Determinants and Reflection of Financial Inclusion: An International Evidences

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Abstract: This research investigates the factors and reflections of access to financing. The research uses quantitative and qualitative analysis with international evidence. The quantitative analysis included fifty countries from six continents based on the World Bank database from 2011–2017. However, 392 professionals and academics from 29 countries participated in the qualitative analysis. The finding clarifies a change in the methodology for measuring financial inclusion, which the research can explain as one of the repercussions of the Fourth Industrial Revolution. The quantitative results presented the impact of financial inclusion on GDP per capita growth and domestic credit to the private sector. Furthermore, qualitative results showed that the order of the determinants of financial inclusion are "the demographic determinants," especially with regard to the level of education; then "economic determinants"; and the "banking industry determinants" are the third. As for the four most important reflections of financial inclusion, they are "improved credit risk scoring efficiency", "enhances the relation between income inequity and economic development", "improves GDP per capita" and "supports financial sustainability".

Keywords: Financial inclusion, GDP per Capita Growth, Domestic Credit, Private Sector, Banking technology services.
JEL Classification: G21, O30.

1. INTRODUCTION

Financial inclusion has been developed to be an essential goal, recently, specifically under the wave of digital transformation in the economy and variations in the new tech for financial activities (FinTech) industry. The financial inclusion also was raised as one of the important topics policymakers because it minimizes the elaboration of economic inequality and provides good standards of living for the rising residents in underdeveloped nations like Hayah Kareema, as a social program implemented by the Egyptian government. Financial inclusion indicators have increasingly become more important due to the increase of the digital economy and financial technologies, which state the need for more people to have access to computerized banking facilities. Within the 2030 continual Development aims of the United Nations, financial inclusion is in eight of the 17 goals (United Nations, 2014). The United Nations Development Program (UNDP, 2015), has also declared the demand for a more inclusive financial system as an important element of organizational variation and the establishment of employment opportunities.

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Financial inclusion is defined as "the entry of all members—government, banks, private and social sector—of the economy to different helpful and economical financial products and services which satisfy their needs, such as settlements, transfers, savings, insurance, and credit" (World Bank, 2016). According to a report from UN, financial inclusion is the continual supplying of economical financial services that brings the low income level individuals into the authorized economy (United Nations, 2016). Such access will lead to an easier daily life, which in turn achieves better planning of long-term objectives.

The rates of participation in financial inclusion vary among countries, between developed and emergent nations. In the United States, for example, 94% of people have a bank account, in Canada, it was 98%, while in the Middle East, in North Africa, only 47% of the population has bank accounts. (World Bank, 2017). Financial inclusion generates economic benefits. It can give an opportunity for poor people to increase their income and grant people a chance to put money in their education, financial projects, and become business founder. It eases well organized allocation of high yielding resources, which will decrease the cost of capital and decrease the growth of casual sources of credit, which will enhance the economic prosperity of poor groups such as rural females who will be able to purchase sewing machines and create small businesses to build resilience against economic shocks. As a result, many countries, like the United States and France, legislated laws in the late nineties to provide

rights for all people, regardless of their level, to have access to formal bank accounts and services.

This research seeks to cover all dimensions of financial inclusion, including its determinants, barriers, and effects. Financial inclusion is considered a key element in the reduction of poverty and inequality by generating opportunities not only within the financial system but also in other markets. So, financial inclusion influences and motivates economic growth.

2. LITERATURE REVIEW

There are interactive relations between financial inclusion and economic performance. So, the classifies these relations into five dimensions in the previous studies as follows:

2.1. Studies Focusing on the Social Issues and Country's Regulations which are Considered as Determinants for Financial Inclusion

Fadi Hassan (2014) stated that women have less opportunities of being financially included as they have lower chance to bank accounts, this decreases the opportunity to deposit or borrow from formal financial companies. Furthermore, a high level of education has affected financial inclusion positively, and medical needs are important reasons for borrowing for all lowest income, particularly the poorest and poorest in MENAP. Swamy (2014) found a positive relation between financial inclusion and the income of low income females households, as noticed by the fact that increase of income (CAGR) without the effect of inflation was of the order of 8.40% as against 3.97 for poor men households. As Akudugu (2016), 40% of the residents is covered by the formal financial market, and Age, literacy, income level, distance, insufficiency of documentation insufficiency of trust in formal financial institutions, and low income levels are all elements that influence financial inclusion in Ghana.

Park Mercado (2015) found that countries with large populations have high levels of financial inclusion and vis versa also fine regime and high conventional quality enhance financial inclusion. Increasing financial inclusion will decrease poverty and the level of income inequality. Ghosh & Vinod (2017) concluded that females heading households have more access to informal finance compared to males householders and less entrance to formal finance than male-headed households. The discrimination against females affects their financial inclusion, there are many economical, social, and political challenges that stay in front of the financial inclusion of females. Alexandra & Laurent (2016) found that the motives behind savings do not differ from the motives behind borrowing, but motives of loan taking are affected, but characteristics like age or education finally financial inclusion is a successful instrument for improving economic growth. Antonia et al (2018) found that minimizing financial literacy will have positive impact on financial inclusion. Through examining data of 143 countries, it was obvious that at the beginning of financial development literacy may lead to raising financial intensity while at later levels of financial progress it plays an essential role to totally utilize available infrastructure. Abeer & Noura (2020) concluded that plans recommending financial inclusion should target all groups, males, females, and the young populations are the main obstacles facing financial inclusion in Egypt are insufficiency of money. But deficiency of corroboration and illiteracy are only boundaries to the most high income individuals when it comes to being financially included also financial inclusion level in Egypt is low compared with the rest of the world and that improving financial inclusion is considered as a step toward reducing poverty level and in turn enhancing economic growth. Yan Shen, Wenxiu Hu, C. James Hueng (2021) concluded that social trust can act as a tool for enhancing economic growth through spreading of financial inclusion and also mention some of the reasons behind the lack of financial inclusion. Similarly, social distrust can act as one of the barriers preventing the expansion in financial inclusion. Rong Chen Raian Divanbeigi (2019) concluded that individual in countries with high number of regulatory practices will have higher possibility to have accounts in financial corporations. When the country has great improvement in its regulatory framework, so it will jump in the regulatory index from the first to the 4th quartile which will increase the probability that individuals will have accounts in financial institutions.

2.2. Studies Focused on the Relation Between Financial Inclusion and Financial Stability

Aduda & Kalunda (2012) concluded that products that identify financial inclusion must be provided. Access and usage must be included in financial inclusion measures since access and usage are not the same but supplementary. Peterson K. Ozili (2017) found that cybernated finance affects financial inclusion in advancing the economy. It facilitates the of different income to financial services, but at a lower cost than that submitted to them by official banks. This will improve financial inclusion and in turn financial stability. Ebenezer, Bugri Anarfo, and Joshua Yindenaba Abor (2020) found that tight financial regulations have negative effect on financial incluson. The requirements of capital adequacy affect negatively the ability of banks to submit financial services, but financial stability can oppose this negative effect. There is a positive relationship between competition in the financial sector and financial inclusion. Rajesh Barik, and Ashis Kumar Pradhan (2021) concluded a positive link between financial inclusion and financial stability through the control variable GDP and a negative effect through inflation.

López and Winkler (2019) concluded that the countries with more inclusive banking systems have less severe loan crunches during times of financial turmoil. Although, larger borrower growth rates in the years leading up to a catastrophe have little impact on the severity of the recession.

2.3. The Relation Between Financial Inclusion and Economic Growth

Sanjaya Kumar Lenka (2016) found that there is a significant effect for financial inclusion on the control of money supply, as there is a negative link between inflation and financial inclusion, it will lead to a constant price level in the economy, In spite of the fact that financial inclusion improves GDP in all cases, its Effect on inequity differs. Era Dabla-Norris (2015), The effect on the Gini coefficient can be positive or negative for a decrease in the credit involvement costs, based on the country-specific features. For example,

Uganda's GDP reacts more if the raise in credit to investment ratio occurred because of decreased involvement costs. Though, Egypt's GDP reacts more to relieving the borrowing boundaries; while other nations are more reactive to lower cost of financial intervention mediation. David et al (2018) found a great positive relation between financial inclusion elements and GDP per capita income, liquidity crisis, credit to the private sector and the number of cybercitizen as an increased amount of money in circulation will properly enhance financial inclusion in the country. In addition, the internet has basically concise the cost of transactions, through the utilization of mobile and the ATM. It has raised the magnitude of credit delivery faraway in the country.

Suhaibu et al. (2017) found that in the long run, the research showed a two way relation between tools of control on money supply and stock market breakdowns in Africa. While the stock market reacts positively to an interest rate shock, the interest rate reacts negatively to stock market breakdown. Badar Alam Iqbal Shaista Sami (2017) found that GDP of the country is positively affected by the number of bank branches and credit deposit ratio of banks which are an indicator of financial inclusion. As another measure of financial inclusion, ATMs growth rate has not shown a significant effect on Indian GDP. It means that financial inclusion is greatly accompanied by the growth and expansion of the economy. Dai-Won Kim, Jung-Suk Yu, and M. Kabir Hassan (2018) found that the economic growth in OIC countries is positively affected by financial inclusion. Gamze Oz-Yalaman (2019) concluded that financial inclusion as it is a means of reducing poverty and enhancing welfare is considered also one of the reasons behind increasing tax revenues. Yan Shen, WenxiuHu, C. JamesHueng (2021) found that automated financial inclusion has a great positive relation with economic Growth at the1%level. The improvement of automated financial inclusion in a country can upgrade its economic development. Digital financial inclusion has an overflow effect on nearest nations. Dharmendra Singh and Nikola Stakic (2021) concluded that in the long run there was a small positive impact of financial inclusion on GDP per capita and a significant 1% the increase in banking financing and activities will lead to increased economic expansion because banks are the major financial intermediaries between savers and companies or small and medium enterprises. In 2019 Vo, Duc (2019), and Nizam et al., (2020) found that there is a limitlessness effect on the relation between financial inclusiveness and economic development. Such effect is strong for countries with low growth rate more than countries with high growth rate.

2.4. Studies Focused on the Relation Between Financial Inclusion and Financial Performance

Kumar (2013) showed a positive relationship between credit and deposit penetration. It showed a positive impact of high life standard on the level of utilization of financial services which means that level of economic condition is an essential element of financial inclusion efforts. Chakravarty & Pal (2013) implemented a measure for financial inclusion which is calculating the percentage of subscriptions of different various aspects to the whole procurement in terms of financial inclusion; this measure will facilitate collecting information about the degree of financial inclusion of households. It was found that level of economic development social banking policy was effective this will positively affect financial inclusion. Zuzana Fungáčová and Laurent Weill (2015) found that financial inclusion if determined through the percentage of people who have formal accounts and formal savings is well developed in china while formal credit is not well developed. There is a direct relation between gender, age, level of education , and having formal credit and formal account which can affect economic growth and financial stability. Bampinas & Panagiotidis (2016) concluded that there is a substantial decrease in the number of companies that hedge inflation. While the companies' ability of average inflation hedging decreased regularly over the past ten years. Lisa Chauvet and Luc Jacolin (2017) found that corporate growth is positively affected by financial inclusion and this is under the condition of increasing bank concentration. Benefits expected from developing banking systems in developing countries may be reduced inadequate financial inclusion and lack of information and transparency. Ann & Javier (2018) found that countries are characterized by great financial inclusion when regulations permit banks to captivate in the greater scope of activities. When markets are disputable large banks are compatible with financial inclusion. Thai-Ha Le, Anh Tu Chuc, Farhad Taghizadeh-Hesary (2019) found that financial inclusion has a positive effect on financial efficacy while it has a negative effect on financial sustainability as financial inclusion and finical stability strengthen each other. But, financial inclusion may affect information and transaction costs.

2.5. The Relation Between Financial Inclusion and Artificial Intelligence

Sanjaya Kumar Lenka, Rajesh Barik (2018) found that growth in mobile phones and internet services will positively affect financial inclusion... While the level of nonemployment and the magnitude of the ruler population has negative effect on financial inclusion. The income level and education are positively affected by financial inclusion. Rizwan Mushtaq, and Catherine Bruneau (2019) used financial inclusion as a channel to assess how poverty is affected by information communication technology. He found that there is a negative relation between the microfinance intensity, information and communication indicators, poverty, and the poverty gap. Improving the information communication technology infrastructure will positively affect financial inclusion which in turn will improve mobile banking. María Óskarsdóttir, Cristián Bravo (2019), Carlos Sarraute, Jan Vanthienen, Bart Baesens (2019) found that the speed and the strength of financial inclusion are greatly affected by the big data through the data available on mobile phones as the attitude of people in using phones is considered as an important source of data to determine whether they should be granted a loan or not. So, the research proposed that the data has to be used positively, to make financial inclusion easier for people who don't have enough information about correct profiling. Giorgio, Nuzzo Stefano, and Piermattei revealed to the diffusion of electronic cards, is one of the elements that affect the degree of financial inclusion because it facilitates financial practices for customers and reduces the cost of economic transactions. Peterson K. Ozili (2021) concluded that artificial intelligence and big data develop the efficacy and

risk management process of financial services providers. It leads to an easier providing of smart financial products and services to banked adults and make the procedure of opening bank account much easier for adults.

2.6. Dimensions of Financial Inclusion

The research will provide an overview of determinants, obstacles, and the effect of financial inclusion on the performance of companies as a step toward economic growth.

2.6.1. Education Level

The education level of people is an essential factor that determines the extent to which a person is included in the official financial system. The low degree of financial education leads to a absence of knowledge about saving and credit alternatives, also little or no information concerning the financial market. Secondary education increases the consciousness between the new generation about the different uses and gains of mobile banking .As well as education allows users to realize fundamental financial concepts such as deposit accounts, credit accounts, different insurance strategies, pension products, credit facilities, profitable investment opportunities. These days, it is unfeasible to understand the modern and complicated financial system without considering principles of economics and finance (Sukumaran, 2015). Education has a great positive effect on increasing awareness about the advantages of financial inclusion in society and motivates them to avoid the informal source of financial services and saves them from discriminatory financial applications.

2.6.2. The Level of Economic Development Level

It includes several aspects the most important indicators for economic development are unemployment level, economic status of a household, and per capita GDP. Employment is important to factor affecting financial inclusion. It increases employment (formal or informal) in parallel to the increase in income which will lead to engagement in the official monetary system. Formal employment consequentially joins the employees with the official financial system through payroll activities and other advantages scattered through banks. In other words, it enhanced employment and motivates individuals to be more functional, aware, and concerned to be financially included. The economic status of the household is considered an important determinant of financial inclusion. There is a direct relation between the economic status of the household and the degree of financial inclusion and households' characteristics also affect the process of financial inclusion because a household with larger dependent members to total family members is financially excluded than less number of dependent members. GDP Per capita is an essential component that determines identify the level of financial inclusion (Sarma & Pais, 2011). People with high income are expected to be encompassed in the official financial system more than low-income people. saving and credit are highly affected by the increase in income. It is the vital component affecting the penetration of banking services (RBI2015). The relationship between financial inclusion and economic development can also be regarded from the point of view of financial institution responsibilities which permit reducing the complication of information disproportion, thus easing operations and enhancing economic growth.

2.6.3. Financial Literacy, Social Trust and Demographic Factors

Insufficient awareness of financial services and insufficient primary education and financial literacy are the main barrier that stands in front of accessing different financial services for individuals. As people don't understand or even know the importance of various financial products such as bank accounts, cheque facility, loan or insolvency and insurance. If Social trust increase the involvement in economic activities it reduces financing cost and expected returns and willingness to usage of official financial services which incorporate more savings and account transactions, taking money from formal financial intermediaries and the familiarization of automated finance. Demographic factors most of commercial banks work only in financial areas and these banks set their subsidiaries in productive areas. So, people in rural areas face difficulty to entre the financial services. Also, females are prohibited from entering financial services because of the absence of official identities such as original birth document and identification cards.

2.6.4. Digital Finance and Big Data

Digital finance means making financial services available digitally to facilitate poor people and non-served to use formal financial services instead of cash transactions even if fundamental financial activities including payments for electricity, water supply, and money transfer to relatives and friends, so should be affordable to customers to raise the degree of financial inclusion. To get the maximum benefits of digital financial inclusion the price of acquiring a digital transaction by low income people should be minor, which implies to mobile phones, desktop computers, and internet access.

2.6.5. Insufficient Awareness

It includes the lack of awareness by Governments about needed financial services which satisfy people's needs which in turn will affect the willingness of customers to be financially included through formal channels. People's awareness about the available financial services submitted by financial companies and the branches places of banks and also the expected benefits of being financial including Absence of documentation and absence of trust in financial institutions. And absence of formal health and insurance services in developing countries, there is only 17% of adults personally paid for health insurance. Proposing financial services to rural clients is one of the major obstacles facing the financial inclusion agenda because of the great distances that rural habitants must travel to reach a bank branch and also the low-income high percentage of rural residents suffering. Finally, poor infrastructure and telecommunications facilities. Artificial aid to prevent fraud by strengthening client verification with numerous layers of domination

2.6.6. Tight Regulations

The role played by financial regulations in preventing corruption and maintaining market integrity and reducing nega-

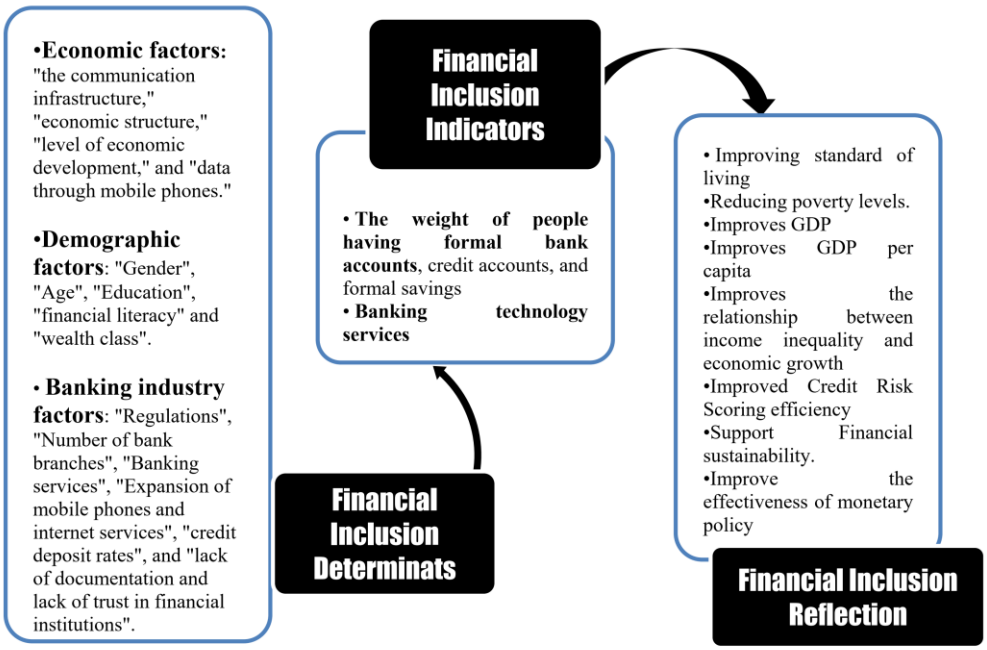

Fig. (1). Research outline.

tive externalities, may be an obstacle hindering the capability of financial companies in granting financial services. There are several examples such as (1) Adequacy capital requirements may force some banks to terminate their operation or merge with other banks which may lead to reducing the attainability of funds to commercial banks for supplying loans which will obstruct financial inclusion. (2) Low credit capacity caused by monetary regulations can force money lenders to go after profit by granting credit to only successful credit candidates at high-interest rates that consequently will lead to low financial inclusion.

2.7. Financial Inclusion Reflection

Financial inclusion has several effects from social, financial and economic point of view

2.7.1. Socially

a. It allows low-income people to save for the future which will lead to a high level of use of bank deposits which provides a more balanced deposit support for banks during distressing times. It also, allows poor households to create investments and obtain credit, also enables them to face income crisis and distress such as sickness or dismissal.

b. It provides opportunities for small and medium enterprises to have funds and be involved in the business field this will be considered a stepping stone in economic development. This will help in reducing poverty and inequality between different social levels, also raising the standard of living

2.7.2. Economically

a. Improves the involvement by various parts of the economy in the official monetary system because, as the portion of the formal monetary sector upraised, it enhances the usage of interest rate as a fundamental strategy instrument for macroeconomic stability, which has positive impacts on economic development.

b. It Increases the tax revenue gained by the government.

c. It has a great impact on the monetary policy the link between financial inclusion and inflation, which was used for amplifying the efficacy of the monetary policy, is greatly negative, which leads to the stability of the price level.

d. It may have a positive effect on economic development through making finance accessible and inexpensive for all economic aspects. Financial inclusion may decrease loan standards as financial companies are trying to outreach the low income levels by reducing loan conditions

. Financial inclusion may move the financial circumstances and income level of the poor and decrease income disparity (Beck et al, 2007). According to (Brune et al., 2015), saving permits families to upgrade their capability to dampen financial stress, ease utilization, assemble assets, and invest in health and education. Entrance to financial services has the possibility to eliminate low income people from the cycle of poverty via a society of saving and generating well organized and low-cost payment tools (Dixit & Ghosh, 2013).

2.7.3. Financially

Several financial aspects affect economic growth like (i) the availability of information about possible investments, (ii) the managing and diversification, of risks, (iv) the flow and pooling of savings, and (v) the trading of goods and services.

The link connecting financial inclusion and economic development could be seen from the context of the functions of financial intermediaries that ease reducing the trouble of information imbalance, so will promote economic growth (Vo, Duc 2019). So, It could be distinguished that discover-

ing a direction between financial inclusion and economic development is exciting because they can reciprocally affect each other. Financial inclusion would have positive impact on economic development to better reach financial services for companies that may be financially constrained, improving them to be profitable, which in turn will result in economic development

There is a causal link between the country's "GDP per capita" and the "financial inclusion". Financial inclusion is the procedure of assuring access to suitable financial products and services Required by all society members generally and especially unprotected groups, at an inexpensive cost impartially and clearly by primary organiztional players" (Chakrabarty, 2012).. On other side; according to Hendieh and Ashta (2022) that despite the increasing financial inclusion, poverty has increased since the COVID-19 pandemic, indicating that financial inclusion does not offer resilience to the poor.

2.8. Research Outline

The following figure summarize the factors affecting financial inclusion; its measurements and the expected reflection of improving financial inclusion.

The research relies on the application of distinct methods for the aim of in-depth analysis of the phenomenon of financial inclusion, including the use of qualitative analysis in addition to quantitative analysis in the investigation of the determinants, its measurement, and reflection of financial inclusion.

3. DATA ANALYSIS AND HYPOTHESES TESTING

3.1. Research Design

The research employed both quantitative and qualitative methodologies to examine the factors affecting financial inclusion and the barriers it faces, as well as their influence on the economy.

3.1.1. Quantitative Methodologies

The research uses quantitative methodologies for influence of financial inclusion on the economy according to time series analysis based on panel data analysis. according to World Bank Database. The test included fifty countries. The independent variables are "account ownership at a financial institution or with a mobile-money-service provider", "automated teller machines (ATMs)", and "bank branches". but dependent variables are "GDP per capita growth" and "domestic credit to private sector (% of GDP)". that under "annual population growth rate" as control variable.

3.1.2. Qualitative Methodologies

The research uses qualitative methodologies for determinants and obstacles of financial inclusion based on survey of the opinions of bankers through an electronic questionnaire on social networking sites through a paid advertisement to attract Professional bankers and academics. the questionnaire includes three dimensions: determinants; indicators and reflection of financial inclusion.

3.2. Quantitative Analysis

3.2.1. Methodology and Data Collection

The research investigated financial inclusion for 2011, 2014, and 2017; according to World Bank Database. The research included fifty countries (table No. 1).

Table 1. Quantitative Research Sample.

Algeria	Croatia	Indonesia	Malaysia	South Africa
Argentina	Cyprus	Ireland	Mexico	Spain
Australia	Denmark	Israel	New Zealand	Sudan
Bahrain	Egypt	Italy	Nigeria	Sweden
Belgium	Ethiopia	Japan	Pakistan	Switzerland
Brazil	Finland	Jordan	Portugal	Turkey
Cameroon	France	Kenya	Qatar	U.A.E
Canada	Germany	Korea, Rep.	Russian	United Kingdom
China	Greece	Kuwait	Saudi Arabia	United States
Colombia	India	Lebanon	Singapore	Venezuela

3.2.2. Quantitative analysis variables

Table (2) lists the research's independent, dependent, and control variables:

Table 2. Quantitative Analysis Variables.

Variables	Symbol	Measurement
Independent Variables	X1	Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+
	X2	Account ownership at a financial institution or with a mobile-money-service provider, older adults (% of population ages 25+
	X3	Account ownership at a financial institution or with a mobile-money-service provider, primary education or less (% of population ages 15+)
	X4	Account ownership at a financial institution or with a mobile-money-service provider, young adults (% of population ages 15-24)
	X5	Automated teller machines (ATMs) (per 100,000 adults)
	X6	Commercial bank branches (per 100,000 adults)
Control Variable	C	Annual population growth rate (annual %)
Dependent Variables	Y1	GDP per capita growth (annual %)
	Y2	Domestic credit to private sector (% of GDP)

3.2.2. Correlation Matrix

The correlation coefficients between the research variables range from -15.87& as a minimum to 99.5% as a maximum.

Table 3. Correlation Matrix Between Quantitative Analysis Variables.

Correlation coefficients, using the observations 1:1 - 50:3 **(missing values were skipped)** **5% critical value (two-tailed) = 0.1603 for n = 150**									
X1	**X2**	**X3**	**X4**	**X5**	**X6**	**C**	**Y1**	**Y2**	
1.0000	0.9958	0.9539	0.9496	0.5996	0.5063	-0.4460	-0.0752	0.6933	X1
	1.0000	0.9497	0.9221	0.5993	0.5105	-0.4343	-0.0965	0.6826	X2
		1.0000	0.9130	0.5590	0.4701	-0.4465	-0.0403	0.6445	X3
			1.0000	0.5495	0.3982	-0.3925	0.0092	0.6911	X4
				1.0000	0.4970	-0.4268	-0.0634	0.4442	X5
					1.0000	-0.4314	0.2414	0.5600	X6
						1.0000	0.1099	0.3605	C
							1.0000	-0.1587	Y1
								1.0000	Y2

Source: Gnu Regression, Econometrics and Time-series Library.

3.2.3. Examining the Impact of Financial Inclusion on GDP per Capita Growth According to Quantitative Variables

Following the technique used by panel data analysis based on weights based on per-unit error variances, the investigation yielded the following results.

According to the Table (**4**), the research found an insignificant effect of some financial inclusion variables on GDP per capita growth. So, the examination will be re-examined without these variables.

Table 4. First round of the Effect of Financial Inclusion on GDP per Capita Growth.

Model 1: WLS, using 133 observations **Included 47 cross-sectional units** **Dependent variable: Y1** **Weights based on per-unit error variances**					
	Coefficient	***Std. Error***	***t-ratio***	***p-value***	
Const.	3.33362	0.626397	5.322	<0.0001	***
X1	−7.62248e-05	0.138202	−0.0005515	0.9996	
X2	−0.00159485	0.117446	−0.01358	0.9892	
X3	−0.0115202	0.0160903	−0.7160	0.4753	
X4	0.0194139	0.0324943	0.5975	0.5513	
X5	0.000638880	0.00115489	0.5532	0.5811	
X6	0.0605416	0.00923469	6.556	<0.0001	***
C	0.450038	0.146359	3.075	0.0026	***

Statistics based on the weighted data:			
Sum squared resid	121.5690	S.E. of regression	0.986181
R-squared	0.504991	Adjusted R-squared	0.477271
F(7, 125)	18.21727	P-value(F)	1.54e-16
Log-likelihood	−182.7427	Akaike criterion	381.4854
Schwarz criterion	404.6081	Hannan-Quinn	390.8816

Statistics based on the original data:			
Mean dependent var	1.755000	S.D. dependent var	2.821521
Sum squared resid	916.3408	S.E. of regression	2.707531

Source: Gnu Regression, Econometrics and Time-series Library.

Table 5. Second Round of Examining the Impact of Financial Inclusion on GDP per Capita Growth.

Model 2: WLS, using 141 observations **Included 49 cross-sectional units** **Dependent variable: Y1** **Weights based on per-unit error variances**					
	Coefficient	***Std. Error***	***t-ratio***	***p-value***	
Const.	3.92328	0.189129	20.74	<0.0001	***
X6	0.0655260	0.00462261	14.18	<0.0001	***
C	0.554952	0.0835660	6.641	<0.0001	***

Statistics based on the weighted data:			
Sum squared resid	140.7814	S.E. of regression	1.010027
R-squared	0.600738	Adjusted R-squared	0.594952
F(2, 138)	103.8188	P-value(F)	3.07e-28
Log-likelihood	−199.9610	Akaike criterion	405.9219
Schwarz criterion	414.7682	Hannan-Quinn	409.5167
Statistics based on the original data:			
Mean dependent var	1.736319	S.D. dependent var	2.840261
Sum squared resid	999.3501	S.E. of regression	2.691035

Source: Gnu Regression, Econometrics and Time-series Library.

Through table (**5**), the research found, according to weights based on per-unit error variances test based on Commercial bank branches (per 100,000 adults), there was a significant effect of financial inclusion on GDP per capita growth (annual %) under Annual population growth rate (annual %) as Control Variable; These variables explain 59.49% of change at GDP per capita growth (annual %).

3.2.4. Examining the Effect of Financial Inclusion on Domestic Credit to Private Sector (% of GDP) According to Quantitative Variables

Following the technique used by panel data analysis based on weights and per-unit error variances, the investigation yielded the following results.

Table 6. First Round of the Effect of Financial Inclusion on Domestic Credit to Private Sector (% of GDP).

Model 3: WLS, using 125 observations **Included 46 cross-sectional units** **Dependent variable: Y2** **Weights based on per-unit error variances**					
	Coefficient	***Std. Error***	***t-ratio***	***p-value***	
Const.	1.78119	5.76760	0.3088	0.7580	
X1	−3.09912	1.77799	−1.743	0.0840	*
X2	2.28777	1.36763	1.673	0.0970	*
X3	0.229504	0.191222	1.200	0.2325	
X4	1.65082	0.434819	3.797	0.0002	***
X5	−0.0645343	0.0395610	−1.631	0.1055	
X6	1.13214	0.186421	6.073	<0.0001	***
C	−1.47636	1.78273	−0.8281	0.4093	

Statistics based on the weighted data:			
Sum squared resid	120.4626	S.E. of regression	1.014690
R-squared	0.920964	Adjusted R-squared	0.916236
F(7, 117)	194.7631	P-value(F)	2.31e-61
Log-likelihood	−175.0564	Akaike criterion	366.1128
Schwarz criterion	388.7393	Hannan-Quinn	375.3048
Statistics based on the original data:			
Mean dependent var	82.96369	S.D. dependent var	52.83709
Sum squared resid	151060.7	S.E. of regression	35.93211

Source: Gnu Regression, Econometrics and Time-series Library.

According to table (**6**), the research found an insignificant effect of some financial inclusion variables on domestic credit to the private sector. So, the examination will be re-examined without these variables.

Table 7. Second Round of the Effect of Financial Inclusion on Domestic Credit to Private Sector (% of GDP).

Model 4: WLS, using 128 observations **Included 47 cross-sectional units** **Dependent variable: Y2** **Weights based on per-unit error variances**					
	Coefficient	***Std. Error***	***t-ratio***	***p-value***	
Const.	−3.15896	3.40287	−0.9283	0.3551	
X1	−2.16723	1.75208	−1.237	0.2185	
X2	1.66595	1.36609	1.219	0.2250	
X4	1.56988	0.423263	3.709	0.0003	***
X6	1.04081	0.163730	6.357	<0.0001	***
Statistics based on the weighted data:					
Sum squared resid	121.5365	S.E. of regression	0.994033		
R-squared	0.908208	Adjusted R-squared	0.905223		
F(4, 123)	304.2469	P-value(F)	9.27e-63		
Log-likelihood	−178.3080	Akaike criterion	366.6159		
Schwarz criterion	380.8761	Hannan-Quinn	372.4099		
Statistics based on the original data:					
Mean dependent var	85.31809	S.D. dependent var	54.40149		
Sum squared resid	164247.9	S.E. of regression	36.54243		

Source: Gnu Regression, Econometrics and Time-series Library.

According to table (**7**), the research found an insignificant effect of other financial inclusion variables on domestic credit to private sector. So, the examination will be re-examined without these variables.

Table 8. Third Round of the Effect of Financial Inclusion on Domestic Credit to Private Sector (% of GDP).

Model 5: WLS, using 128 observations **Included 47 cross-sectional units** **Dependent variable: Y2** **Weights based on per-unit error variances**					
	Coefficient	***Std. Error***	***t-ratio***	***p-value***	
Const.	−1.26417	2.09841	−0.6024	0.5480	
X4	1.06707	0.0450920	23.66	<0.0001	***
X6	0.944502	0.135936	6.948	<0.0001	***
Statistics based on the weighted data:					
Sum squared resid	122.6187	S.E. of regression	0.990429		
R-squared	0.913236	Adjusted R-squared	0.911848		
F(2, 125)	657.8479	P-value(F)	4.43e-67		
Log-likelihood	−178.8753	Akaike criterion	363.7505		
Schwarz criterion	372.3066	Hannan-Quinn	367.2269		
Statistics based on the original data:					
Mean dependent var	85.31809	S.D. dependent var	54.40149		
Sum squared resid	165494.5	S.E. of regression	36.38621		

Source: Gnu Regression, Econometrics and Time-series Library.

Through table (**8**), the research found weights based on per-unit error variances test based on Account ownership at a financial institution or with a mobile-money-service provider, young adults (% of population ages 15-24), and Commercial bank branches (per 100,000 adults) there was a significant effect of financial inclusion on domestic credit to the private sector; These variables explain 91.18% of change at domestic credit to the private sector (% of GDP).

3.3. Qualitative Analysis

3.2.1. Methodology and Data Collection

The research investigated the determinants and obstacles of financial inclusion on the basis of a survey of the opinions of bankers in many countries of the world through an electronic questionnaire on social networking sites through a paid advertisement to attract Professional bankers and academics, the data was collected during the period from November 2021 to April 2022, where 410 responses were obtained through a random sample. according to Dillman et al (2014) the sample size calculation and previous surveys assessing the factors and obstacles facing financial inclusion In the case of a 5% sampling error, a sample size of 384 questionnaires is required. 392 questionnaires were finally responded to from Professional and academics from Twenty-nine countries. The test questionnaire was verified by a panel of analysis experts and afterward tested for reliability using the test-retest approach. This measured 0.89 for three dimensions within 26 statements.

3.2.2. Qualitative Analysis Variables

The following table lists the research's variables for qualitative analysis; the questionnaire includes three dimensions: determinants; indicators and reflection of financial inclusion

Table 9. Qualitative Analysis Variables.

The dimension	**symbol**	**Variables**
Determinates of financial inclusion	D11	Economic factors: "the communication infrastructure," "economic structure," "level of economic development," and "data through mobile phones."
	D12	Demographic factors: "Gender", "Age", "Education", "financial literacy" and "wealth class".
	D13	Banking industry factors: "Regulations", "Number of bank branches", "Banking

		services", "Expansion of mobile phones and internet services", "credit deposit rates", and "lack of documentation and lack of trust in financial institutions".
Financial inclusion indicators	D21	The number of people having formal bank accounts
	D22	The size of credit accounts
	D23	Size of formal savings
	D24	banking technology services
Reflection of financial inclusion	D31	Improving standard of living
	D32	Reducing poverty levels.
	D33	Improves GDP
	D34	Improves GDP per capita
	D35	Improves the relationship between income inequality and economic growth
	D36	Improved Credit Risk Scoring efficiency
	D36	Financial sustainability.
	D37	Improve the effectiveness of monetary policy

3.3.3. Examining the Determinants of Financial Inclusion

Based on an indicator for each group of financial inclusion determinants, the outputs of the inferential analysis appear in Table (**10**).

Table 10. The test of Financial Inclusion Determinates.

Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary	
Total N	392
Test Statistic	784.000
Degree Of Freedom	2
Asymptotic Sig.(2-sided test)	.000

Source: Statistical Package for the Social Sciences.

From table (**10**), the research found a significant difference in the importance of the determinants of financial inclusion at the level of 1%, as it turns out that the most determinants of financial inclusion are the demographic determinants, especially with regard to the level of education. Then Economic determinants, and finally the banking industry is the third one. Our results are consistent with what was indicated Lotto (2022).

3.3.4. Examining the Financial inclusion indicators

Based on the four indicators of financial inclusion, the outputs of the inferential analysis appear in Table (**11**).

Through table (**11**), the research found a significant difference in the importance of the indicators of financial inclusion at the level of 1%, as it turns out that the most indicators of financial inclusion are "the banking technology services that based on the number of units of automated teller machines (ATM's), points of sale (POS), payment cards (debit and credit), the number of E-Wallets, in addition to fintech services.", then The number of people having formal bank accounts, The size of credit accounts and Size of formal savings.

Table 11. The Test of Financial Inclusion Indicators.

Related-Samples Wilcoxon Signed Rank Test Summary	
Total N	392
Test Statistic	.000
Standard Error	1945.251
Standardized Test Statistic	-19.799
Asymptotic Sig.(2-sided test)	.000

Source: Statistical Package for the Social Sciences.

3.3.5. Examining the Financial Inclusion Reflection

Based on the seven reflections of financial inclusion, the outputs of the inferential analysis appear in Table (12).

Table 12. The Test of Financial Inclusion Reflection.

ANOVA					
D3					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	2890.678	6	481.780	825.803	.000
Within Groups	1596.786	2737	.583		
Total	4487.464	2743			

Source: Statistical Package for the Social Sciences.

Through table (**12**), the research found a significant difference in the importance of the reflection of financial inclusion at the level of 1%, as it turns out that the most reflection of financial inclusion is "Improved Credit Risk Scoring efficiency", then "Improves the relationship between income inequality and economic growth", "Improves GDP per capita" and "support Financial sustainability".

4. DISCUSSING THE RESULTS, CONCLUSION AND RECOMMENDATIONS

The research found great interest, both on the part of academics and professionals, as well as local and international regulators, in financial inclusion (like World Bank Group; G20; Financial Services Board - FSB; Women's World Banking, African Development Bank..Etc.). today; Financial inclusion is a policy priority for development (Balliester Reis, 2022). Literature Review illustrates how financial inclusion impacts microeconomics such as the impact on the firm performance through borrowing, sale, and investment based on digital financial channels (Luo et al., 2021). In addition, the positive impacts of financial inclusion on Macroeconomics such as the impact on economic growth (Emara and El Said, 2021), financial sustainability (Le et al., 2019),

and Low levels of poverty, especially among women (Swamy, 2104).

However, many countries have not reached the targeted levels of financial inclusion, which is measured under the third industrial revolution on the basis of the number of formal accounts in banks, but according to our survey; the financial inclusion measured under the 4th industrial revolution, banking technology has become one of the most important measures of financial inclusion by relying that based on The number of units of automated teller machines (ATM's), points of sale (POS), payment cards (debit and credit), the number of E-Wallets, with the spread of FinTech services. This result agreed with Ozili (2018) about the several benefits of financial inclusion and Digital finance for both Individuals, firms; financial institutions, and government, or financial inclusion and Digital finance have several benefits to the economy as all. Addition to agreed with Jungo et al. (2022) about Sub-Saharan African Countries

Additionally, the research concluded many determinants of financial inclusion, especially in developing countries versus Western countries and Japan, but all determinants can be divided into three main groups: Economic factors ("the communication infrastructure", "economic structure," "level of economic development," and "data through mobile phones.") Demographic factors ("Gender", "Age", "Education", "financial literacy" and "wealth class". The banking industry factors ("Regulations", "Number of bank branches", "Banking services", "Expansion of mobile phones and internet services", "credit deposit rates", and "absence of documentation and absence of trust in financial companies"). According to our survey; the most determinants of financial inclusion are the demographic determinants, especially with regard to the level of education. Then economic determinants, and finally the banking industry is the third one. Our results are consistent with what was indicated Ofosu - Mensah Ababio et al, (2021) that human development is a stimulus for the expansion of financial inclusion. On the other hand, entrepreneurship is achieved by creating new benefits for stakeholders (Wagdi and Hasaneen, 2019). Banking technology services are an effective mechanism to achieve financial inclusion and bank entrepreneurship due to the benefits they provide to stakeholder groups.

The research found a significant difference in the importance of the indicators of financial inclusion at the level of 1%, as it turns out that the most indicators of financial inclusion are the banking technology services as the main indicator, then the number of people having formal bank accounts, the size of credit accounts and size of formal savings as a supportive indicator. Such a result indicates a change in the methodology for measuring financial inclusion, which is something that the research can explain as one of the repercussions of the 4th industrial revolution.

On other hand; the repercussions of financial inclusion from the viewpoint of bankers is one of the most important to the least: "Improved Credit Risk Scoring efficiency", "Enhances the relation between income disparity and economic development", "Improves GDP per capita", "Support Financial sustainability.", "Improving the standard of living", "reducing poverty levels.", "Improves GDP", and "Enhance the efficacy of monetary strategy" according to qualitative analysis. Such results could be explained by the high information efficiency based on financial inclusion, which works to attract the family sector and the business sector to the formal economy, thus maximizing the effectiveness of both credit information systems and financial forecasting systems.

Based on quantitative analysis, the research found a significant impact of financial inclusion on GDP per capita growth explaining 59.49% of the change in GDP per capita growth (annual %); that is This result is in agreement with Emara and El Said (2021) that investigates at MENA countries; an addition to the significant effect of financial inclusion on national credit to the private sector within explaining 91.18% of change at domestic credit to the private sector (% of GDP) that agree with Ozili (2018)

That imply to financial inclusion is more tied to poverty, which may prompt policymakers to take a different strategy to promote the incorporation of the low income level individuals into the formal financial system, In addition to, There are substantial welfare benefits associated with increasing financial participation. that agree with Balliester Reis (2022) and Sakyi - Nyarko et al., (2022).

Finally, The research recommends that financial inclusion should be included as one of the dimensions of sustainable development plans in developing countries because of its great repercussions on individuals, firms, financial institutions, and the overall economy, in addition to the need for regulators to focus on banking technology services as the basis of financial inclusion in the 4th industrial revolution. Thus, the research anticipates an important role for big data as one of the methods of artificial intelligence with financial inclusion during the 4th industrial revolution. So, such a topic is important for future studies, both professional and academic, to support financial stability.

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