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The Impact of Electronic Automation and its Efficiency on the Performance of Commercial Banks for a Period (2011-2021)

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Abstract. The research aims to shed light on the impact of electronic services on the profitability of Iraqi private commercial banks, and to make a comparison between them for that performance. Explaining the extent to which the research sample banks are able to provide electronic banking services and keep pace with global development. And identifying the most important indicators that greatly affect the improvement of the performance of commercial banks. This research is applied to a sample of three banks listed on the Iraq Stock Exchange, namely (Bank of Baghdad - Gulf Commercial National Bank - Mosul Bank for Development and Investment), and the time period of the research was (2011-2021). While the practical aspect used the analytical method for the financial data of banks related to the research variables and evaluating the economic phenomena during the research period and following up on their developments during the different time periods and then deducing the effects resulting from that, and the standard analysis was processed according to (Panel Data) in addition to using the statistical program (Eviews12) to show the effect of the independent variables (ATM, electronic cards) on the dependent variable banking efficiency. The research reached a set of conclusions, the most important of which was: the use of banks for ATMs and electronic cards, which provide ease in completing international financial transactions such as (withdrawal and payment), which makes them a suitable means for travel and work abroad by facilitating international operations.

Keywords: ATM, Electronic cards, Performance efficiency.

1. INTRODUCTION

Witness The global banking industry is undergoing radical transformations in light of the rapid technological developments that have reshaped the nature of financial operations and services. It's ready. Automated One of the most notable of these innovations is electronic banking, which is now essential for increasing banking operations' efficiency and cutting expenses .Where it witnessed a noticeable decline in traditional patterns of banking work.In this context, financial institutions seek to adopt advanced technological solutions, such as automated data management systems and artificial intelligence technologies, to improve the quality of services provided to customers and increase their competitiveness in financial markets..

With the rapid progress in the world of finance and business, electronic banking services have become an indispensable necessity. Commercial banks have been clearly affected by the efficiency of these services, which has led to improved financial performance thanks to globalization and the widespread use of mobile phones and the Internet. These developments have contributed to the activation of services for transferring financial balances, checking balances, paying bills, and conducting banking transactions via the Internet, which has positively reflected on the financial performance of commercial banks in Iraq..

Providing electronic banking services saves customers time and effort, reduces the need to carry cash, and saves banks costs related to stationery and printing. With the spread of more than sixty thousand networks connected to the Internet worldwide, it has become necessary for commercial banks to modify their operating mechanisms to meet customer needs in innovative ways.

The shift to electronic banking services via phone and the Internet reflects the increased use of the Internet by customers to manage their accounts, which gives them greater freedom to complete their transactions at competitive prices. This shift has prompted Jordanian commercial banks to enhance the efficiency of their electronic services, which is reflected positively on financial performance.

1.1. Research Objective

The purpose of the study is to examine how automation affects Iraqi commercial banks' performance and operational efficiency. In addition to enhancing customer service by offering real-time transaction updates, the study aims to assess how automation may increase accuracy and decrease mistakes in banking processes. The research also explores the importance of AutomationIn reducing operating costs and increasing productivity, and analyzing their impact on financial performance indicators such as profitability, liquidity and capital adequacy in a sample of Iraqi banks. The research also aims to understand the differences in performance between different banks and provide recommendations to improve the efficiency of banking operations through Automation

1.2. Research Problem

The research problem was represented in answering a set of questions as follows:

1. Were the sample banks able to devote the use of electronic automation to raise performance efficiency?

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2. Are there substantial distinctions between the study sample banks in adopting electronic automation to increase performance efficiency?

1.3. Research Hypothesis

1. The banks in the research sample vary in the method of using electronic automation in order to achieve the best performance efficiency.
2. Electronic cards and ATMs have little effect on enhancing banks' financial performance efficiency.

2. THEORETICAL FRAMEWORKTOAUTOMATION AND EFFICIENCY OF BANKING OPERATIONS

2.1. Automation and Efficiency of Banking Operations

In the banking industry, automation may significantly increase accuracy and decrease mistakes. Businesses may make sure that every transaction is handled properly and quickly by automating data input, payment processing, and reconciliation. Additionally, automation can offer real-time transaction updates and enhance customer support.

2.1.1. Automation Concept

The linguistic meaning of the term automation: is the use of computers and automatic devices to reduce the amount of work done by people and at a faster speed. Automated the machine made it automatic, workingSelf-operating and automated[1],Banking activities, or the legal transactions a bank does in the course of its regular business, are an example of this. Depending on the bank's size and specialty, these transactions may include lending, mortgages, and investments. One tactic that seeks to advance banking processes is automating them.

2.1.2. The Importance of Automating Banking Operations in Banks

Automating banking operations is of great importance, which is:

2.1.2.1. Reduce Cost

Automation is one of the best and smartest strategies used to reduce and limit costs, by developing the service for the end user customer while systematically reducing costs.

2.1.2.2. Yield

As the technology requirements of an organization grow, productivity becomes a greater concern. Traditional banking operations are being supported by tools to increase their productivity and effectiveness. The proliferation of banking software has increased the productivity of bank employees.

2.1.2.3. Banking Operations Available

Banks rely on their computers constantly, and daily business is carried out routinely, and if the computer is not available, a large percentage of banking business will not be completed properly and will even be disrupted.

2.1.2.4. Reliability

IT operations are based on reliability; without it, confusion results.IT operations requires two sets of talents to deal with chaos and user discontent. On the one hand, a technical worker has to have excellent technical skills, such understanding the system's intricacies. ([2]).

2.1.2.5. Performance

The more advanced the electronic system is, the higher and better the performance level will be, the higher the production level will be and the cost and effort will be lower. There are two options to improve performance, which are renewing and maintaining the devices.

2.1.3. The Transformative Power of Automation in Banking and the Challenges It Faces

In banking, automation boosts worker productivity, allowing them to concentrate on higher-value tasks. Banks can use a strategic rather than a tactical strategy to take advantage of this potential. An area of great

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interest in the global banking sector is automation.[3],

2.2. Banking Performance Efficiency

This topic deals with the nature of banking efficiency, its types, and the possibility of measuring it using financial analysis within the indicators of profitability, liquidity, safety, and indebtedness.

2.2.1. What Is Banking Efficiency?

The concept of efficiency: The concept of efficiency is linked toEfficiency in capitalist economic thought is how to allocate limited and available resources to society, in order to meet the continuous needs and desires of individuals. The beginning of interest in measuring efficiency is represented in analyzing the ability of the institution to make good use of its resources, and good control of its costs. Efficiency means the ability of the institution to achieve its goals, by reducing its costs and thus increasing its profits and increasing its share in the market.

Banking efficiency has many types, including the following:

2.2.2. Types of Banking Efficiency

1- Productive efficiency: Productive efficiency refers to the relationship between the amount of resources used and the results achieved.

1. Economies of scale efficiency: Economies of scale efficiency is defined as "the profits resulting from the decrease in production costs as a result of the increase and expansion of the project, or economies of scale are achieved for the bank when the average cost decreases with the increase in the volume of the bank's activity.".
2. Economies of scope: These are the cost reductions that come from utilizing the same resources to create ([4])Several types of productsThe efficiency of economies of scope expresses the bank's ability to produce a mix of banking services (diversification of services) at a total cost lower than the cost of producing each service from the mix separately.
3. 1-2-3: Measuring banking efficiency using financial analysis
4. evaluating the effectiveness of a sample of private banks' banking operations. The effectiveness of the financial system at both the macro and microeconomic levels is significantly impacted by the measurement of the banking industry's and the financial sector's overall efficiency.[5],
5. Below is a detailed presentation of the financial and banking ratios used within the practical framework.([6])

2.2.2.1. Profitability

The end effect of the bank's many policies and choices is profitability. It is useful for measuring the effectiveness of the bank's operations and is considered a tool. Profitability is also the ambitious goal of any institution, including banks.

2.2.2.2. Indicators Liquidity

They are called short-term ratios, and they are the ratios that help determine the liquidity of banks and the ability to meet obligations. ([7]) The bank's capacity to fulfill short-term commitments serves as its symbol. Current obligations and assets are used to measure it. The bank's liquidity also means the bank's ability to maintain deposits at any time.

2.3. Indicators Security

These elements can be divided into three categories: fairness (both official and informal discrimination), inclusion (economic, social, and political), and security (individual, communal, and societal). The indicator integrates performance across dimensions and variables.

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2.3.1. The Role of Automation in Improving Banking Efficiency

Banks are using automation to boost productivity and cut down on mistakes as the world becomes more digital. This is particularly true in the banking industry, where automation may greatly increase precision and lower the possibility of mistakes. With automation's assistance, through.

1. Accuracy in data entry

In banking, data input is one of the most frequent causes of mistakes. Human operators can easily make mistakes while handling high transaction volumes.

2. Automate the payment process

There is another area where automation canImprove accuracy and processingPayment. Businesses may guarantee precise and efficient processing of each payment by implementing automated payment processing.

3. Simplify reconciliation

Settlement is an important part of secure banking, but it can be a complicated process.It takes time.[8] long and error prone.

4. Improve customer service

Additionally, automation can enhance customer service.by cutting down on payment processing time and offering real-time transaction information.

5. Choosing the right automation solution

Several alternatives are available to you when it comes to automating your safe deposit box banking services.

2.3.2. Effect Automation on Banking Services

2.3.2.1. Simplify Operations

One of the main forces behind the constantly changing landscape of safe banking is automation.Unlocking Efficiency Like Never Before

A-Improved data capture: Automation tools like optical character recognition (OCR) have completely changed how data is collected in banking.For the deposit box for safety.

for-Reducing errors: In the banking industry, human mistake may be expensive, but automation can assist reduce these risks. By employing sophisticated verification methods,

G-Real-time reporting:Automation allows transaction statuses to be tracked and reported in real time. ThisIt will change the game.For both banks and their customers.

Automation in safe banking has the potential to provide a better client experience in addition to increasing efficiency. Providing first-rate service in a setting that is becoming more and more competitiveAs a significant difference [9]

The First Requirement: Measurement

First. Homogeneity test forHsiao

Table 1: Homogeneity test forHsiao.

Specification Tests of Hsiao (1986)		
H1 = Null Hypothesis: panel is homogeneous vs Alternative Hypothesis: H2		
H2 = Null Hypothesis: H3 vs Alternative Hypothesis: panel is heterogeneous		
H3 = Null Hypothesis: panel is homogeneous vs Alternative Hypothesis: panel is partially homogeneous		
Hypotheses	F-Stat	P-Value
H1	3.711981	0.009419
H2	1.141711	0.360853
H3	8.676864	0.001169

We notice through the testHsiao In the table () the heterogeneity of the trends and constants together as it appears from the probability value of H1 is less than the significance level (0.05) so we reject the null hypothesis that assumes the existence of homogeneity and accept the alternative hypothesis that assumes the heterogeneity of the trends and constants, and it seems that there is homogeneity of the trends only because the probability value of H2 is greater than the significance level (0.05) so we accept the null hypothesis that assumes the existence of homogeneity, and we also note the heterogeneity of the constants because the probability value of H3 is less than (0.05), so what we can conclude is the total heterogeneity in the model, and since there is no total homogeneity it means that the cumulative regression model is not suitable for the estimation process.

Secondly, the unit root test unit root test

1. Dependent variable performance stabilized at level with breaker:
2. Independent variable○ATM settled at level with breaker and direction:

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Table 2: Unit Root Test for the Independent Variable Number of ATMs (ATM).

Panel unit root test: Summary

Series: ATM
Date: 08/10/24 Time: 12:15
Sample: 2011 2021
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistics	Prob.**	Cross-sections	Obs.
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.77407	0.0000	3	28
width t-status	-0.33826	0.3676	3	25
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.05847	0.0198	3	28
ADF - Fisher Chi-square	18.9427	0.0043	3	28
PP - Fisher Chi-square	28.9054	0.0001	3	30

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

The series has stabilized at its level and we notice that most of the unit root tests for the combined series data are less than (0.05) except for the testBreitung t-stat whose probability value was (0.3676),

3. The independent variable is the number of cards.nc settled at the first difference with a secant and direction:

Table 3: Unit Root Test for the Independent Variable Number of Electronic Cards (NC).

Panel unit root test: Summary
Series: D(NC)
Date: 08/10/24 Time: 12:25
Sample: 2011 2021
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistics	Prob.**	sections	Obs.
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.26729	0.0000	2	18
width t-status	-4.08794	0.0000	2	16
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.00146	0.0227	2	18
ADF - Fisher Chi-square	15.7841	0.0033	2	18
PP - Fisher Chi-square	21.1978	0.0003	2	18

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

The series is stationary in the first difference and we notice that most of the unit root tests for the combined series data are less than (0.05).

Third: Estimation using static panel models

1. None

Table 4: Estimation by Ensemble Regression Model.

Dependent Variable: PREFORMANCE
Method: Panel Least Squares
Date: 08/10/24 Time: 14:32
Sample: 2011 2021
Periods included: 11
Cross-sections included: 3
Total panel (balanced) observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.303918	0.014353	21.17449	0.0000
ATM	0.000748	0.000396	1.885970	0.0690
NC	-2.71E-07	1.88E-07	-1.446644	0.1584
Root MSE	0.034754	R-squared		0.110396
Mean dependent var	0.322424	Adjusted R-squared		0.051089
SD dependent var	0.037419	SE of regression		0.036451
Akaike info criteria	-3.699203	Sum squared resid		0.039860
Black Criterion	-3.563157	Log likelihood		64.03685
Hannan-Quinn criterion.	-3.653428	F-statistic		1.861436
Durbin-Watson stat	0.910442	Prob(F-statistic)		0.172962

We cannot take the results of the regression test into account because there is no complete homogeneity in the estimated model, but we can consider it as a transition stage between the fixed effect and random effect models.

3. CONCLUSIONS

1. Electronic services are characterized by speed, low cost and risk, which increases the number of users of these services.
2. It is clear that the number of electronic cards, including Visa and MasterCard, has been on an upward trend in recent years of the research period, as a result of the continuous work on developing electronic services, which reduces the risk factor as well as credit risk.
3. The legal liquidity ratio is the ratio imposed by the Central Bank on commercial banks that maintain it with the Central Bank.
4. By using modern services and technologies, interaction with customers increases as banks can communicate continuously with customers.

4. RECOMMENDATIONS

1. Working on improving electronic services and reviewing the latest methods used in advanced banks in the field of evaluating electronic services.
2. Reducing risks in the field of providing electronic services by employees by subjecting them to training courses in dealing with technical problems.
3. Seeking to find modern indicators of banking performance to be the optimal alternative for measuring efficiency and effectiveness in achieving banking goals.
4. The necessity of the banks in the sample of the research, especially the Bank of Baghdad, to pay attention to a sufficient percentage of capital, as it achieved an average percentage compared to the rest of the banks in the sample of the research, and because it is the basic pillar for protecting depositors' money to adapt to the abnormal conditions that the bank may be exposed to at any time, in addition to increasing its ability to absorb the largest possible amount of operating losses.

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