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## **Financial Inclusion Effect on Banks' Profitability**

**Asmaa Ahmed Abo Alkomsan<sup>1</sup>**

**Mohamed Sameh Gameel<sup>2</sup>**

**1 Faculty of Business Administration, Sadat Academy for Management Sciences, Cairo, Egypt**

**2 Faculty of Business Administration, Sadat Academy for Management Sciences, Cairo, Egypt**

**Correspondence: Asmaa Ahmed Abo Alkomsan, Faculty of Business Administration, Sadat Academy for Management Sciences, Cairo, Egypt.**

**Tel: 002-0111-090-7688. E-mail: [Asmaa.AboAlkomsan@sadaacademy.edu.eg](mailto:Asmaa.AboAlkomsan@sadaacademy.edu.eg)**

**Abstract:**

The present study examines the effect of financial inclusion on banks' profitability in both developing countries (low-income) and developed countries (high-income). The study took place over the period from 2010-2022. We find that banks' profitability in both developed and developing countries is affected by financial inclusion. The study sample consists of 10 countries as five low-income countries and five high-income countries. The study uncovers the existence of a positive effect of number of ATMs on banks' return on equity in both developed and developing countries. And the bank branches have a negative effect on banks' return on assets and banks' return on equity in both developed and developing countries, this may be due to the increasing cost of establishing these branches. There may be more influential variables, but this does not prevent that financial inclusion still has an effect. There may be more influential variables, but this does not prevent that financial inclusion still has an effect.

**Keywords:** financial inclusion, banks' profitability, banking sector.

## 1. Introduction:

As a result of the rapid and successive financial developments, which reflected on most of organizations in general and the financial ones in particular... This has been appeared recently because of the trend of most countries towards the digital economy with less money.

In a serious attempt to keep pace with these developments, Egypt has taken effective steps towards digital transformation, through a major concern at the national level, and by presenting multiple initiatives in this field, such as: Egypt's National Vision 2030, which was launched in February 2016 as a strategic plan to achieve the principles and goals of sustainable development in all fields.

In order to activate Egypt's trend towards digital transformation and the transition to a less liquid society, the National Payments Council was established in February 2017, headed by the President of the Republic personally, by Republican Decree No. 89, which resulted in the rapid spread of new technologies, especially as a result of the new situation imposed by Covid 19 on the world. which led to major transformations in establishing effective collaboration within organizations, better customer engagement, and increased innovation and productivity.

And so, it has not only combated the unprecedented challenges brought about by the pandemic, but also accelerated the pace of digital transformation across all industries. Especially in the financial technology industry.

Therefore, the Central Bank of Egypt has also realized the importance of financial technology in supporting, modernizing,

and developing the Egyptian financial sector, enhancing financial inclusion, and activating and confirming the leadership of the Egyptian financial and banking services sector in the Middle East and Africa regions.

Through this study, the researchers seek to identify the financial inclusion, and the effect of applying this system reflects on the profitability of the banks under study.

There is diversification of researchers' visions concerning the concept of financial inclusion, so it is important to point out that there is no universally unified definition of financial inclusion.

(Chen et al. 2018) and (Ozili, 2021b). Ozili, P. K. (2021b) definitions are Consistent with the definition of the World Bank, which focuses on what financial inclusion provides in terms of affordable financial products and services with easy access to all parties to society and companies, regardless of income groups and levels, in a sustainable and long-term manner, in addition to transaction services payments, savings, credit and insurance, with equal access to those services for all.

From the same point of view, the term financial inclusion is defined as "the process of ensuring timely access to financial services and adequate credit where needed by vulnerable groups such as the weaker sections and low-income groups at an affordable cost. (George Varghese, 2018)"

(Ghaith N. Al-Eitan, 2022) considers financial inclusion as "the situation where individuals/firms have easy access to useful, affordable, and suitable financial products and services to satisfy their transactions, demands, savings, credit, insurance, and

financial services types at an equitable price and in a sustainable manner”.

And from different point of view (Mohieldin et al., 2011) indicated that “in order to obtain an effective financial inclusion environment, there are four elements which are the foundations of stable financial institutions that are governed by sound regulatory agencies, and the availability and ease of access to financing for various individuals and companies regardless of income groups, in the long term. The long-term sustainability of the various financial intermediaries, and finally the continuous competition between these financial intermediaries in terms of providing premium financial products that suit (match) the needs of different groups”.

(Ratnawati 2020a, 2020b; Ilahiyah et al. 2021; Na'im et al. 2021), (Bruhn and Love, 2014), Allen et al. (2016) provided a specified definition of financial inclusion from the term itself “inclusion” which define it as a process that ensures that marginalized groups, such as vulnerable segments and low-income groups, have access to appropriate financial products/services – transactions, payments, savings, credit and insurance – at reasonable costs and in a responsible manner and sustainable through the main formal institutional actors to meet their needs and the possibility of increasing their income.

While (Sanderson Abel, 2018) defined financial inclusion in broader terms as” the process of bringing the weaker and vulnerable members of society into the ambit of organized financial system which ensures that they access timely and adequate credit and other financial products at affordable price”.

Agreed with him (Hasmet Sarigul, 2020) where he defined it as "the existence of a financial system that enables weaker and disadvantaged individuals of the society to have access to and be able to use financial products. While financial inclusion is to make financial services accessible and usable by the majority of the society, financial exclusion emphasizes the situation that prevents low income and disadvantaged individuals of society from having access and being able to use these financial services" and (Anupama Sharma, 2013) "the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost".

(Estu, Widarwati, 2019) defined financial inclusion as "community access to financial services which peroxided by deposits, while the financial stability of Sharia banking is measured by Non-Performing Financial (NPF)".

The center for financial inclusion (CFI) defines financial inclusion as "a state in which everyone who can use them has access to a full suite of quality financial services, provided at affordable prices, in a convenient manner, with respect and dignity. And financial services are delivered by a range of providers, in a stable, competitive market to financially capable clients." (CFI, 2013).

Financial inclusion means that individuals regardless of their background or income, have access to affordable financial products and services including banking, credit, insurance, pensions and savings and the use of financial technology. (Probhakar, 2021)

#### **4. Literature Review:**

It has been noticed by the researchers, through dealing with the concepts of financial inclusion, the diversity of these concepts in terms of the different points of view through which the presenter of this concept looked. This is exactly what applies to the researchers' visions of previous studies, which also varied according to their vision of the application of these studies, which can be seen by presenting these studies as follows:

The visions of researchers interested in financial activity on the concept of financial inclusion have diversified and varied, as it is important to point out that there is no universally recognized unified definition of financial inclusion.

Despite the novelty of the topic of financial inclusion, to some extent, which researchers and practitioners began to talk about at the beginning of this century, specifically after the global financial crisis that swept the world by the year 2008.

However, researchers notice the increasing interests of most parties concerned about the topic of financial inclusion, whether researchers, practitioners, financial institutions, or financial regulatory authorities. While the researchers are addressing the previous studies related to the topic of financial inclusion, they found the diversity of approaches of those who had previously researched on this topic, and this is through the impact and linkage of financial inclusion to: bank liquidity, profitability, financial performance, fiscal Stability. (Financial technology and Bank services) As well as the reflections of the previous dimensions on competition between banks.

The two researchers will tackle the most important studies that we were able to access by linking each group of studies that dealt with each of these elements. Researchers notice that there is virtual consensus among researchers concerned about previous studies on the constituent elements of the variables of financial inclusion (independent variable) which can be reduced to:

Distribution of Automated teller machine (ATM)- Distribution of Point of sale (POS)- Online transactions- Number of branches- Number of credit cards- Bank Penetration- Number of uses of financial services- Accessibility to the bank's financial services- Cost of financial services- amount of loans granted to small and medium enterprises.

Whereas the indicators of the dependent variables were compatible with the element that will be measured through the connection with financial inclusion, which is represented in (earning capacity, banks performance, fiscal stability, and competition).

Concerning the connection between the financial inclusion and profitability the (Rami Obeid, 2021) is tackling the impact of financial inclusion on return on assets in 11 Arab countries during the period of 2013-2019 using in this number of economic variables represented in interbank lending rate (ILR) which is expected to have a negative impact on return on assets as a result of the increase in interest rates and thus an increase in the costs of lending from banks and its negative reflection on the profits of these banks, considering the inflation rate (INF) which is expected to have a negative impact on return on assets too. The results of this study showed that there are important and positive effects of

the return on assets because of the expansion of financial inclusion.

Concerning the effect of electronic services as one of the indicators of financial inclusion on the profitability of banks in Nigeria, a study (Itah, A. J., & Ene, E. E., 2014) is using variable rate of return on equity (ROE) for banks in Nigeria, and the result of this study showed that there is a positive relation between the Automated teller machine (ATM) and the Point of sale (POS) on rate of return on equity (ROE), while WBT online transactions were negatively connected with return on equity as a result of higher rates of banking fees on online deposits, this resulted in decreasing customers' usage of WBT for online deposits and what followed this of negative impact on the profitability of Nigerian banks.

The content of study (Almaleeh, N. M. S., 2020) in its studying of the relationship between financial inclusion and profitability ratios in Egyptian banks agreed with this study, by analyzing the relationship between the variables of financial inclusion and the profitability variables represented in the average rate of return on assets, the average rate of return on equity and the net interest margin. By analyzing this correlation, it was found that most financial inclusion indices are highly positively correlated with the profitability indices of Egyptian banks.

The results of study (Al-Eitan, G. N., Al-Own, B., & Bani-Khalid, T., 2022) in analyzing the financial inclusion impact on the performance of the banking sector, measured by the return on assets of 11 Arab countries during the period 2013-2019 agrees with the previous two studies, using a set of variables including

those related to banks like: the size of banks, which is measured by the size of assets and their impact on the banks profitability, cashflow, which is represented by capital adequacy ratio (CER), Credit growth for the banking sector (Credit), and other macroeconomic variables such as the interbank lending rate (ILR), Real gross domestic product growth rate (GR), Inflation rate (INF). The researcher compared these variables with the financial inclusion variables, as the results of the study showed the importance of the response of the return on assets to change in several factors and the impact of this on banks profitability.

On the other side, the study (Ikram, I., & Lohdi, S., 2015) discussed the financial inclusion impact on the banks profitability by focusing on a certain type of disadvantaged people of banking services due to the difficulty of accessing these services and their high cost.

The results of this study showed that there is an illegal relationship between the variables of financial inclusion and banks profitability as a result of: disadvantaged people do not have sufficient capacity to recover the bank loan, lack of suitable product offered by banks to this population, lack of awareness of banking financial services and products.

As for the studies that focused on the relation between financial inclusion and the banks performance, the study (Shihadeh, F., 2021) discussed a study of the relationship between financial inclusion and the financial performance of banks in Palestine through the variables of financial inclusion and its relationship to the variables of financial performance such as the bank's assets and gross domestic product and their impact on the bank's

performance using the data of 15 Palestinian banks to analyze the financial inclusion impact on operating profits, gross revenue, return on the shareholders equity, as the bank's performance indices. The results of the study show that the financial inclusion helps banks improve their performance and increase their revenues, there is also a significant impact on operating profits and gross revenue as indices also for the performance of banks, while the study showed the lack of importance of some financial inclusion variables on the bank performance, such as the banking hack variable (penetration).

This study agrees with another study presented by (Shihadeh, F. H., Hannon, A. M., Guan, J., Ul Haq, I., & Wang, X., 2018) to analyze the relationship between financial inclusion and the banks performance in the Jordanian economy using secondary data for 13 commercial banks from 2009-2014. Using the total income variables and return on assets as results to measure the banks performance, the results of the study showed a significant impact of the financial intermediary on the bank's profitability and performance, and that new services as a variable in banking innovation have a significant impact on the bank's performance. Also, the number of ATMs and services has a significant impact on the total income and return on assets as the bank's performance variables.

The study (Vitenu-Sackey, P. A., & Hongli, J., 2019) which attempted to analyze the relationship between financial inclusion and the banks performance, agrees with this study, using the variables of return on assets and return on equity. The results of this study found a positive relationship between financial inclusion

and the banks performance in countries with low gross domestic product.

In the same way, the study (Hung Pham, 2020) which aimed to clarify the financial inclusion impact on the financial performance of banks in Palestine by analyzing the correlation between the financial inclusion variables and the banks' performance variables represented in the return on assets and the return on equity, agreed with previous studies. In general, the results of the study concluded that the financial performance of banks is positively affected by financial inclusion, as it was found from this study that the return on assets was more affected than the return on equity by financial inclusion indices.

At the same time, the study (Al-Chahadah, A. R., Qasim, A., & El Refae, G. A., 2020) on the financial inclusion indices impact on the financial performance of Jordanian banks listed on the Amman Stock Exchange, its results agreed with the previous studies, as the researcher linked between the financial inclusion variables and the financial performance variables of the Jordanian commercial banks listed in the Amman Financial Market through the rate of return on assets in those banks. One of the most important results of this study was the presence of a statistically significant effect and a direct relation with different degrees between the financial inclusion indices selected in this study and the return of the Jordanian banks listed on the Amman Stock Exchange.

It was agreed with this study (Nguyen, T. D., & Du, Q. L. T., 2022), which dealt with the analysis of the impact of financial inclusion on the stability of banks using variables: Bank size, loan loss provisions, income diversification, capitalization, and quality

of management .The results of this study showed that although many people do not know the impact of financial inclusion on the stability of banks, especially through the greater economic well-being of individuals and SMEs, which are the main governing elements of the ASEAN economy. However, it found in this study by using a sample of 102 banks in 6 ASEAN countries during the period 2008-2019 that banks can obtain higher financing for customer deposits and reduce non-performing loans, thereby maintaining the stability of banks.

The study (Angela Kuznyetsova, Iryna Boiarko, Myroslava Khutorna and Yuliia Zhezherun, 2022) agreed with the previous studies, which focus on the developmental characteristics of financial integration and its relationship to ensuring financial stability, especially in Ukraine. The results of the study confirmed the correlation between financial inclusion and financial stability and the importance of being part of the Sustainable Development Policy of the state to improve the well-being of the population.

Since the analysis of the correlation between the results of financial inclusion indicators and profitability, liquidity, banks ' performance and financial stability extends its impact to the competition between banks. (Ahamed, M. M., 2016) tried to analyze this relationship through the variables of financial inclusion- previously mentioned – Return on assets, Intellectual property, credit risk (non-performing debt), income diversification Index (total non-interest income on total income), as well as capital adequacy ( measured by the ratio of EqA equity capital to total assets), i.e. EqA as one of the important factors affecting the profitability of the bank, as well as liquidity risk (LTA) ,for not falling into problems of inability to fulfill banks ' obligations to creditors, which may eventually lead to bankruptcy (we use the

ratio of total bank loans to total assets LTA), also the use of the operating expenses index to total assets as an alternative to cost efficiency, while the market concentration Herfindahl-Hirschman Index provides a measure of the extent to which the largest banks contribute to Activity in the banking industry, the market share shows the market power of the individual bank.

The results of this study showed a negative relationship between credit risk and profitability of banks, especially foreign ones, in contrast to state-owned or private local banks. There is also strong evidence that debt restructuring improves the banking stability, but this effect decreases with increasing market power of banks, and this confirms the existence of a relationship between financial inclusion indicators and interbank competition indicators.

The previous presentation of previous studies by the two researchers shows a clear correlation between the indicators of financial inclusion (as an independent variable) and the indicators of the constituent elements of the dependent variable, the most important of which is (profitability – performance of banks – financial stability – competition), which confirms through the presentation of these previous studies the existence of a mutual impact between financial inclusion and the profitability of banks.

The researchers will use the multiple variables mentioned in the previous studies, whether related to financial inclusion (independent variable) or profitability (dependent variable), taking into account the different application environment to be a sample of Egyptian banks, in order to identify the extent of agreement or difference between the results of the current study and comparing them with the results of previous studies, the aspects of agreement and differences between them through the analysis of the research gap.

## 2. Description of Data and Sample

The researchers relied on a sample of 10 countries: Egypt, Bolivia, Cameroon, Cambodia, Algeria, Egypt, Germany, Denmark, Spain, France, and Italy.

The sample consisted of two groups:

Table. 1 countries of the Sample

Developed Countries (high-income)	Developing Countries (low-income)
Germany	Egypt
Denmark	Bolivia
Spain	Cameroon
France	Cambodia
Italy	Algeria

Source: Prepared by researchers

The rationale behind this classification the existence of infrastructure of financial inclusion services and culture of banks' clients that differ across countries. The study period extended for 11 years from 2010 to August 2020 based on availability of data.

### 2.1 Dependent variable

The dependent variable is the banks' profitability which is measured by return on assets after tax and return on equity after tax in each country within the sample.

### 2.2 Independent variables:

Based on review of previous studies, found that the most important variables that were repeated are:

**2.2.1 ATMs:** Number of automated teller machine per 100,000 adults

**2.2.2 Branches:** Number of branches per 100,000 adults

**2.2.3 Number of credit cards**

**2.2.4 Number of debit cards**

**2.2.5 WBT (Web Based Transaction):** A transactional interaction between a client, usually web browser.

To illustrate this effect the researchers will test the following hypotheses:

**H1** There is a significant effect of financial inclusion on banks' profitability.

**H1-1** There is a significant effect of financial inclusion on banks' profitability in low-income countries.

**H 1-2** There is a significant effect of financial inclusion on banks' profitability in high-income countries.

To test the effect of financial inclusion on banks' profitability, we develop the following model to illustrate the effect of the financial inclusion variables on the banks' profitability, as shown in figure 1.

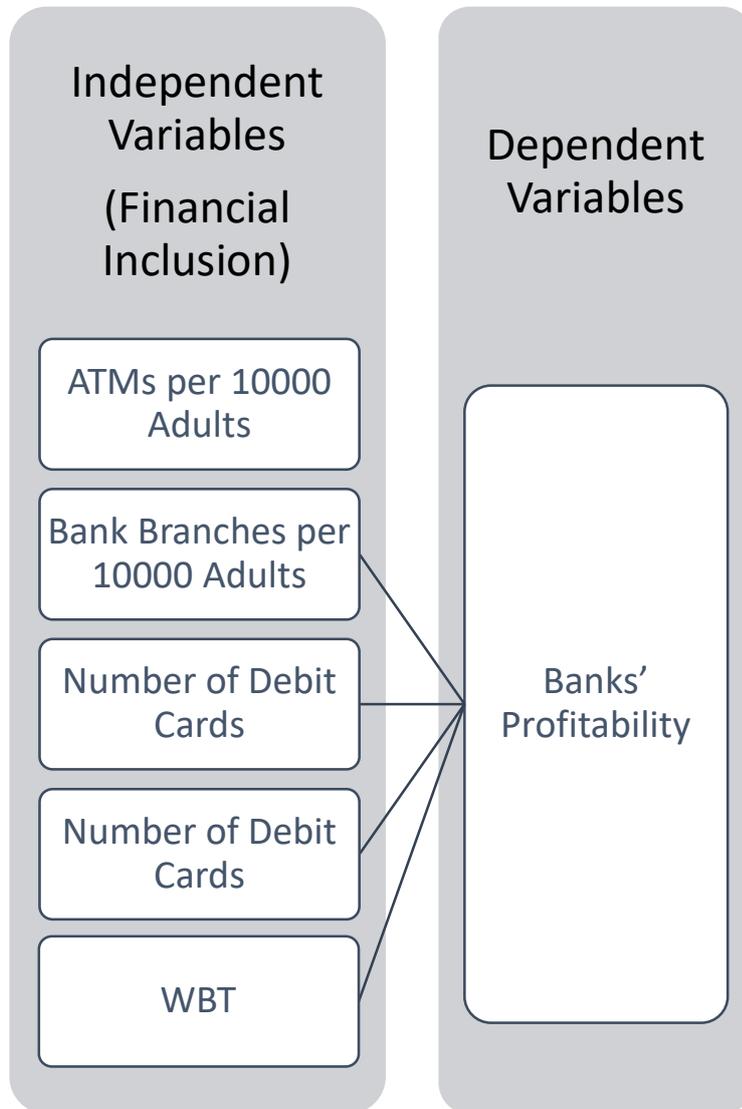


Figure 1: Research Model

**5. Results:****Table 2. Correlation**

<b>Independent variables: Financial Inclusion</b>		
	Bank Return on Assets (%, after tax)	Bank Return on Equity (%, after tax)
ATMs per 100,000 adults	.000 (- .773**)	.000 (- .724**)
Bank branches per 100,000 adults	.000 (- .620**)	.000 (- .566**)
Number of credit cards	.000 (- .558**)	.000 (- .472**)
Number of debit cards	.000 (- .572**)	.000 (- .621**)
WBT	.028 (- .209*)	.518 (- .062)
** Correlation is significant at the 0.01 level		
* Correlation is significant at the 0.05 level		

Source: Prepared by researchers

There's 99% significant negative correlation between ATMs, bank branches, number of credit cards, and debit cards and banks' return on assets, the more ATMs, bank branches, number of credit cards, and debit cards exist the lower the ROA. And there's 95% significant negative correlation in between WBT and banks' return on assets.

Also, there's 99% significant negative correlation between ATMs, bank branches, number of credit cards, and debit cards and bank return on equity, the more ATMs, bank branches, number of credit cards, and debit cards exist the lower the ROA.

Table 3. Correlation

Independent variables: Financial Inclusion				
	Low-income		High-income	
	Bank Return on Assets (%, after tax)	Bank Return on Equity (%, after tax)	Bank Return on Assets (%, after ax)	Bank Return on Equity (%, after tax)
ATMs per 100,000 adults	.154 (- .195)	.527 (- .087)	.030 (- .292*)	.278 (- .149)
Bank branches per 100,000 adults	.009 (- .349**)	.091 (- .230)	.119 (- .213)	.274 (- .150)
Number of credit cards	.070 (.247)	.013 (.332*)	.725 (- .049)	.316 (.138)
Number of debit cards	.410 (- .113)	.001 (.444**)	.019 (- .315*)	.001 (- .431**)
WBT	.222 (.167)	.028 (- .297*)	.334 (.133)	.005 (.371**)
** Correlation is significant at the 0.01 level				
* Correlation is significant at the 0.05 level				

Source: Prepared by researchers

In low-income countries, there's 99% significant negative correlation between bank branches and banks' return on assets. There's no significant negative correlation between ATMs and number of debit cards and banks' return on assets. And there's no significant positive correlation between number of credit cards and WBT and banks' return on assets.

As for the return on equity, there's 99% significant positive correlation between number of debit cards and banks' return on equity. While there's 95% significant positive correlation between number of credit cards and banks' return on equity. And 95% significant negative correlation between WBT and banks' return

on equity. And there's no significant positive correlation between ATMs and bank branches and banks' return on equity.

The more ATMs, bank branches, number of credit cards, and debit cards exist the lower the RoE. Because the infrastructure for this type of services is not fully completed so it is very costly for the banking sector in the low-income countries, and the culture of its use is not widespread yet, so it may be costly high without getting the expected return.

In high-income countries, there is 95% significant negative correlation between ATMs and number of credit cards and banks' return on assets. While there is no significant negative correlation between bank branches and number of credit cards and banks' return on assets. And no significant positive correlation between WBT and banks' return on assets.

As for the return on equity, there is 99% significant negative correlation between number of debit cards and banks' return on equity. And there is 99% positive correlation between WBT and banks' return on equity. While there is no significant negative correlation between ATMs and number of branches and banks' return on equity. And there is no significant positive correlation between number of credit cards and banks' return on equity.

Table 4. Multiple Regression

<b>Multiple Regression for Bank Return on Assets After Tax</b>		
<b>Independent variable: Financial Inclusion</b>		
	Model 1	Model 2
Adjusted R Square	.626	.626
Model significance	<b>.000</b>	<b>.000</b>
ATMs per 100,000 adults	<b>.317</b> <b>(- 1.006)</b>	
Bank branches per 100,000 adults	<b>.010</b> <b>(- 2.609)</b>	<b>.000</b> <b>(-7.150)</b>
Number of credit cards	<b>.028</b> <b>(2.235)</b>	<b>.038</b> <b>(2.098)</b>
Number of debit cards	<b>.002</b> <b>(- 3.118)</b>	<b>.000</b> <b>(-6.987)</b>
WBT	<b>.010</b> <b>(- 2.627)</b>	<b>.000</b> <b>(-3.702)</b>

Source: Prepared by researchers

As shown in table 4, the stepwise regression generates two models that are all significant. Both models have explanatory power with 63%.

Model 1 showed that bank branches, number of credit cards, number of debit cards and WBT have a significant effect on banks' return on assets. ATMs was excluded from model 2. Model 2 shows that there is negative significant effect of bank branches, number of debit cards and WBT on banks' return on assets. This could be due to the infrastructure for this type of services in not fully completed in some countries, which may lead to an increase of its costs' construction for the banking sector, therefore, the researchers had to classify the countries under study into low-

income and high-income countries. Model 2 also confirmed that ATMs has a positive significant effect on banks' return on assets.

Table 5. Multiple Regression

<b>Multiple Regression for Bank Return on Equity After Tax</b>			
Independent variable: Financial Inclusion			
	Model 1	Model 2	Model 3
Adjusted R Square	.573	.574	.572
Model significance	<b>.000</b>	<b>.000</b>	<b>.000</b>
ATMs per 100,000 adults	<b>.156</b> <b>(- 1.429)</b>	<b>.029</b> <b>(-2.217)</b>	<b>.051</b> <b>(-1.971)</b>
Bank branches per 100,000 adults	<b>.111</b> <b>(- 1.608)</b>	<b>.176</b> <b>(-1.362)</b>	<b>.031</b> <b>(-2.180)</b>
Number of credit cards	<b>.131</b> <b>(1.521)</b>	<b>.212</b> <b>(1.255)</b>	
Number of debit cards	<b>.018</b> <b>(- 2.399)</b>	<b>.006</b> <b>(-2.787)</b>	<b>.000</b> <b>(-3.906)</b>
WBT	<b>.384</b> <b>(- .874)</b>		

Source: Prepared by researchers

As shown in table 5, the stepwise regression generates three models that are all significant. The first, second, and third model have explanatory power with 57.3%, 57.4%, and 57.2% consequently.

Model 1 showed number of debit cards has a negative significant effect on banks' return on equity. WBT was excluded from model 2. Model 2 shows that there is negative significant effect of ATMs and number of debit cards on banks' return on

equity. While in model 3 number of credit cards and WBT were excluded. And showed that there is negative significant effect of ATMs, number of branches, and number of debit cards on banks' return on equity. This negative effect may be because of lack of basics for these services, in addition to the culture of using these services is not widespread yet.

Therefore - as has been mentioned before - the researchers had to classify the countries under study into low-income and high-income countries.

**Table 6. Multiple Regression for Bank Return on Assets After Tax in Low-income Countries**

Independent variable: Financial Inclusion

	Model 1	Model 2	Model 3	Model 4
Adjusted R Square	.304	.282	.269	.266
Model significance	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>
ATMs per 100,000 adults	<b>.047</b> <b>(2.042)</b>	<b>.169</b> <b>(1.395)</b>		
Bank branches per 100,000 adults	<b>.038</b> <b>(- 2.135)</b>	<b>.100</b> <b>(-1.677)</b>	<b>.283</b> <b>(-1.086)</b>	
Number of credit cards	<b>.008</b> <b>(2.768)</b>	<b>.029</b> <b>(2.251)</b>	<b>.001</b> <b>(3.635)</b>	<b>.000</b> <b>(4.543)</b>
Number of debit cards	<b>.001</b> <b>(- 3.552)</b>	<b>.003</b> <b>(-3.184)</b>	<b>.001</b> <b>(-3.420)</b>	<b>.000</b> <b>(-4.137)</b>
WBT	<b>.115</b> <b>(- 1.603)</b>			

Source: Prepared by researchers

According to previous recommendations, countries are categorized into low-income and high-income countries. The previous table refers to the low-income countries. As shown in table 6, the stepwise regression generates four models that are all significant. The first, second, third, and fourth model have explanatory power with 30%, 28%, 27% and 27% consequently.

Model 1 showed bank branches and number of debit cards have a negative significant effect on banks' return on assets. While ATMs and number of credit cards have positive significant effect on banks' return on assets. WBT was excluded from model 2. Model 2 shows that there is positive significant effect of number of credit cards on banks' return on assets. And a negative significant effect of number of debit cards on banks' return on assets. While in model 3 number of ATMs and WBT were excluded. And showed that there is positive significant effect of number of credit cards on banks' return on assets. And negative significant effect of number of debit cards on banks' return on assets. In model 4 ATMs, number of branches, and WBT were excluded. And showed that there is positive significant effect of number of credit cards on banks' return on assets. And negative significant effect of number of debit cards on banks' return on assets.

**Table 7. Multiple Regression for Bank Return on Assets  
After Tax  
in High-income Countries**

**Independent variable: Financial Inclusion**

	<b>Model 1</b>	<b>Model 2</b>
Adjusted R Square	.186	.182
Model significance	<b>.009</b>	<b>.007</b>
ATMs per 100,000 adults	<b>.270</b> <b>(1.115)</b>	
Bank branches per 100,000 adults	<b>.009</b> <b>(- 2.736)</b>	<b>.004</b> <b>(-3.031)</b>
Number of credit cards	<b>.135</b> <b>(1.522)</b>	<b>.096</b> <b>1.695</b>
Number of debit cards	<b>.004</b> <b>(- 3.036)</b>	<b>.002</b> <b>(-3.321)</b>
WBT	<b>.032</b> <b>(- 2.211)</b>	<b>.062</b> <b>(-1.907)</b>

Source: Prepared by researchers

The previous table refers to the high-income countries. As shown in table, the stepwise regression generates two models that are all significant. The first and second have explanatory power with 28.6% and 18.2% consequently.

Model 1 showed bank branches, number of debit cards, and WBT have a negative significant effect on banks' return on assets. While ATMs and number of credit cards have no effect on banks' return on assets. ATMs was excluded from model 2. Model 2 shows that there is negative significant effect of bank branches, number of debit cards, and WBT on banks' return on assets. And positive significant effect of number of credit cards on banks' return on assets.

**Table 8. Multiple Regression Multiple Regression for Bank Return on Equity After Tax in Low-income Countries**

Independent variable: Financial Inclusion

	Model 1	Model 2	Model 3
Adjusted R Square	.395	.406	.394
Model significance	<b>.000</b>	<b>.000</b>	<b>.000</b>
ATMs per 100,000 adults	<b>.002</b>	<b>.002</b>	<b>.000</b>
	<b>(3.260)</b>	<b>(3.303)</b>	<b>(5.216)</b>
Bank branches per 100,000 adults	<b>.001</b>	<b>.000</b>	<b>.000</b>
	<b>(- 3.519)</b>	<b>(-3.757)</b>	<b>(-5.485)</b>
Number of credit cards	<b>.810</b>		
	<b>(- .241)</b>		
Number of debit cards	<b>.309</b>	<b>.157</b>	
	<b>(1.028)</b>	<b>(1.436)</b>	
WBT	<b>.001</b>	<b>.000</b>	<b>.000</b>
	<b>(- 3.470)</b>	<b>(-4.077)</b>	<b>(-5.130)</b>

Source: Prepared by researchers

The previous table refers to the low-income countries. This table measures the effect of variables on banks' return on equity. As shown in table 7, the stepwise regression generates three models that are all significant. The first, second, and third model have explanatory power with 40%, 41% and 39% consequently.

Model 1 showed bank branches and WBT have a negative significant effect on banks' return on equity. And ATMs has positive significant effect on banks' return on equity. While number of credit cards and number of debit cards have no effect on banks' return on equity. Number of credit cards was excluded from model 2. Model 2 demonstrated that bank branches and WBT have a negative significant effect on banks' return on equity. And

ATMs has positive significant effect on banks' return on equity. Number of credit cards and number of debit cards were excluded from model 3. Model 3 showed that bank branches and WBT have a negative significant effect on banks' return on equity. And ATMs has positive significant effect on banks' return on equity. The existence of this positive effect between ATMS and banks' return on equity due to market's efficiency, in addition, the infrastructure is already established.

**Table 8. Multiple Regression for Bank Return on Equity  
After Tax  
in High-income Countries**

Independent variable: Financial Inclusion

	Model 1	Model 2	Model 3
Adjusted R Square	.288	.281	.273
Model significance	<b>.001</b>	<b>.000</b>	<b>.000</b>
ATMs per 100,000 adults	<b>.044</b> (2.063)	<b>.029</b> (2.252)	<b>.039</b> (2.118)
Bank branches per 100,000 adults	<b>.003</b> (- 3.176)	<b>.005</b> (-2.935)	<b>.003</b> (-3.088)
Number of credit cards	<b>.225</b> (1.229)		
Number of debit cards	<b>.001</b> (- 3.612)	<b>.001</b> (-3.381)	<b>.000</b> (-4.599)
WBT	<b>.088</b> (- 1.742)	<b>.225</b> (-1.229)	

Source: Prepared by researchers

The previous table refers to the high-income countries. As shown in table 8, the stepwise regression generates three models

that are all significant. The first, second, and third model have explanatory power with 29%, 28% and 27% consequently.

Model 1 showed bank branches and number of debit cards have a negative significant effect on banks' return on equity. And ATMs has positive significant effect on banks' return on equity. While number of credit cards and WBT have no effect on banks' return on equity. Number of credit cards was excluded from model 2. Model 2 demonstrated that bank branches and number of debit cards have a negative significant effect on banks' return on equity. And ATMs has positive significant effect on banks' return on equity. While number of credit cards has no effect on banks' return on equity, so it excluded from model 3. Model 3 showed that bank branches and number of debit cards have a negative significant effect on banks' return on equity. And ATMs has positive significant effect on banks' return on equity. As mentioned before, the reason of positive effect of ATMs on bank's return.

As for establishing new branches the reason may be due to the high cost of establishing these branches.

### **Conclusion:**

At the end of the research, results demonstrate three main findings, The first is that banks' profitability in both developed and developing countries is affected by financial inclusion. The second finding is that ATMs has a positive effect on banks' return on assets and banks' return on equity in both developed and developing countries, we can refer it to the actual existence of this services which does not cost the banks any additional cost. The third result indicates that bank branches have a negative effect on banks' return on assets and banks' return on equity in both developed and developing countries, this may be due to the increasing cost of establishing these branches. There may be more influential variables, but this does not prevent that financial inclusion still has an effect.

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