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FINANCIAL INCLUSION AN ENABLER FOR GROWTH IN DIGITAL INDIA: ANEMPIRICAL APPROACH

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Abstract

Purpose: An inclusive financial system is essential for absolute growth of a nation. The purpose of the study is firstly to examine the key trends in growth of Mobile banking in India for the last decade (2010-2020). Secondly to determine the key enablers for Financial inclusion in digital India and to analyse the relation between Financial inclusion index and Average rate of growth of real GDP in India

Design/Methodology: The study is based on complete secondary data and it has been collected from official government databases such as RBI, NPCI, World Bank, Global Findex Databases, PMJDY, NSFI etc. The research methodology is descriptive research design. The collected data are analysed using statistical tools such as Graphs, Tables, Correlation and Ordinary Least square inEviews 12.

Findings: The study provides insight on the trend of Digital financial inclusion policies in India. India has received greater advantages from the Jan Dhan and Mobile Banking policies throughout the past few years. The study concludes thatin order to create a sustainable environment for the end users there is a need to encourage the regulators, the telecom service provider and the financial institutions.

Practical Implication: Financial inclusion and mobile Banking in any growing economy synchronizes with each other. This paper studies the coordination between the two although both are expanding in India. There is a need of customer centric approach as far as technological growth is concerned. The findings of the study may further help to nourish the ongoing procedure and policies of the two schemes and may upgrade the standard of Digital India.

Originality/Value: Financial inclusion has been more widely acknowledged as a key contributor towards socio-economic development and Digitalization has become significant for Indian Banking sector. The revolutionary combination of the two major initiatives leads to greater social cohesion and shared economic growth. The paper has also focusedon retail payment systems of USSD portal based M-Banking which is led by the National Payment Corporation of India.

Keywords: Mobile Banking, Financial Inclusion,System theory, vulnerable theory, DigitalIndia

Introduction

According to a Report by C.Rangarajan(2008) defines Financial Inclusion as "the societal process that ensures timely and adequate access to the financial needs by the marginalized groups which includes the poor segment of the society and the low income groups and also facilitating and fulfilling credit needs ofthem at an economical cost. Financial inclusion, as per the Reserve Bank of India, is a process of ensuring that all sections of society, which include vulnerable communities such as underprivileged and low-income groups, have access to the necessary financial products and services at a reasonable cost, in a fair and transparent manner, from players ofgoverned financial institutions. (Dangi & Kumar, 2013)

From many past decades the main vision of the Indian government has been to ensure sustainable futurealong with inclusive economic growth. (Ponnuraj & Nagabhushanam, 2015). Financial inclusion is majorly interested with the vital financial needs of the vulnerable segment which includes basic banking services such as opening of the saving accounts, easy credit terms, insurance, equity and facilities for pensioners etc.

In India, financial inclusion started with the nationalization of State Bank of India in 1955. In order to give it a boast on August 28 2014, Pradhan Mantri Jan Dhan Yojana (PMJDY) was launched by the Modi government (Dutta Tulika, 2017). According to a report published by NSFI (2019-2024), within a duration of five-year period, 34.01 crore accounts were opened under PMJDY, with total deposits of Rupees 89257 crore. The Guinness Book of World Records has recognized the achievement of opening the most accounts under PMJDY in a single week.

(GOI, 2019).The government has not only simplified the procedure of opening bank accounts under financial inclusion outreach programmes but even has done it very quickly which clearly shows the latent demand of the same. (Arun.T, 2015) Digital and technological changes have provided newer ways to deliver financial services and in the coming years it will be extended it to the vulnerable, lower income groups and the unbanked population of India. Its impact on the economy is substantial especially on household and vulnerability as it links the micro level with macro level goals such as economic growth, economic development and dominantly fall in inequality. (Demirguc Kunt, 2017)In developed countries increased access of digital products such as credit cards, debit cards have reduced the risk of financial sector but in developing countries in India, Digital banking along with formal account ownership reduces the risk of liquidation(Ozili P. K., 2021)

According to Ministry of Finance March 2020, "the total number of beneficiaries of the PMJDY has been more than 380 million. It has also assisted the government for the implementation of various plans and policies for reaching out to the people.(Draboo, 2020)The blend of digital banking and financial inclusion yields several benefits to the account holders or service users, service providers, to the economy as a whole. There are three main elements of digital service: a quality digital transactional platform, efficient agents and knowledgeable customers to do mobile banking via digital platform. (Ozili P. K., Impact of digital finance on financial inclusion and stability, 2018)According to the study usage and adoption of mobile money substantially affects financial inclusion. The rural areas can be benefitted from mobile money technology without visiting bank branches (Okello Candiya Bongomin G. J., 2020) India is a bank-based economy here the financial system is dominated by banking sector. To attain sustainable inclusive growth policymakers should consider both financial inclusion and financial knowledgein the society (Sharma, 2016)financial inclusion is a greatest approach towards inclusive growth and inclusive growth is a part of overall economic development which must reach the vulnerable groupspecifically the women, children, minority segment, the weaker and poor sections of the society (Lal, 2019)

The Reserve Bank's FI Index is weighted at 35 percent, 45 percent and 20 percent respectively, on three dimensions of financial inclusion: 'Access,' 'Usage,' and 'Quality.' The weights were

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adjusted to make the index more forward-looking, with a stronger focus on the deepening of financial inclusion.

The '**Access**' sub-index is further divided into four different dimensions: Banking, Digital, Pension, and Insurance. These dimensions reflect the flexible supple side of financial inclusion, such as the availability of physical and digital infrastructure and measures to make basic products and services accessible to exempted segments.

Under the '**Usage**' sub index, savings and investments, Credit, Digital, Insurance, and Pension are separated into five dimensions. These are identified asa demand-side indicator comprised of 52 variables which assesses the level of active financial infrastructure usage.

Under the "**Quality**" sub-index, there are 19 variables comprising three dimensions: Financial Literacy, Consumer Protection, and Inequality.

The latest report of the Reserve Bank of India has shown the following beneficiaries coming under the Pradhan Mantri Jan Dhan Yojana in Public Sector banks, Private Sector banks and Regional Rural Banks for the year 2021.

Table IBeneficiaries Under PMJDY as on December 2021

Bank Name/Type	Number of Beneficiaries at rural/semiurban centre bank branches	Number of Beneficiaries at urban metro centre bank branches	No. of rural-urban Female Beneficiaries	Number of Total Beneficiaries	Deposits in Accounts(In Crore)	Number of Rupay Debit Cards issues to beneficiaries
Public Sector Banks	21.80	13.10	19.25	34.90	117677.85	26.75
Regional Rural Banks	7.04	1.01	4.65	8.05	28705.01	3.42
Private Sector Banks	0.70	0.58	0.70	1.28	4556.51	1.10

Grand Total	**29.54**	**14.69**	**24.61**	**44.23**	**150939.36**	**31.28**

Source: RBI Annual Report 2021

Table II Status of Online Banking in India as on December 2021

% of Household in each Income group	Income Groups			Total
	Bottom 40%	Middle 40%	Top 20%	
Have smart phones	57%	72%	90%	68%
Do Digital Payments	24%	34%	49%	32%
Have mobile app for Banking	14%	37%	59%	31%
Use phone for Banking related matters	5%	17%	30%	14%

Source: NPCI Price Report 2021

According to Table 2, online banking is not well developed as compared to online payments but in the upcoming years online banking has its wide scope. Currently usage of mobile phones for banking is low and there is a gap of 36 % between smart phone ownership and digital payment users. Financial literacy and awareness towards digitalization represents immediate opportunity.

Literature Review

In any economy sustained development and growth along with overall economic development could be feasible when the digital payments and digital transactions embrace both at urban as well as rural areas, there are significant developments taking place such as improved transparency, corporate governance and restriction on cash based economy. The Government has launched many UPI (united payment interface) real time payment systems for instant inter-bank transactions and mobile payment apps such as BHIM for effortlessdigital transition.(Ali, Akhtar, & Safiuddin, 2017)

Financial inclusion primarily provides banking services to the unbanked and underbanked segment of the economy. Underbanked in this context refers to either infrequent usage bank account or restricted access to modern financial services. Unbanked refers to the lack of a traditional bank account, hence the unbanked population relies on restricted or transitory finance for credit, savings, and other payment-related services. (Gupta, Manrai, & Goel, 2017)

Financial inclusion encourages the regulation ofvarious financial institutions and telecom service providers in order to involve the ultimate users to create a reliable and viable environment for digital banking. Consequently, the study advocates the perspectives of end users and policies of financial inclusion with respect to mobile banking services. This fact starts together with the improvement in mobile related technology whichimplies that if the goal of financial inclusion is to become a phenomenon its association with the technology is very crucial(Mishra & Bisht, 2013). The major focus of India as a developing nation is to intensify the role of financial Inclusiveness. The increasing usage of smart mobile phone and its various practicesto conduct online transactions brings the entire population to avail the basic financial services. This study has contemplated model of IVR (interactive voice response) which is based on cloud based mobile branchless banking (Ghosh & De, 2014). For better advancement of mobile banking services in rural India many digital applications have been introduced under Digital India Programmesuch as the National Payment corporation of India developed Unified Payments interface (UPI) for real time interbank transactions and BHIM (Bharat Interface for Money) mobile applications similarly other retail epayment systems are Bharat Bill Payment System (BPSS), mobile money, mobile wallets and so on. Other enlargementsofthe banking sector in the form of digital wallet services in IndiaincludesPaytm, Mobikwik, free Charge apps and many other latest payment modes have helped to the smooth flow with respect to digital payments (L., 2019). Microfinance banks have significant role in developing countries especially for the lower income groups. In addition, financial literacy has positive effects of financial inclusion (Okello

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Candiya Bongomin G. M., 2020). Financial inclusionsights onthe well-being of the people as well as also has noticeable and profitableforesight. The basic focus of financial inclusion is to facilitate atleast the fundamental financial services to impoverished segment of the country in a sincere, translucent and reasonable manner to unlock its probable growth. Itis a benevolent activity as well as a governing compulsion also it is an undetermined opportunity which involves a sizeablesegment of the population. (Bansal, 2014). The use of branchless banking may allowcustomers to withdraw as well as deposit funds and also make electronic payments from different channels. Unlike the rich,usage of mobile banking is more likely to perform for the upliftment of the poor counterparts. It is win-win situation for both financial service providers as well as for the customers (Singh, Venkataramani, & Ambarkhane, 2014). The study shows positive effects of financial inclusion on economic growth. Also after applying Granger causality test the results shows that financial inclusion and economic growth have mutual causality which means one helps to determine other and vice versa. (Kim, 2018)Financial inclusion along with digital expansion is essential for number of reasons. First it helps to achieve long term macro-economic development and long-term economic growth. Secondly, it has important association with monetary and financial stability under central banking. Thirdly it helps to smoothen the consumption patterns for households digitally that make stability in their savings and borrowings. (Aaron Mehrotra, 2015) A well-developed financial sector is the one which connects people with recent digital banking facilities. This not only provide various investment options but also makes access to credit easier and motivates people to save for higher earnings in the future this in turn leads to sustainable banking to people beIt from lower income group or middle-income group (Singh K. , 2021). Social inclusion is achieved through digital financial inclusion such as use of digital applications, individual bank applications etc. this has also been promoted by multinational institutions (Ozili P. K., Social inclusion and financial inclusion: international evidence, 2020)

Objective of the study

Following are the major objectives of the study

- To examine key trends in growth of Mobile banking for the last decade in India

- To determine the key enablers for Financial inclusion in digital India
- To analyse the relation between Access and Usage index of financial Inclusion and Average rate of growth of real GDP in India

Theoretical framework of Financial inclusion in India

Financial inclusion outcomes are achieved through the existing system and as a resultit will have immense benefits for the entire systems. The study shows that the two sectors financial inclusion and Banking are interdependent on each other. Increase in the usage of mobile banking leads to increase in the volume of financial inclusion. Similarly increase in financial inclusion leads to more usage of m-banking. The government is making many efforts to achieve the goals of financial inclusion in order to provide numerous benefits to its citizens. There are various success stories of financial inclusion around the world and India has witnessed one of them. The PMJDY scheme proved a huge success in itsinitial years and provided many benefits of its citizens. On the other side activities and programs related to the policy of financial inclusion should target the marginalizedpeople of society such as poor people, females, and elderly people (Ozili, 2020). In India, PMJDY is a National Mission on Financial Inclusion that employs an integrated strategy to ensure the financial inclusion of all Indian households. The plan envisions ubiquitous access to banking facilities with a minimum of one basic bank account per family, financial knowledge, access to banking, insurance and pension facilities particularly for the disadvantaged and low-income groups. Easy access to income and other financial services in production as well as consumption purposes help the poor people to come out of poverty. This helps to upliftthe standard of living and eventually leads to overall development. Under the objectives of inclusive finance, females have been given various benefits and this has led to growth with equity. There are schemes for Females under inclusive growth, reports show that compared to households headed by men, those headed by women are 8 percent less likely to obtain formal financing and 6 percent more likely to access informal financing. In India, households headed by women utilize 20% less cash than those headed by men. The schemes under PMJDY have not even given political but social and economic empowerment to women (Ghosh & De, 2014)

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Research Methodology

The research design of the study is descriptive and is based on secondary data. The data for further analyses has been collected from the official government databases such as RBI, National Payment Corporation of India, World Bank, Global Findex Databases, PMJDY, NSFI etc. The collected data has been analysed by using statistical tools such as graphs, tables, bivariate Correlation and Ordinary Least Square Linear using Eviews 12.

There is no base year for the FI Index. A normalized parameter's lowest value is 0 and its highest value is 100. By dividing them by the corresponding goal, all indicators (Yi) are normalized (Ni), making them unit free and bringing them on the same scale. In n-dimensional space, financial inclusion is calculated by averaging the normalized Euclide a distance of weighted normalized indicators (w1N1, w2N2,…..wkNk) from their worst points (0,0….0) and the inverse of distance from their best points (w1.w2……wn).The FI sub indices are derived based on their respective dimensions and FI Index is produced basedonthree sub indices using the same approach.Let Yi be the ith indicator, with i=1,2,...k, wi being the related weight, and ti being the desired aim or target specified for the ith indicator. Let Ni denote the normalised value of the ith indications that correlate to Yi.

$$N_i = \text{Normalised value } (Y_1) = \frac{Y_i - \text{State when no financial services were available}}{\text{Desired goal } (t_i)}$$

$$N_i = \frac{Y_i - 0}{t_i} = \frac{Y_i}{t_i}$$

Let $d_i = w_i * N_i \,;\, d_I^2 = d_i * d_i \,;$

Let $D^2 = d_1^2 + d_2^2 + \ldots\ldots d_k^2 = \sum_i^k = 1 d_i^2 \,;$

Let $W^2 = w_1^2 + w_2^2 + \ldots\ldots w_k^2 = \sum_i^k = 1 w_i^2 \,;$

$(W - D)^2 = \sum (w_i - d_i)^2$

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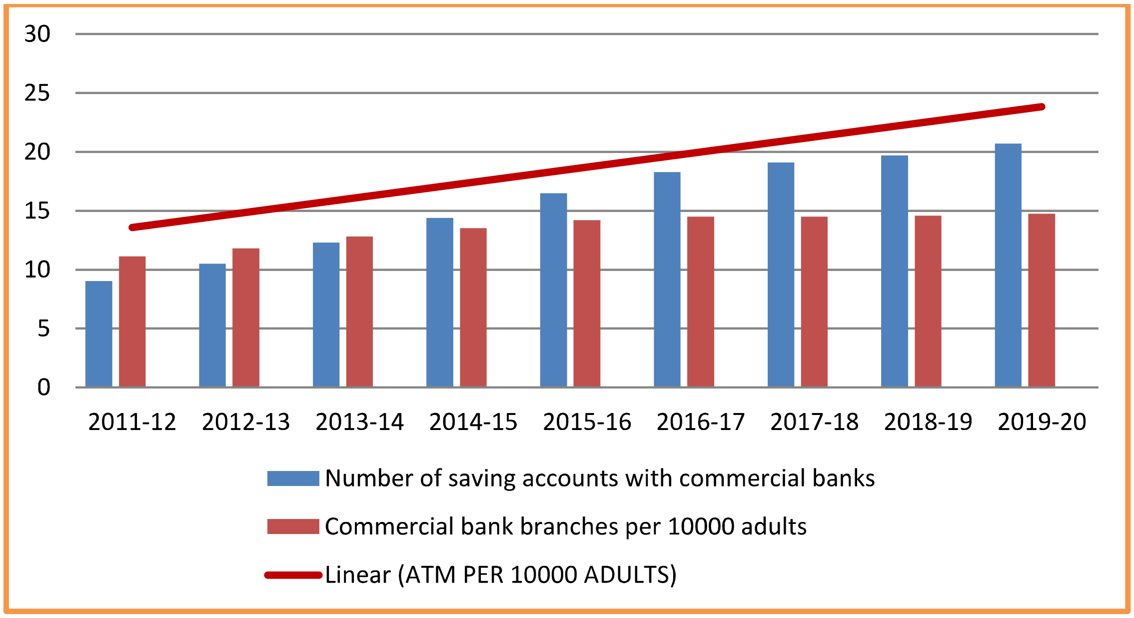
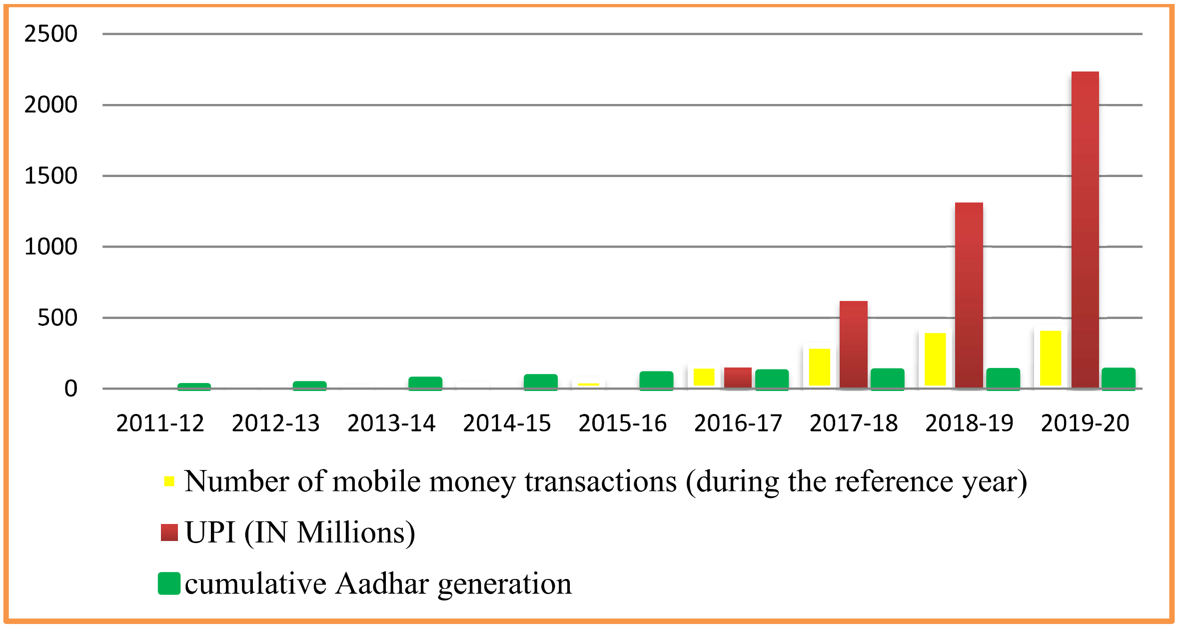
FI Index of a dimension = $\underline{X1 + X2\ /\ 2}$

Figure 1 Key indicators of Access dimension under Financial Inclusion Index



Source: Author's Calculation using data from IMF

Figure 2 Key enablers of Financial Inclusion in India



Source: Authors' calculation using data from RBI

Figure 1 shows that Number of saving accounts with commercial banks have increased in the past years particularly after 2013 there is a steep rise which is attributable to Pradhan Mantri Jan Dhan Yojana. However, the number of Commercial bank branches per 100,000 adults is showing a constant pace. The number of ATMs per 100,000 adults is increasing which reveals that access to banking is increasing more than branch penetration, since ATMs are more accessible(Suman Dahiya, 2020) and also fulfils the basic requirements of the customer such as money withdrawal, money deposits and fund transfer.

Figure 2 shows the three key enablers of digital financial inclusion, the number of mobile money transactions have increased significantly after the year 2015 when the central government launched the Digital India Mission this shows clear proliferation and adoption of mobile phones or smart phones in India. On the other hand, the number of UPI transactions have increased which shows that people are adopting world class payment system through PPI (Prepaid Payment Instruments) along with this the number of Aadhar enrollment has also increased which has turned to be the Digital Identity in India.

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Table 3 Descriptive Statistics of different indicators of financial inclusion and GDP Per capita from the year 2005 to 2020

	A_C_FI	GDP	LOG_ATMS	LOG_ATM...	LOG_CB_...	MB	OTSD_DEPO
Mean	1.357904	3.235203	1.733102	1.251721	1.124605	2.809669	1.796839
Median	1.394790	3.222163	1.840726	1.307204	1.141759	2.790257	1.796611
Maximum	1.602060	3.322375	1.867315	1.342364	1.163752	3.886491	1.811475
Minimum	1.113943	3.159532	1.071775	1.039415	1.046929	1.732394	1.782053
Std. Dev.	0.191873	0.064567	0.270601	0.115306	0.044952	0.810795	0.009582
Skewness	-0.128355	0.143780	-2.160578	-1.036825	-0.733871	0.079309	-0.113583
Kurtosis	1.419215	1.463276	5.857022	2.432982	2.028987	1.609707	2.155211
Jarque-Bera	0.854927	0.814738	8.944988	1.540511	1.032378	0.652692	0.255091
Probability	0.652161	0.665399	0.011419	0.462895	0.596791	0.721556	0.880253
Sum	10.86323	25.88163	13.86481	10.01377	8.996843	22.47735	14.37471
Sum Sq. Dev.	0.257708	0.029183	0.512575	0.093068	0.014145	4.601723	0.000643

Descriptive statistics of all the indicators is presented in Table 3. Access means the access of financial services which is a conjoint index of ATMs per 100,000 adults, Number of Commercial bank branches and Number of ATMs per 1,000 Sq Km. The mean values are 1.733, 1.124 and 1.251 respectively which shows increased access to financial services in India. This growth can be noticed after the year 2015 when substantial efforts and initiatives were taken by the government. Next dimension is Usage of financial services which include Number of Accounts

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under PMJDY scheme, Cashless and Mobile based transactions and Outstanding deposits with Commercial bank (% of GDP) the mean values are 1.357, 2.809 and 1.796 respectively. The study measures the impact of the various dimensions under financial inclusion index with GDP per Capita. It is a global benchmarkto measure a country's prosperity and it is used along with GDP divided by the total population of a nation. A country's prosperity measures its economic growth. The mean of GDP Per Capita is 3.235 which represents that it is increasing at a significant pace in India. The average values shows that people are utilising banking services as well as its accessibility is also fairly good.Increased financial outreach brings in a substantial rise in per capita growth. Banking penetration, availability of banking services, and deposit utilisation all contribute to an increase economic growth.(Suman Dahiya, 2020).

Table 4Correlation between different indicators of Usage and Access dimension of financial inclusion with GDP Per capita

		GDP	LOG_ATMS	LOG_ATM	LOG_CB	OTSD_DE	MB
FI Accounts	1.000000 -----						
GDP	**0.993558** 23.19576	1.000000 -----					

Per 10000 ATMS	0.997253 35.62425	0.997456 37.01842	**0.984705** 14.95331	1.000000 -----			
Commercial Banks	0.995230 26.99191	0.999759 120.5243	0.987688 16.70425	**0.998758** 53.04084	1.000000 -----		
Otsd Deposits	0.991333 19.96511	0.999807 134.6557	0.989371 18.00102	0.996413 31.15191	**0.999320** 71.71802	1.000000 -----	
M Banking	0.990439 18.99573	0.970035 10.56313	0.939514 7.257339	0.980808 13.30934	0.973777 11.32455	**0.965335** 9.785008	1.000000 -----

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The correlation matrix is shown in Table 4 it shows the linear association between two variables. The Pearson's correlation coefficient was computed to assess the relationship between various dimension of the two indicators with GDP Per Capita. The correlation coefficient value between three dimensions of Usage indicator and GDP per capita is 0.986 and the correlation coefficient value between three dimensions of Access indicator and GDP Per Capita is 0.99 therefore the variables are highly correlated with each other and each dimension of Usage as well as Access indicator are highly correlated with GDP Per Capita.

Table 5 Ordinary Least Square Regression Analysis

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.543657	6.808674	0.520462	0.6945
A C FI	0.025662	0.396226	0.064766	0.9588
LOG ATMS	-0.024452	0.126031	-0.194016	0.8780
LOG ATMS 100 000 ADULTS	-0.016600	1.364207	-0.012168	0.9923
LOG CB BRANCHES	0.395966	4.566770	0.086706	0.9449
MB	0.049816	0.114733	0.434192	0.7392
OTSD DEPO	-0.481632	3.512035	-0.137138	0.9132

R-squared	0.960233	Mean dependent var	3.235203
Adjusted R-squared	0.721630	S.D. dependent var	0.064567
S.E. of regression	0.034066	Akaike info criterion	-4.250462
Sum squared resid	0.001161	Schwarz criterion	-4.180951
Log likelihood	24.00185	Hannan-Quinn criter.	-4.719288
F-statistic	4.024396	Durbin-Watson stat	2.919576
Prob(F-statistic)	0.364112		

The Regression results are shown in Table 5 using Ordinary Least Square where GDP is considered as an endogenous variable and other various dimensions of financial inclusion are considered as exploratory variables. The regression results reveal a model fit with a significant F value. The value of R^2 is 96% and adjusted R^2 value is 72%. The difference between R square

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and adjusted R square values portrays a good model fit. There is significant impact of the few dimensions on GDP Per Capita especially jam Dhan Accounts, Commercial Bank Branches and more importantly Mobile based transactions or Cashless transactions have significant role to play in overall growth and digitalization.

Discussion and Conclusion

Digital Banking is tremendously growing in India since the government is taking many initiatives to facilitate new technology among both urban as well as rural segment of the economy. It is essential to bring a systematic and structured digital network infrastructure in order to have a vigorous and efficient comprehensive approach to inclusive financial. Along with this, expansion of the digital banking and financial infrastructure to co-operative banks and other specialised banks such as small financing house as well as other non-banking entities will be far efficient and transparent in the services offered to end users (NSFI). In India, the rural banking customers still face challenges to grasp recent developed digital payments. (Malik, 2019)At the same time, the Reserve Bank of India is consistently making huge efforts to develop their banking network by setting up of new high-tech branches, installation of latest ATMs, implementation of EBT and usage of information and communication technology (ICT) for increasing the awareness level of customers both at rural and urban India towards electronic banking and Mobile banking in India. In order to enhance the financial literacy of the customers various training and awareness programs are conducted. The study provides insight on the trend of Digital financial inclusion policies in India. India has substantially gained from the two policies they are mobile banking and Jan Dhan yojana over last many years, although still with the growing competitive environment suitable measures are needed to extend the digital inclusiveness. The major proportion of financial index comprises of Usage and Access index that is 45% and 35% respectively. It means that if more efforts and initiatives are taken then India will definitely notice a major incline in the overall growth rate. Here policy makers and banks may frame pertinent policies and schemes to achieve complete financial inclusion in urban and rural India which would ensure a significant growth of an economy.

It concludes that both banking and financial inclusion are two indispensible pillars for the growing economy. There is higher correlation between the two it clearly means there is

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requirement of more such plans by the government so that it reaches out to larger segment of the society as still 16% of the Indian population is not able to fetch the benefits of various financial plans and services. Thus, financial inclusion has shown pragmatic and profitable changes because of change in technological advancement. Still India is facing various challenges such as security risk, financial illiteracy, lack of training etc(Forbes, 2017). In order to achieve inclusive financial growth RBI, Government and implementing agencies have to work together, along with this proper regulation and easy access to financial products and services must be made through SHGs and MFIs(Neha Dangi, 2013). Therefore, requisite steps should be inherent to ensure that digital banking or mobile banking along with inclusive finance is availed by the entire Indian customer base in the current digital scenario.

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