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The Role of Selected Financial Inclusion Indicators in the Profitability of Banks: An Applied Study on a Sample of Banks Listed in the Iraq Stock Exchange for the Financial Period (2014–2023)

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Abstract : The research aims to clarify the role of financial inclusion through its indicators, represented by (the number of bank branches and the number of ATMs), and its impact on bank profitability through its tools, represented by (return on assets). The research problem was identified as a central question: To what extent does financial inclusion affect bank profitability in Iraq

To achieve the research objectives and answer the proposed questions, a set of hypotheses was adopted concerning the relationship between the indicators of financial inclusion and bank profitability. The main hypotheses included: the existence of a statistically significant correlation between financial inclusion indicators and bank profitability, and testing their effect using statistical and econometric tools. The analysis was conducted using the statistical programs SPSS 21 and R programming. The study sample was represented by the Iraqi banking sector for the period (2014-2023)

The research reached several conclusions, the most important of which is the existence of a positive, statistically significant correlation between financial inclusion and commercial bank profitability in Iraq. This indicates that improving financial inclusion indicators has a positive impact on the current performance of banks. The research concluded with several recommendations, the most important being: the necessity of adopting a comprehensive national strategy to enhance financial inclusion in Iraq by expanding the network of bank branches, increasing electronic services, and simplifying all procedures.

Keywords: Financial Inclusion, Bank Profitability, Iraqi Banking Sector.

INTRODUCTION: The banking sector is a fundamental pillar of the national economy due to its role in linking savers with investors and supporting economic growth. However, Iraqi banks face structural and regulatory challenges, most notably the lack of trust, political and economic instability, and the low level of banking awareness. In this context, financial inclusion represents a strategic tool to enhance the efficiency and effectiveness of the sector by expanding the scope of banking services to include all segments of society, particularly the disadvantaged groups, thereby reducing reliance on informal channels.

Nevertheless, the implementation of financial inclusion in Iraq encounters several obstacles, including weak banking infrastructure, the limited spread of electronic payment tools, and low confidence in the banking system.

This research is structured into four main chapters. The first chapter consists of two sections: the first section addresses the research methodology, while the second reviews the previous studies. The second chapter includes three sections: the first discusses financial inclusion, the second focuses on commercial profitability, and the third examines the relationship between financial inclusion and banking profitability. The third chapter is divided into two sections: the first provides an applied analysis of financial inclusion indicators, while the second analyzes the tools of commercial profitability in Iraq and measures their impact on the banking sector. Finally, the fourth chapter comprises two sections: the first presents the conclusions, and the second provides **recommendations.**

Section One: Scientific Methodology

1. Research Problem:

Despite the efforts of banks in Iraq to develop their services and expand their customer base through the use of modern technologies, the impact of these efforts on their profitability remains unclear, given the economic and financial challenges and the low levels of financial inclusion compared to neighboring countries**.**

Do Selected Financial Inclusion Indicators Affect the Profitability of Banks in Iraq? From this main question, the following sub-questions emerge**:**

a. Is there a statistically significant effect of the number of ATMs on the profitability of banks in Iraq?

b. Is there a statistically significant effect of the total number of bank branches on the profitability of banks in Iraq?

2. Research Significance:

The importance of this research stems from its focus on the relationship between financial inclusion and profitability and their impact on improving the efficiency and performance of banks, making it valuable both theoretically and practically. Its significance can be summarized as follows**:**

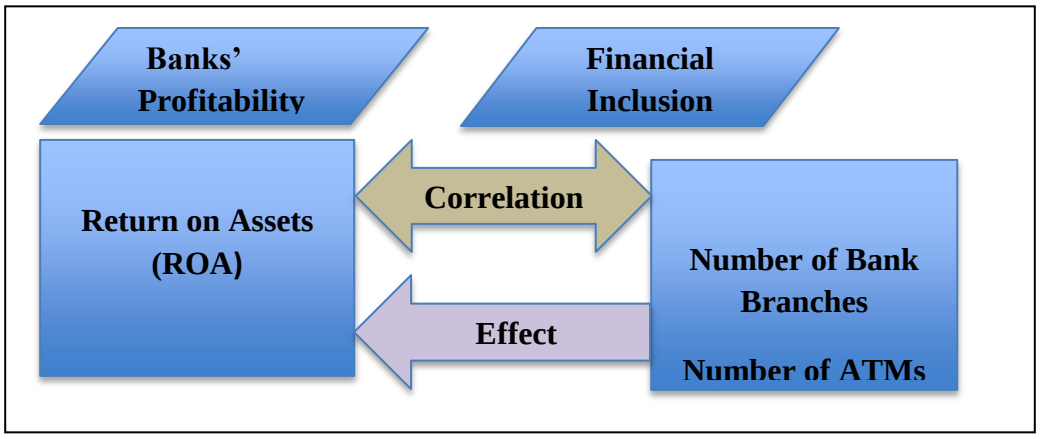
1. Enriching the theoretical side by clarifying the concepts and objectives of financial inclusion and profitability**.**
2. Explaining the relationship between financial inclusion and profitability through scientific and statistical analysis**.**

3. Research Objectives:

This research aims to analyze the role of financial inclusion in enhancing the commercial profitability of Iraqi banks by achieving the following objectives**:**

1. Clarifying the concept of financial inclusion and commercial profitability and their importance in improving banks' financial performance**.**
2. Analyzing the relationship between financial inclusion indicators and commercial profitability, and explaining their mutual impact**.**

4. The Hypothetical Framework of the Study



Source: Prepared by the researcher

5. Research Hypotheses

Based on the research questions and problem, and in order to test the research framework and answer the questions, the following hypotheses were formulated:

Main Hypothesis 1:

"There is a statistically significant correlation between certain financial inclusion indicators and the profitability of banks in the Iraq Stock Exchange."

This main hypothesis is divided into the following sub-hypotheses:

"There is a statistically significant correlation between certain financial inclusion indicators and the profitability of banks in the Iraq Stock Exchange."

"There is a statistically significant correlation between certain financial inclusion indicators and the profitability of banks in the Iraq Stock Exchange."

Main Hypothesis 2:

"Some financial inclusion indicators have a statistically significant impact on the profitability of banks in the Iraq Stock Exchange."

a. Is there a statistically significant effect of the number of ATMs on the profitability of banks in the Iraq Stock Exchange?

b. Is there a statistically significant effect of the total number of bank branches on the profitability of banks in the Iraq Stock Exchange?

6. Population and Sample of the Study

The population of the study consists of the banks listed on the Iraq Stock Exchange. The study sample included all banks in the banking sector as a whole.

7. Research Methodology

The study adopted a descriptive-analytical approach to analyze the data obtained from the time series.

8. Research Boundaries:

The spatial boundaries are represented by the Iraqi banking sector, while the temporal boundaries cover the period. (2014-2023)

Section Two: The Theoretical Aspect

First: Financial Inclusion

1. The Concept of Financial Inclusion:

During the 1990s, many studies and publications by economists addressed the difficulties faced by societies and financial institutions (particularly central banks), especially with regard to access to financial services, their use, and their quality. Financial inclusion gained notable attention on the international stage after the outbreak of the 2008 global financial crisis. From the perspective of financial exclusion, a target group is considered financially excluded if it does not have the ability to access essential formal financial services such as bank accounts, insurance, credit facilities, and payment facilities (Sakariya & Ruparel, 2018: 53)**.**

2. The Importance of Financial Inclusion:

Financial inclusion is a strategic tool for supporting economic growth and social development by expanding access to financial services for all segments of society, especially the poor and the excluded. It contributes to improving living standards and reducing poverty, while also enhancing financial efficiency, financial stability, financial integrity, and consumer protection. Moreover, it supports innovation in banking services and integrates society into the formal financial system to achieve sustainable economic and social well-being (Salihah et al., 2019: 4)**.**

3. Indicators for Measuring Financial Inclusion:

There are several indicators for measuring financial inclusion that reflect the ability of banks to attract individuals into the banking system, the most important of which are**:**

1. Number of Bank Branches**:**

This is one of the most important indicators for measuring financial inclusion. It depends on the spread of bank branches within the country to provide financial services to all segments of society. It is measured by the number of branches relative to the country's area, as well as the number of branches per 100,000 adults. The World Bank's standard ratio is 10 branches per 100,000 people (equivalent to 1 branch per 10,000 people)**.**

Formulas**:**

Number of branches per 1,000 km² = (Number of bank branches / Country area) × 1,000 (1)…..

If the number of branches is lower than the standard ratio, this means they are insufficient to reach all members of society, thereby weakening financial inclusion. On the other hand, if the number exceeds the standard, it may create a financial burden on banks and negatively affect their profitability**.**

2. Number of Automated Teller Machines (ATMs):

ATMs are a technological banking tool that provides cash withdrawal, deposit, and transfer services quickly and securely around the clock, helping to reduce costs and achieve a competitive advantage. This is measured by the number of ATMs relative to the country's area or per 100,000 adults. In the Middle East and North Africa (MENA) region, the standard ratio is 26.1 ATMs per 100,000 adults**.**

Formula:

Number of ATMs per 100,000 adults = (Number of ATMs / Number of adult population) × 100,000**(2) ..…**

The ATM represents one of the most important electronic payment tools for accessing banking services at minimal cost**.**

Second: Bank Profitability

1. The Concept of Bank Profitability:

There are a set of systems and laws governing the activities of banks, which differ from one bank to another based on these regulations. These laws define the activities carried out by a bank, as it is a financial institution that provides monetary, credit, and financing services to its clients, according to their requests and within the financing rules it operates under. It should be noted that banks typically accept deposits payable on demand or for a fixed term, and engage in both domestic and international financing activities. They also work on developing savings and financial investments domestically and internationally, and participate in establishing projects along with the required banking and financial operations, based on the regulations set by the central bank (Brigham, 2010: 123)**.**

2. Methods for Maximizing Bank Profitability (Arabi, 2023: 98–99)**:**
The most important methods for improving bank profitability are**:**
1. Expanding activities and services offered and entering new markets or customer segments**.**
2. Optimal investment of assets and funds to increase returns**.**
3. Raising the prices of certain services permitted by law to enhance revenues**.**
4. Reducing expenses, especially general expenses, by improving efficiency**.**

Thus, profitability can be maximized by balancing increased revenues with reduced costs while smartly seizing available opportunities**.**
3. Profitability Measurement Indicator**:**
Return on Assets (ROA)**:**
This is one of the most widely used ratios for measuring financial performance in the banking sector. It shows the management's ability to obtain deposits at a reasonable cost and invest them in profitable ventures. This ratio expresses the profitability of each dollar of assets owned by the bank (Badreldin, 2009: 2). It can be calculated (Brigham et al., 2011: 100) using the following formula**:**
ROA = \frac{NI}{TA} \times 100\% \quad (3)…
Where**:**
- NI = Net Income
- TA = Total Assets

First: Financial Analysis of the Research Variables
1. Financial Analysis of Financial Inclusion Indicators**:**
a. Number of Bank Branches in Iraq**:** (2014-2023)
The number of bank branches in Iraq fluctuated between 2014–2023 due to security, economic, and policy factors—peaking at 938 in 2014 and dropping to 816 in 2023—with private sector growth offset by public sector decline**.**

Table (4)
Number of Bank Branches in the Iraqi Banking Sector for the Period (2014-2023)

Growth (%) Rate	Total Number of Branches	Number of Bank Branches		Year
		Private Sector	Public Sector	
6.3-	938	522	416	2014
12.4-	821	424	397	2015
4.5	858	452	406	2016
2.7-	834	411	423	2017
2.7	857	437	420	2018
2.8	881	458	423	2019
0.3	884	459	425	2020
1.9	901	492	409	2021
6.9	838	460	378	2022
2.6-	816	443	373	2023
	86208	406.1	407	Average

Source: Prepared by the researcher

B. Automated Teller Machines (ATMs) in Iraq (2014–2023):
From 2014–2023, ATMs in Iraq grew sharply from 337 to 4,021, with the highest jump in 2023 (+80.8%), yet coverage remains below demand.

Table (9)
Number of ATMs in the Iraqi Banking Sector (2014–2023)

ATM Penetration Rate (per 100,000 Adults)	Number of Adults (per 1,000) per ATM	Growth Rate (%)	Number of ATMs	Adult Population Above 15 (in millions)	Year
1.5	65	47.9-	337	21926	2014
2.6	38	72.1	580	22082	2015
2.9	34.3	13.7	660	22654	2016
2.9	34.3	1.2	668	22974	2017
3.8	26.2	31.4	878	23012	2018
4.3	22.8	16.2	1021	29423	2019
5.3	18.7	25.1	1278	23902	2020
6.4	15.6	22.4	1565	24522	2021
7.5	13.2	0 .42	2223	29515	2022
15.4	6.4	80.8	4021	25994	2023
5.26	27.45		1379.5	24600	Average

Source: Prepared by the researcher

2 – Financial Analysis of the Banks' Profitability Indicator

A – Return on Assets (ROA):

Return on Assets (ROA) in Iraq (2014–2023)

From 2014–2023, ROA rose from lows of 0.4% (2014, 2016) to a peak of 1.3% in 2023, with the sharpest jump between 2021 and 2022.

Table (12)
Return on Assets for the Iraqi Banking Sector (2014–2023) – Million IQD

(Return on Assets (ROA	Year
%4 . 0	2014
% 5 .0	2015
% 4 . 0	2016
%8 . 0	2017
%5 .0	2018
% 8 . 0	2019
% 9 . 0	2020
% 5 . 0	2021
%0 . 1	2022
%3 .1	2023

Source: Prepared by the researcher

1. Descriptive Analysis of Financial Inclusion Indicators and Their Impact on Bank Profitability in the Iraqi Banking Sector (2014-2023)

A. Total Number of Bank Branches

A set of descriptive statistical measures for this variable is summarized in Figure (2) below.

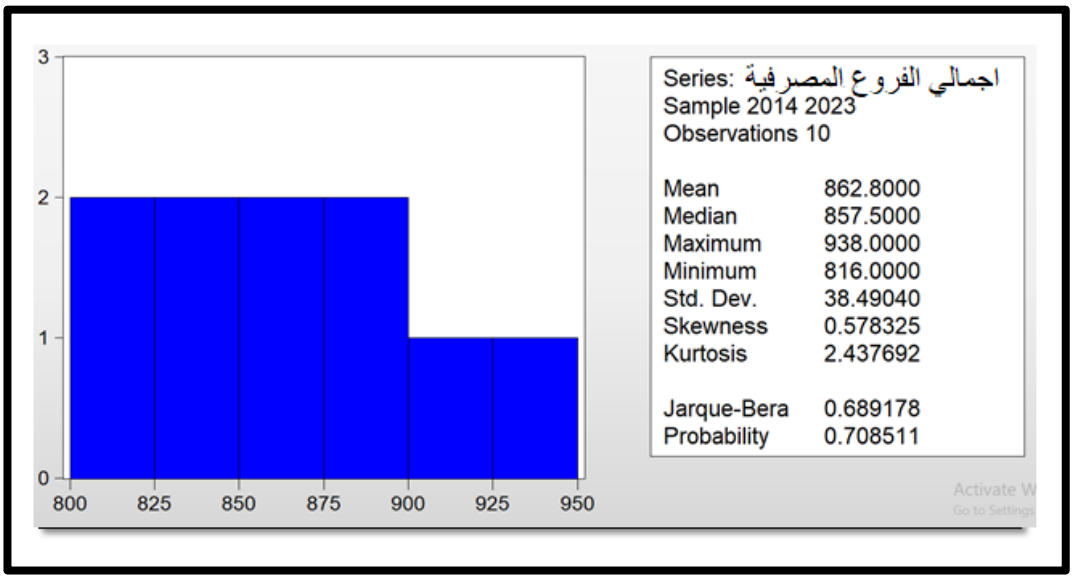


Figure (2): Statistical Description and Normality Test for the Total Number of Bank Branches

Source: Prepared by the researcher based on the outputs of the electronic calculator using statistical software (SPSS 21) and (R programming)

From 2014–2023, bank branches averaged 862.8 (max 938 in 2014, min 816 in 2023) with low dispersion, and the data followed a normal distribution (Jarque-Bera p = 0.7085)**.**

B – Number of Automated Teller Machines (ATMs)

A set of statistical measures for this variable can be summarized through Figure (3) shown below**.**

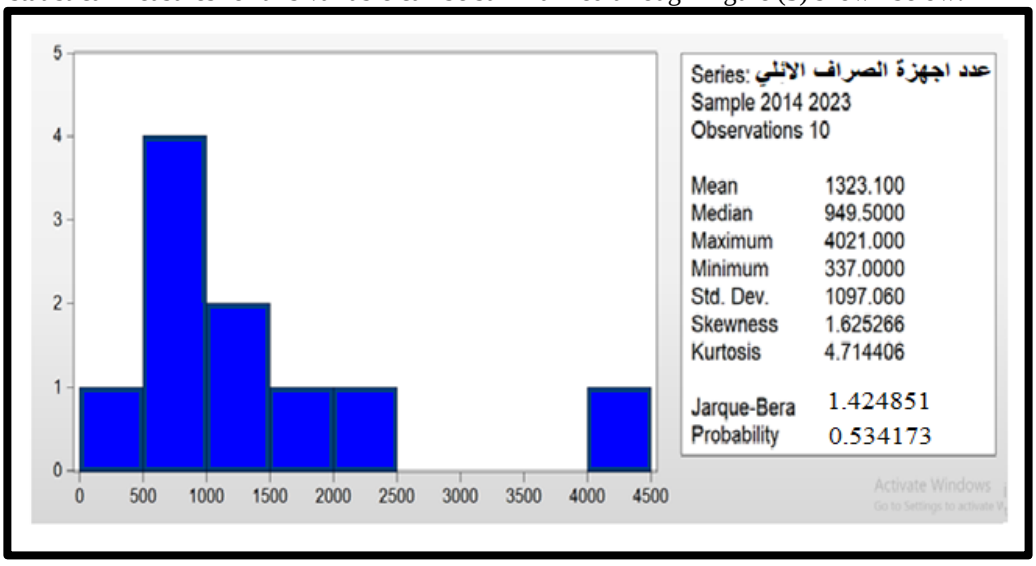


Figure (3): Statistical Description and Normality Test for the Total Number of Automated Teller Machines (ATMs)

Source: Prepared by the researcher based on the outputs of the electronic calculator using statistical software (SPSS 21) and (R programming)**.**

From 2014–2023, ATMs averaged 1,323.1 (max 4,021 in 2023, min 337 in 2014) with low dispersion, showing strong growth, and the data followed a normal distribution (Jarque-Bera p = 0.5342)**.**

2. Description and Analysis of Banks' Profitability Indicators for the Iraqi Banking Sector (2014-2023)

A – Return on Assets (ROA)**:**

A set of statistical measures for this variable can be summarized through Figure (4) shown below**.**

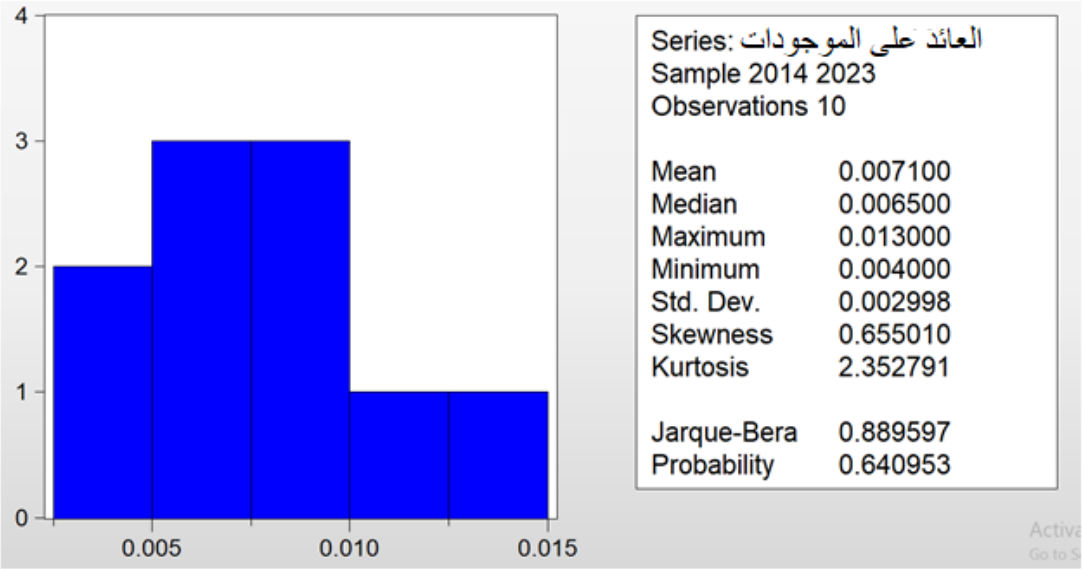


Figure (4): Statistical Description and Normality Test for the Total Return on Assets (ROA)

Source: Prepared by the researcher based on the outputs of the electronic calculator using statistical software (SPSS 21) and (R programming)**.**

From 2014–2023, ROA averaged 0.71% (max 1.3% in 2023, min 0.4% in 2014 & 2016), showed low variability, and followed a normal distribution (Jarque-Bera p = 0.641)**.**

Third: Testing and Analyzing the Research Hypotheses

1. Correlation Hypothesis:

The correlation test (Table 3) shows statistically significant positive relationships between financial inclusion (and its sub-variables) and bank profitability (and its sub-variables) for 2014–2023.

Bank Profitability	Return on Assets (ROA)	Dependent Variable Independent Variable	
0.442	**0.497**	**Correlation**	**Total Bank Branches**
0.027	**0.008**	**Sig. (2-tailed)**	
10	**10**	**N**	
0.542	**0.834**	**Correlation**	**ATM → Number of ATMs**
0.002	**0.000**	**Sig. (2-tailed)**	
10	**10**	**N**	
0.567	**0.491**	**Correlation**	**Financial Inclusion**
0.000	**0.019**	**Sig. (2-tailed)**	
10	**10**	**N**	

Source: Prepared by the researcher based on the outputs of the electronic calculator using statistical software (SPSS 21) and (R programming).

a – Correlation between Financial Inclusion and Bank Profitability

The results indicate a moderate positive and statistically significant correlation ($r = 0.567$, $p < 0.05$). The null hypothesis is rejected, and the alternative hypothesis is accepted**.**

b – Correlation between Financial Inclusion and Return on Assets (ROA)

A low positive and statistically significant correlation was found ($r = 0.491$, $p < 0.05$). The null hypothesis is rejected, and the alternative hypothesis is accepted**.**

c – Correlation between Total Bank Branches and ROA

A low positive and statistically significant correlation was observed ($r = 0.497$, $p < 0.05$). The null hypothesis is rejected, and the alternative hypothesis is accepted**.**

d – Correlation between Number of ATMs and ROA

A strong positive and statistically significant correlation was found ($r = 0.834$, $p < 0.05$). The null hypothesis is rejected, and the alternative hypothesis is accepted**.**

2. Impact Hypothesis

The effect relationship between the independent variable (financial inclusion and its sub-variables) and the dependent variables (bank profitability and its sub-variables) was measured using Simple Regression Analysis.

a – Impact of Financial Inclusion on Bank Profitability Indicators (ROA)

According to the results in Table (17), the simple regression coefficient shows a statistically significant effect of financial inclusion on ROA for the financial years 2014–2023 (t-test significant at $p < 0.05$). The null hypothesis is rejected, and the alternative hypothesis of a significant effect is accepted.

Dependent Variable Independent Variable	**Bank Profitability**			**(F) Computed**	**Sig**
	Coefficient Estimates(β)	**T Computed**	**Sig**		
Constant Term	**0.055**	**4.886**	**0.000**	**6.542**	**0.003**
Financial Inclusion	**0.118**	**3.576**	**0.033**		
Coefficient of Determination R^2 0.321=		**Adjusted Coefficient of Determination (Adjusted R²) R^2 0.296=**			

Source: Prepared by the researcher based on the outputs of the electronic calculator using statistical software (SPSS 21) and (R programming)**.**

The calculated F-value was 6.542 with a corresponding p-value of 0.003 ($p < 0.05$), indicating that the model fits the study data well**.**

The R-squared was 32.1% and the adjusted R-squared was 29.6%, meaning that financial inclusion explains about 29.6% of the variation in bank profitability**.**

Financial inclusion has a positive and statistically significant effect on bank profitability: a one-unit increase in financial inclusion increases profitability by 0.118. The t-value for B1 was 3.576 with a p-value of 0.033 ($p < 0.05$), leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis that financial inclusion significantly affects bank profitability during 2014–2023**.**

b – Impact of Total Bank Branches on Return on Assets (ROA)

As shown in Table (21), the simple regression results indicate a statistically significant positive effect of total bank branches on ROA for the financial years 2014–2023 ($p < 0.05$), leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis.

Dependent Variable Independent Variable	**Return on Assets (ROA)**			**(F) Computed**	**Sig**
	Coefficient Estimates(β)	**T Computed**	**Sig**		
Constant Term	**0.0404**	**1.960**	**0.085**	**12.854**	**0.000**
Total Bank Branches	**0.206**	**7.048**	**0.029**		
Coefficient of Determination (R²) R^2 0.247=		**Adjusted Coefficient of Determination (Adjusted R²) R^2 0.225=**			

Source: Prepared by the researcher based on the outputs of the electronic calculator using statistical software (SPSS 21) and (R programming).

The model between ROA and total bank branches is statistically significant (F = 12.854, p = 0.000). The adjusted R^2 = 22.5%, meaning that total branches explain about 22.5% of ROA variation. A positive and significant effect was found: a one-unit increase in total branches increases ROA by 0.206 (t = 7.048, p = 0.029). The null hypothesis is rejected, and the alternative hypothesis of a significant effect is accepted**.**

c – Impact of Number of ATMs on Return on Assets (ROA)

As shown in Table (24), the simple regression results indicate a statistically significant positive effect of the number of ATMs on ROA for the financial years 2014–2023 ($p < 0.05$), leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis.

Dependent Variable Independent Variable	**Return on Assets (ROA)**			**(F) Computed**	**Sig**
	Coefficient Estimates(β)	**T Computed**	**Sig**		
Constant Term	**0.000002**	**4.270**	**0.002**	**18.236**	**0.000**
ATM → Number of ATMs	**0.004**	**4.548**	**0.001**		
Coefficient of Determination (R^2) R^2 0.695=		**Adjusted Coefficient of Determination (Adjusted R^2) R^2 0.673=**			

Source: Prepared by the researcher based on the outputs of the electronic calculator using statistical software (SPSS 21) and (R programming).

The results show that the number of ATMs has a positive and significant impact on Return on Assets (ROA), explaining 67.3% of the variations during 2014–2023, supporting the acceptance of the alternative hypothesis and the rejection of the null hypothesis**.**

Conclusions

1. There is a significant positive link between financial inclusion and bank profitability in Iraq**.**
2. Banks adopting digital and inclusive services achieve higher profits**.**
3. Financial inclusion is a key driver of banking performance**.**

Recommendations

1. Develop a national strategy to expand financial inclusion through more branches, e-services, and simpler procedures**.**
2. Promote financial literacy, especially in rural and underserved areas**.**
3. Support further research on the link between financial inclusion and profitability**.**

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