically significant relationship between the use of modern technologies and the profits of the researched banks.
2. There is a statistically significant impact of modern technologies on the profitability of the researched Iraqi banks.

Previous Studies:

Modern Banking Technologies

The concept of modern banking technologies is a highly intricate term from the perspective of cognitive capacity. There exists a divergence in several concepts and viewpoints. This complexity arises because the banking system operates as a meticulously organized entity, governed by sophisticated banking technological systems that harmonize its functions and objectives. We shall elucidate certain key concepts for our present study:

A study conducted by Hamed & Sultan (2012) delineates modern banking technologies as "an amalgamation of advanced electronic technologies and cutting-edge tools, encompassing all equipment and devices effectively deployable for attaining solutions in the realm of information production."

Similarly, a study by Al-Zuwaidi (2012) portrays modern banking technologies as "contemporary means through which information can be stored, retrieved, and harnessed, concurrently generating verbal, textual, and digital data through electronic conduits via the integration of electronic computing devices and communication apparatus."

In tandem with these perspectives, a study conducted by AL-Alami (2013) characterizes modern banking technologies as "technological constructs underpinned by electronic devices that can be harnessed for the processing, analysis, storage, and judicious utilization of information. These informational resources are methodically encapsulated until knowledge acquisition is realised."

In keeping with this paradigm, banks have traversed contemporary avenues to cultivate trust among their clientele, leveraging multifarious channels and banking technologies. Eminent examples from the year 2021 encompass electronic account opening, application development, person-to-person payments, cloud computing, video-based communication, and the introduction of three additional technologies in 2022: chatbots, machine learning, and electronic loan application procedures (Shevlin, 2022). Both researchers contend that the cadence of technological advancement and the orchestration of the information revolution have interlinked individuals across the globe via networks and the internet, catalysing the expeditious exchange of information and the prompt metamorphosis of inputs into outputs, facilitating information retrieval and informed decision-making.

The Importance of Modern Technologies

Bank managers require making decisions that, in turn, necessitate strategic information. The importance of these technologies lies in the fact that modern and advanced technology instills confidence in managers to make such decisions, reduces errors, and enhances time management. Many countries have adopted this approach across various sectors. These advancements have created a positive impact for the benefiting customers. The recent and advanced technological transformation holds significant importance for the banking and financial industries, enabling the creation of modern methods within the banking system, such as increased investments in Fintech, defined by the Financial Stability Board as financial technology (Abd Ali & Khudair, 2020, p. 30). Contemporary financial technologies, commonly referred to as Fintech, have inaugurated a substantive transformation in the administration of banking procedures, enhancing the efficacy of conventional banking activities. These encompass electronic payment platforms, virtual currencies, digital authentication mechanisms, and electronic authentication. The significance of the imperative for these technological advancements may be succinctly encapsulated as follows: (Dowling & Leech, 2014) (Gray, 2016, p. 6):

- Speed, accuracy, and reliability.
- Precision in preparing financial data or any other statistics when making decisions.
- Increased task completion speed, thereby increasing productivity.
- Cost reduction and achieving efficiency in terms of effort and time.
- Swift access to information for individuals through the use of the internet and mobile phones.
- Sending and receiving data at any time and place.

Dimensions of modern technologies for banks

Technology and its innovations are at the forefront due to the benefits they offer to both **customers** (low costs, speed, and convenience) and **banks** (market share acquisition, service diversification, cost reduction, efficiency). The central axis of these processes revolves around dimensions without which there would be no effectiveness or performance. Many researchers have identified these dimensions according to their classifications, with Salah (2011, p. 20) suggesting the most crucial ones: components and devices, software, applications, communications, databases, and the human resources that form the foundation of these technologies.

Rationale for using these technologies:

Due to the deficiency in adopting this modern culture in most countries worldwide, which have the potential to evolve lifestyles and work patterns, it becomes necessary to change the nature of knowledge and information within society. Moreover, the volume of work and information that requires storage, preservation, updating, and processing through responsive computer devices is significant (Al-Nawashi, 2010, pp. 22-23).

Electronic Banking Operations:

The banking sector holds a crucial position in the country's economy, particularly in light of the information revolution and the growth of electronic commerce and artificial intelligence programs. Banks have undergone a significant transformation in the services they provide, which can be described as a range of beneficial activities, processes, and banking services accessible through online platforms

and modern channels. These tools enable customers to efficiently and accurately carry out their banking transactions, fulfilling both their current and future financial needs (Keivani et al, 2012, p. 62). A study conducted by Takele and Sira (2013, p. 402) has elucidated these mechanisms as the means by which customers may consummate their transactions with financial institutions and avail themselves of electronic communication channels, encompassing automated teller machines (ATMs), mobile phone banking, and internet banking. Conversely, it is conceivable to articulate this concept as a sequence of processes executed through the medium of the internet, exemplified by virtual financial institutions delivering services via online platforms, thus obviating the necessity for customers to physically visit brick-and-mortar establishments (Siam, 2006). Electronic banking services are characterized by their lack of time restrictions, ease of communication, provision of new integrated services, cost reduction, and speed of conducting banking transactions (Hajira, 2022, p. 130).

Types of Banking Services Associated with Banking Technologies and technological Advancements:

These can be divided into electronic distribution points and electronic payment methods as follows (Soleman, 2013, p. 21):

- Electronic Distribution Points:
  - ATM Service.
  - Phone Banking.
  - Call Centers.
  - Short Message Service (SMS).
  - Point of Sale Service.
  - Internet Banking Service.

Electronic Payment Methods:

The payment system within the framework of international banking operations has undergone a transformation from tangible currency and paper-based methods to expeditious and dependable electronic protocols (Premchand & Choudhry, 2015, p. 110). Electronic payment systems are characterized as service mechanisms wherein the utilization of technology, communication infrastructure, and information assets converges to facilitate the electronic transfer of monetary assets from one financial account to another (Moertini et a ,2011,p. 17). The European Central Bank also defines it as the process of electronically transferring transactions by transmitting data from one party to another, processed through an intermediary (processing systems). Electronic payments are carried out using a variety of methods:

- Electronic Funds Transfer.
- Debit Card.
- Electronic Money (Digital Currency).

Banking Profitability:

The concept of profitability holds a significant place in various business operations, especially for financial companies, where it signifies operational efficiency. Profitability is considered a reason for

the existence of organizations striving for profit, and prominent among these organizations are banks (Al-Qaisi & Al-Taie, 2023, p. 235). Profitability, in the form of retained earnings, is one of the primary sources for generating capital. A sound banking system relies on profitable banks with sufficient capital (Al-Karawi, 2009, p. 5).

The concept of profitability derives from two words, “profit” and “ability.” Profit represents the total income generated from business activities during a specific period (AL-Jua’any & Al-Shimmary, 2021, p. 128). Concurrently, "ability" denotes the potency and capability of these enterprises to accrue profits. Through the synthesis of these dual notions, profitability emerges as the aptitude to employ and invest in a particular resource with the aim of yielding returns from its utilization (Tulsian, 2014, p. 19). It’s essential to distinguish between profit, as the absolute amount extracted from the income statement of a business entity, and profitability, as the percentage of this amount to the operating elements within the entity. For business and banking management, what matters is not the absolute amount of profit, but profitability because it serves as a crucial indicator in evaluating performance and provides definitive answers about the operational efficiency of bank management. Profitability reflects the result of many operational decisions and policies (Hussain & Al Moula, 2021, p. 177).

Profitability is defined as a bank’s ability to achieve profits through optimal investment of its resources, yielding a return proportionate to the bank’s resource base over a specified period of time. It is expressed as a percentage representing the rate of return on a specific resource within the bank's resources (Al-Qaisi & Al-Taie, 2023, p. 253). It is also defined as the relationship between the returns a bank seeks to achieve and the investments that contributed to achieving them (Al-Aajibi & Hamidi, 2021 , p. 128). Therefore, it serves as a measure of relative efficiency resulting from the extent to which results are achieved through the optimal utilization of available means (AL-Yasseri & Radhi, 2021 , p. 447).

The Importance of Banking Profitability:

- It serves as an indicator of efficiency and optimal utilization of a country’s resources and wealth (Al-Karawi, 2009, p. 5).
- Profitability is essential for increasing shareholders’ wealth and achieving a high return on equity (AL Ogaili, 2020, p. 423).
- It is the primary criterion for assessing the management’s capability and efficiency. The more efficient the management, the more profits it can generate (Al Hussain & Al Moula, 2021, p. 177).
- Profitability is crucial for dealing with the numerous risks that banks face in the intense competition of the market (Hamad, 2011, p. 410).

Assessing Bank Profitability:

Bank profitability is evaluated using a set of financial indicators or ratios. These indicators are among the most critical financial metrics used extensively to assess bank profitability because they measure the bank’s ability to achieve a return on invested capital (Hussan et al, 2021 , p. 273). Some of the most important of these indicators include:

- Return On Assets (ROA): The return on assets ratio serves as a metric portraying the bank's proficiency in deriving profits from its asset base, thereby shedding light on the efficiency with which the bank's assets yield revenue (Mengistu, 2015, p. 52). This ratio is calculated using the following equation (Omer & Ali, 2022, p. 625):

- ROA= $\frac{\text{Net Profit after Tax}}{\text{Total Assets}}$*100

- Return On Equity (ROE): This ratio aims to demonstrate the relationship between the capital contributed by shareholders and the profits generated from it (Uhmedy & Kareem, 2023, p. 34). An increase in this ratio reflects the bank's ability to achieve significant profits for shareholders and increase the balance of retained earnings, leading to an increase in the share's value and the profits distributed on those shares, thus maximizing returns (AL Ogaili, 2020, p. 423). It can be measured according to the following equation (Hussan et al, 2021, p. 273):
  - ROE= $\frac{\text{Net Profit after Tax}}{\text{Total Equity}}$*100
- Return On Deposits (ROD): This ratio aims to measure the net profits compared to the volume of funds deposited with the bank (Uhmedy & Kareem, 2023, p. 35). In other words, this ratio assesses the bank's ability and efficiency in generating profits as a result of investing the deposits it holds. It is calculated as follows (AL-Yasseri & Radhi, 2021, p. 447):
  - ROD= $\frac{\text{Net Profit after Tax}}{\text{Total Deposits}}$*100
- Return On Resources (ROR): This ratio measures the bank's ability to generate profits from the utilization of available resources, which include deposits and equity (Hussan et al, 2021, p. 274). It is calculated as follows:
  - ROR= $\frac{\text{Net Profit after Tax}}{\text{Deposits+ shareholders' equity}}$*100

The Practical Aspect:

Introduction:

Traditional banks face various challenges, such as outdated technologies or unclear customer systems, leading to difficulties for customers. These banks may also face competition from other institutions offering innovative digital solutions. In this chapter, we will describe the research methodology. The researchers adopted two approaches:

- Descriptive Methodology: This approach involves interpreting phenomena and events by examining data, vocabulary, and their relationships with the events and influencing factors.
- Inductive Methodology: This approach focuses on interpreting the current situation or problem by considering its circumstances and dimensions. It aims to provide a detailed and comprehensive description of the problem, along with solutions and recommendations.

Research Population and Sample:

The research population includes individuals and groups from whom the research seeks to obtain results, either through their responses or from reports and findings published online. The sample consists of employees, administrators, and department heads working in the Iraqi banking sector, specifically at Al-Rafidain and Al-Rasheed banks in Misan. A total of 25 questionnaires were distributed, all of which were returned and are suitable for analysis.

Table (1): The composition of the sample based on gender, age, and educational qualification.

Gender			
14	Female	11	male
Age group			
50 or more	41–50	31–40	20–30
5	5	7	8
Educational qualification			
Master's		Bachelor's	diploma
3		9	13
Job position			
Head of the Department		employee	
2		23	
Years of Experience			
9 or more	6–9	3–6	Less than 3 years
5	4	4	12

Source: Prepared by the researchers based on the results of the questionnaire.

Research Tools:

The researchers primarily relied on a questionnaire as the main data collection tool to address the research questions and achieve specific objectives. The questionnaire was divided into two main sections: personal information and questions related to the study variables, totaling 22 questions. These questions were further categorized into 12 items related to modern technologies and 10 items related to banking profitability. A Likert five-point scale was utilized, as illustrated in Table 2.

Table 2 displays the alternatives for the Likert five-point scale adopted by the researchers.

Disagree	Totally disagree	neutral	OK	Totally agree
1	2	3	4	5

Source: Prepared by the researchers.

Statistical Methods:

The researchers used Microsoft Excel to input the questionnaire data, and the statistical software SPSS was employed to extract and interpret the data, test hypotheses, determine the sample response rates, and analyze correlations and variable.

Presentation and Analysis of Results:

Descriptive Statistics of Participants' Personal Information:

Table 3 illustrates the distribution of sample participants according to the gender variable.

Gender	Repetition	percentage %
Male	11	44%
Female	14	56%

Prepared by the researchers based on the program (SPSS).

Table 3 indicates that the majority of sample participants were females, comprising 56% of the total, while males accounted for 44% of the research sample. This suggests that females exhibit a greater interest in the use of modern technologies compared to males.

2- Age group:

Table (4): Distribution of sample members according to the age variable.

Age Group	Repetition	percentage %
20 – 30	5	20%
31 – 40	5	20%
41 – 50	8	32%
50 or more	7	28%

Prepared by the researchers based on the program (SPSS)

Table 4 indicates that the majority of sample participants fall within the age range of 41 to 50 years, constituting 32% of the sample, followed by those aged 50 years and above, comprising 28%. The age group of 20 to 40 years had the lowest response rate to the questions, suggesting that modern technology has garnered the interest of the older age group as it represents a new approach to modernity.

3- Educational qualification:

Table (5): Distribution of sample members according to the Educational qualification variable

Educational qualification	Repetition	Percentage %
Diploma	13	52%
Bachelor	9	36%
Master's	3	12%

Prepared by the researchers based on the program (SPSS)

The data reveals that the majority of individuals within the research sample possess a diploma-level qualification, comprising 52% of the cohort. In contrast, those holding bachelor's degrees account for 36%, while individuals with master's degrees constitute 12%. This data underscores that a significant proportion of the research sample comprises individuals with lower-level university qualifications.

4 – Years of experience:

Table (6): Distribution of sample members according to the years of experience variable

Years of Experience	Repetition	Percentage %
Less than 3 years	12	48%
3 – 6	4	16%
6 – 9	4	16%
9 or more	5	20%

Prepared by the researchers based on the program (SPSS)

Through Table 5, we observe that individuals within the sample with less than 3 years of experience constitute 48% of the group. They are followed by individuals with 9 years of experience or more, accounting for 20%.

5 – Job Position:

Table 7 illustrates the distribution of individuals within the sample based on their job positions.

Job Position	Repetition	Percentage %
Employee	23	92%
Head of department	2	8%

Prepared by the researchers based on the program (SPSS)

We notice from Table 7 that the majority of the research sample consists of employees, accounting for 92%, which is the largest proportion of the sample. Following that, the department heads make up 8% of the total.

Secondly, addressing the research hypotheses:

1. Is there a correlation between modern technologies and bank profitability?

Table (8): the correlation between the independent variable (modern technologies) and the dependent variable (bank profitability):

Bank profitability	**Dependent variable** / **Independent variable**	
.890**	**Degree of correlation**	**modern techniques**
.000	**((Moral level sig.))**	
25	**Sample volume**	
The correlation is significant at the level of 0.05** ****The correlation is significant at the level of 0.01 .890*		

Prepared by the researchers based on the program (SPSS).

Interpreting this data reveals a clear correlation between modern technologies and bank profitability. This assertion is substantiated by the correlation coefficient, which stands at 0.890 with an associated p-value of 0.000, indicating high statistical significance. This relationship underscores that modern technologies, through their provision of sophisticated services and systems, play a pivotal role in augmenting bank profits. This augmentation encompasses aspects such as precision, swiftness, efficiency, and time-saving. Consequently, this statistical evidence firmly validates the initial hypothesis.

2. Does a significant causative relationship exist, at a significance level of 0.05, between modern technologies and bank profitability performance?

Table 9 elucidates the presence of a noteworthy causal relationship between modern technologies and bank profitability.

Table (9): the causal impact relationship between the research variables.

Significance level	R2	F		T		Variables
0.05	0.729	Value t tabular	valuet calculated	Value t tabular	Value t calculated	Independent variable
		1.964	7.409	1.711	2.823	Dependent variable

Prepared by the researchers based on the program (SPSS)

Table 9 indicates the existence of a significant causative relationship between modern technologies as the independent variable and bank profitability as the dependent variable. This is demonstrated by the computed F-value, which amounts to 7.409, surpassing the critical table value of 1.964, thus establishing statistical significance at the 0.05 level. Moreover, the calculated t-value for the independent variable is 2.823, exceeding the critical table value of 1.711.

Furthermore, the coefficient of determination (R2) stands at 0.729. This underscores the paramount importance of modern technologies in enhancing bank profits through the provision and utilization of electronic services. Several major governmental banks have adopted these cutting-edge technologies to facilitate customer access and engagement. Ultimately, this has a profound positive impact on the profitability performance of the studied banks.

Conclusions and Recommendations:

Conclusions:

1. The research findings have demonstrated that the widespread adoption of advanced modern technologies, coupled with high-quality service delivery through sophisticated systems, contributes significantly to enhancing bank profitability.
2. The results show that modern technologies facilitate the provision of transparent and secure financial information, requiring less effort and time. Moreover, their diversity expands the opportunities for marketing such services to a broader audience.
3. The research outcomes underscore that the scope of banking operations and their modern technologies forms a crucial basis for delivering benefits to both customers, through speed, convenience, and cost reduction, and banks themselves, through efficiency, larger market share, marketing, and cost reduction.
4. The research has indicated a statistically significant impact of modern technologies as an independent variable on bank profitability as a dependent variable at a significance level of 0.05.

Recommendations:

1. There is a need for expansion and modernization of banking technologies by allocating more funds for this purpose while ensuring the availability of the necessary infrastructure and logistical means for secure information transmission. This should include efforts to establish secure networks for preserving the confidentiality and security of electronic payment and transfer services.
2. Promote financial literacy to enhance financial inclusion and the widespread adoption of modern banking services in all regions and markets. Encourage the community to use these technologies and services by investing in human resource training.
3. Consider merging some banks to strengthen their capital base and offer unified services capable of competing and automating the services provided.
4. Emphasize modern marketing strategies for these services to raise awareness and educate customers on how to use advanced services effectively.
5. Continuously monitor the status of other banks and customer needs and preferences through expert analysis to adjust goals in line with economic changes.

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