AN EMPERICAL STUDY ON THE DYNAMICS BETWEEN FINANCIAL INCLUSION, DIGITALIZATION, ECONOMIC GROWTH AND ENVIRONMENTAL SUSTAINABILITY OF INDIAN STATES.

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DECLARATION BY STUDENT

I hereby declare that the data presented in this Dissertation / Internship report entitled, "An Empirical Analysis on the dynamics between digitalization, financial inclusion, economic growth and environmental sustainability of Indian S tates" is based on the results of investigations carried out by me in the (MBA in financial services) at the Goa Business School, Goa University under the Mentorship of Dr. Prachi Kolamker and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will be not be responsible for the correctness of observations / experimental or other findings given the dissertation.

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COMPLETION CERTIFICATE

This is to certify that the dissertation / internship report "An Empirical Analysis on the dynamics between digitalization, financial inclusion, economic growth and environmental sustainability of Indian States" is a bonafide work carried out by **Ms. Pooja Rameshkumar Phadtare** under my mentorship in partial fulfilment of the requirements for the award of the degree of **Masters in Business Administration** in the Discipline **Financial Services** at the Goa Business School, Goa University.

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INTERNSHIP CERTIFICATE

This is to certify that Mr/Ms. Pooja Rameshkumar Phadtare, Student of the Goa Business School, Goa University undergoing Master's in Business Administration in the Discipline Financial Services has successfully completed Internship between 6/02/2023 to 8/04/2023 at IFB Industries Ltd, Verna Goa. She actively participated in the activities during the period of internship and learned the skills needed for various activities.

Place:

Date:

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LIST OF ABRIVATION

FI	Financial Inclusion
NSDP	Net State Domestic Product
CO2	Carbon emission
ICT	Information communication technology

CHAPTER 1

INTRODUCTION

1.1 Introduction:

India, a rapidly developing economy, has been undergoing major changes in recent years. Digitalization, financial inclusion, economic growth, and environmental sustainability are four of the most critical aspects that have received a lot of attention in India's economic and social development agenda. The interdependence of these four elements is of great interest to policy-makers and academics alike. It is necessary to understand the dynamic relationships between digitalization, financial inclusion, economic growth, and environmental sustainability to formulate effective policies for India's sustainable development.

Digitalization has been one of the primary drivers of economic growth in India. The rapid proliferation of mobile phones and the internet has led to an explosion in digital transactions, creating opportunities for entrepreneurs and businesses to expand their reach and increase their revenues. Digitalization has also transformed the way in which people access financial services. Mobile banking and digital payment systems have facilitated financial inclusion, making it easier for individuals and small businesses to access banking services and credit facilities.

Financial inclusion has been a priority for the Indian government in recent years. It is critical for ensuring that all sections of society, including the poor and marginalized, have access to financial services. Financial inclusion has been linked to poverty reduction, income growth, and improved welfare outcomes. With the advent of digitalization, financial inclusion has become more accessible, affordable, and convenient for a larger population. The government's efforts to promote financial inclusion have led to the opening of bank accounts for millions of people and the establishment of various financial institutions that cater to the needs of the underserved and unbanked population.

Economic growth is essential for the overall development of any country. It generates employment opportunities, improves living standards, and reduces poverty. Digitalization and financial inclusion have contributed significantly to India's economic growth in recent years. The government has launched several initiatives to promote entrepreneurship and innovation, which have resulted in the growth of the startup ecosystem. The Indian economy is witnessing a surge in e-commerce, digital payments, and other online businesses, which has created new opportunities for job seekers and entrepreneurs.

Environmental sustainability is critical for ensuring that the growth and development of a country are sustainable in the long run. India has been grappling with several environmental challenges, including air pollution, water scarcity, deforestation, and climate change. The government has taken several measures to promote environmental sustainability, including the promotion of renewable energy, the implementation of energy-efficient measures, and the development of green infrastructure. Digitalization and financial inclusion have also played a crucial role in promoting environmental sustainability. The adoption of digital technologies has reduced the need for paper-based transactions, leading to significant reductions in the use of paper and other resources. Financial inclusion has led to the adoption of sustainable practices by individuals and businesses, such as the use of digital payment methods, which reduce the need for cash transactions and promote transparency.

Empirical analysis is essential for understanding the dynamic relationships between digitalization, financial inclusion, economic growth, and environmental sustainability. The empirical analysis can help identify the key drivers and barriers to the adoption of digital technologies and financial services, which can inform policy interventions. It can also help evaluate the impact of digitalization and financial inclusion on economic growth and environmental sustainability. The empirical analysis can also provide insights into the potential trade-offs and synergies between economic growth and environmental sustainability, which can inform policy decisions.

India's development agenda is characterized by the interdependence of digitalization, financial inclusion, economic growth, and environmental sustainability. These four elements are critical for ensuring that India's growth and development are sustainable in the long run. Empirical analysis is essential for understanding the dynamic relationships between these elements and identifying the key drivers and barriers to their adoption. Policy interventions that promote digitalization, financial inclusion, economic growth, and environmental sustainability can help India achieve its development goals and become a sustainable and prosperous economy.

1.2 Literature review:

Digitalization has been a key driver of economic growth in India. According to ADB (2019), digitalization has played a crucial role in promoting financial inclusion and economic growth in India. The study highlights the role of digital payments and the adoption of digital technologies in promoting financial inclusion and reducing the cost of financial transactions. Similarly, the study by Bhattacharya and Pal (2020) explores the relationship between digitalization and economic growth in India, highlighting the role of

digitalization in promoting entrepreneurship and innovation and contributing to the growth of the startup ecosystem.

The promotion of financial inclusion has also contributed to India's economic growth. According to the study by Chakrabarti and Adhikari (2019), financial inclusion has a positive impact on economic growth and poverty reduction in India. The study finds that access to formal financial services contributes to income growth and improved welfare outcomes. The study also highlights the role of technology and digitalization in promoting financial inclusion and reducing the cost of financial transactions. The literature has also highlighted the potential trade-offs and synergies between economic growth and financial inclusion in India. According to the study by Amartya et al. (2020), economic growth and financial inclusion can have both positive and negative effects on each other. The study finds that financial inclusion can promote entrepreneurship and innovation, which can contribute to economic growth. However, the growth of the financial sector can also lead to income inequality and financial instability, which can have adverse effects on economic growth.

Environmental sustainability is crucial for ensuring that the growth and development of a country are sustainable in the long run. India has been grappling with several environmental challenges, including air pollution, water scarcity, deforestation, and climate change. The government has taken several measures to promote environmental sustainability, including the promotion of renewable energy, the implementation of energy-efficient measures, and the development of green infrastructure. The literature has provided several insights into the relationship between digitalization, financial inclusion, and environmental sustainability in India. According to the study by Adhikary and Chakrabarti (2020), digitalization and financial inclusion have the potential to promote sustainable practices and reduce the environmental impact of economic activities. The study highlights the role of digital payments in reducing the need for cash transactions and promoting transparency, which can help reduce corruption and promote sustainable practices. Similarly, the study by Rai and Singh (2021) examines the relationship between digitalization and environmental sustainability in India, highlighting the potential of digital technologies in promoting sustainable practices and reducing the environmental impact of economic activities. The study identifies several areas where digital technologies can be used to promote environmental sustainability, including renewable energy, waste management, and sustainable agriculture.

1.3 Research gap:

Despite the significant literature available on the relationship between digitalization, financial inclusion, economic growth, and environmental sustainability in India, there is a need for further empirical research to understand the complex dynamics between these variables among the states of India. The study attempts to fill the gap by studying the relationship between these variables for different states and union territories of India for the time period 2017 to 2022. Most of the existing literature has focused on the potential synergies between these variables, while the potential trade-offs have been largely ignored. Additionally, there is a need for more in-depth studies that take into account the socio-economic and cultural factors that influence the adoption of digital technologies and financial inclusion in India. Further empirical research is needed to identify the impact digitalization and financial inclusion has on the economic growth and carbon emission levels of each state.

1.4 Objective of the study:

1) To study the relationship between digital financial inclusion & economic growth in India.

2) The effect of digital financial inclusion on the sustainable environment of India.

1.5 Scope:

The scope of study on the dynamics between financial inclusion, digitalization, economic growth and environmental sustainability of Indian states involves examining the relationship between these variables in different regions of the states. The study would focus on analyzing the trends and patterns of digitalization and financial inclusion across different states, as well as their impact on economic growth and environmental sustainability.

The study would involve collecting data on the level of digitalization and financial inclusion in different states of India, including the adoption of digital technologies, the availability of financial services, and the level of financial literacy among the population. The study would also examine the impact of digitalization and financial inclusion on economic growth, including job creation, entrepreneurship, and innovation.

In addition, the study would analyze the environmental impact of economic activities in different states and the role of digitalization and financial inclusion in promoting sustainable practices. The study would focus on the adoption of renewable energy, waste

management practices, and sustainable agriculture in different states, as well as the potential of digital technologies in promoting sustainable economic growth.

Overall, the study on the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability in the states of India would provide valuable insights into the complex relationships between these variables and the potential for promoting sustainable economic growth in different regions of the states.

1.6 Research Methodology:

INDEPENDENT VARIABLES:

The dimensions used to measure financial inclusion include:

Access: This dimension refers to the availability and accessibility of financial services, including banking and payment services, insurance, and credit. Access is often measured by the number of individuals and businesses that have access to formal financial services.

Usage: This dimension refers to the extent to which individuals and businesses use financial services. Usage is often measured by the frequency and volume of financial transactions, including deposits, withdrawals, and transfers.

Quality: This dimension refers to the quality of financial services, including the reliability, security, and transparency of financial institutions and their products. Quality is often measured by customer satisfaction levels and the level of trust that individuals and businesses have in financial institutions.

Affordability: This dimension refers to the cost of financial services and the ability of individuals and businesses to afford them. Affordability is often measured by the fees and charges associated with financial services and the level of financial literacy of individuals and businesses.

Awareness: This dimension refers to the level of knowledge and understanding of financial services among individuals and businesses. Awareness is often measured by the level of financial education and literacy programs and the ability of individuals and businesses to make informed decisions about financial products and services.

ICT: This dimension refers to Information and Communication Technology, which is the use of digital technology to communicate and access information. The ICT variable is often used as a proxy for measuring the level of digitalization and technological development in a given country or region.

The ICT variable can be measured in different ways, including:

Internet penetration rate: This measures the percentage of the population that has access to the internet.

Mobile phone penetration rate: This measures the percentage of the population that has access to mobile phones and mobile networks.

Broadband penetration rate: This measures the percentage of the population that has access to high-speed internet connections.

ICT infrastructure: This measures the level of investment in ICT infrastructure, including telecommunications networks, data centers, and internet exchange points.

E-government services: This measures the availability and accessibility of government services online.

Measuring the ICT variable is important because it provides insights into the level of technological development and digitalization in a given country or region. The level of ICT development is often seen as a key driver of economic growth and innovation, as it facilitates the exchange of information, the development of new products and services, and the creation of new jobs and industries. The ICT variable is also important for measuring the level of digital divide between different socio-economic groups, as well as between urban and rural areas. By measuring the ICT variable, policymakers and stakeholders can design interventions and policies to promote digital inclusion and reduce the digital divide.

INDICATORS	VARIABLES
1. ACCESS	No. of functioning offices of Commercial Banks
	No. of ATMs per 100000 adults
	No. of E-transaction per 1000 population
	No. of E-services
2. USAGE	No. of Deposits
	No. of credits/loans issued
	No. of debit cards owned
3.FINANCIAL LITERACY	Literacy rate %
4. ICT	No. of total internet subscription
	No. of telecom subscription
	Tele density per 100 people

DEPENDENT VARIABLES:

Since objective 1 aims at studying the impact of digital financial inclusion on economic growth on the states of India, the Net State Domestic Product per capita is the dependent variable. NSDP is a measure of the economic output of a state in India. NSDP is an important indicator of the economic growth and development of a state, and it is often used as a benchmark for comparing the economic performance of different states within India. NSDP per capita is also a commonly used indicator of the standard of living and economic well-being of the residents of a state. NSDP is taken at current price as the proxy measure of economic growth for each state.

In our second objective the goal is to study the relationship between digital financial inclusion and sustainability. Sustainability is measured using the carbon emission levels of each state. Carbon emissions are used as a measure of sustainability because they have a significant impact on the environment and contribute to climate change. Carbon emissions, primarily in the form of carbon dioxide (CO2), are produced through various human activities such as burning fossil fuels, deforestation, and industrial processes. These emissions trap heat in the atmosphere, leading to global warming and climate change.

Sustainable development is about meeting the needs of today's generation without compromising the ability of future generations to meet their own. Carbon emissions contribute to environmental degradation and can have long-term consequences for future generations, making them a critical factor in assessing sustainability.

DATA SOURCES:

There are several data sources that can be used to study the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability in the states of India. The websites that I have referred to our:

National Sample Survey (NSS) - The NSS collects data on various socio-economic indicators, including household access to banking services, digital literacy, and environmental indicators.

Census of India - The Census of India collects demographic and socio-economic data on the population of India, including information on household access to basic amenities like water, electricity, and sanitation facilities.

Reserve Bank of India (RBI) & INDIASTAT - The RBI & INDIASTAT collects and publishes data on various financial and banking indicators, including measures of financial inclusion, such as the number of bank accounts and the level of credit access.

Ministry of Electronics and Information Technology (MeitY) - The MeitY collects and publishes data on various indicators related to digitalization and the use of technology, including the number of internet users, mobile phone penetration rates, and the availability of e-government services.

Central Pollution Control Board (CPCB) - The CPCB collects data on various environmental indicators, including air quality, water quality, and the level of pollution.

National Institution for Transforming India (NITI Aayog) - The NITI Aayog is a policy think tank that collects and publishes data on various socio-economic and environmental indicators, including measures of economic growth and environmental sustainability.

These data sources can be used to analyze the relationships between digitalization, financial inclusion, economic growth, and environmental sustainability in the states of India. Researchers can use these data sources to develop indicators and models to better understand these relationships and to design policies and interventions to promote sustainable development in India.

1.7 TOOLS & TECHNIQUES:

To analyze the data different methods and models under Panel regression are estimated.

Regression analysis of panel data is a data structure which is panel data. Generally, parameter estimation in the regression analysis with cross section data is done by estimating the least squares method called Ordinary Least Square (OLS). Regression Method Data Panel will give the result of estimation which is Best Linear Unbiased Estimation (BLUE).

Data Panel Regression is a combination of cross section data and time series, where the same unit cross section is measured at different times. So in other words, panel data is data from some of the same individuals observed in a certain period of time. If we have T time periods (t= 1,2, ..., T) and N the number of individuals (i = 1,2, ..., N), then with panel data we will have total observation units of N x T.

If sum unit time is the same for each individual, then the data is called balanced panel. If instead, the number of time units is different for each individual, then it is called the unbalanced panel.

While other data types, namely: time-series data and cross-section. In time series, one or more variables will be observed on one observation unit within a certain time frame. While data cross-section is the observation of several units of observation in a single point of time.

ESTIMATION MODEL OF PANEL DATA REGRESSION

In the method of estimating the regression model using panel data can be done through three approaches, among others:

(1) Common Effect Model or Pooled Least Square (PLS)

A panel data model approach is most simply because it combines only time series and cross section data. In this model it is not considered as time and individual dimensions it is assumed that the behavior of corporate data is the same in various periods. This method can use the Ordinary Least Square (OLS) approach or the least square technique to estimate the panel data model.

The form of panel data regression equation is similar to ordinary least square, ie:

$$y_{it} = \alpha + \boldsymbol{\beta}' \boldsymbol{X}_{it} + \varepsilon_{it}$$

Description:

For i = 1, 2, ..., N and t = 1, 2, ..., T.

Where N = Number of individuals or cross section and T is the number of time periods.

From this model NxT can be generated equation, that is equal to T equation of cross

and as much N equation coherent time or time series.

For i = 1, 2, ..., N and t = 1, 2, ..., T.

Where N = Number of individuals or cross section and T is the number of time periods.

From this model NxT can be generated equation, that is equal to T equation of cross section and as much N equation coherent time or time series.

Hypothesis Regression Panel Data Model Common Effects

1. R Square: is the magnitude of the influence or ability of predictor variables simultaneously in describing the response variable. If the value is more than 0.5 then the ability of the predictor variable is strong in explaining the response variable. While vice versa if the value is less than 0.5 then the ability of the predictor variable is not strong in explaining the response variable. In this panel data regression example, the R Square value is 0.9579, which means that the predictor variable is very strong in explaining the response variable.

2. Adjusted R Square: is the magnitude of the influence or ability of predictor variables simultaneously in explaining the response variable by observing the standard error. The explanation is the same as R Square but this value has been corrected with standard error.

3. F-Statistics: is the value of Test F which is a simultaneous test of panel data regression. This F value indicates the significance level of influence of predictor variable to response variable. To use this F value must be compared with F Table. But to facilitate can directly see the value of Prob (F-Statistics).

4. Prob (F-Statistics): is the p value of the F test which is the significance level of the F value, that is to assess the simultaneous influence of the predictor variable to the response variable whether statistically significant or not. If the value of p value is less than the critical limit eg 0.05 then accepting H1 or which means simultaneous influence of predictor variable to the response variable proved statistically significant. Vice versa if the value of p value is more than the critical limit then accept H0 or which means the simultaneous influence of predictor variables to the response variable is not proven statistically significant.

(2) Fixed Effect Model (FE)

This model assumes that differences between individuals can be accommodated from different intercept. To estimate Fixed Effects model panel data using a dummy variable technique to capture the differences between intercept companies, different intercept can occur due to differences in work, managerial, and incentive cultures. Nevertheless the

intercept same between companies. This estimation model is often also called the technique of Least Squares Dummy Variable (LSDV).

The Fixed effect model differs from the common effect, but still uses the ordinary least square principle. The assumption of modelling that produces a constant intercept for each cross section and time is considered less realistic, so more models are needed to capture the difference.

Fixed effects assume that differences between individuals (cross section) can be accommodated from different intercept. In order to estimate the Fixed Effects Model with different intercept between individuals, the dummy variable technique is used. Such estimation models are often referred to as the Least Squares Dummy Variable technique or abbreviated LSDV.

The regression equation of fixed effects model panel data is as follows:

$$y_{it} = \alpha_i + \boldsymbol{\beta}' \boldsymbol{X}_{it} + \varepsilon_{it}$$

Description:
for i = 1,2, ..., N and t = 1,2, ..., T.

Where N = number of individuals or cross section and T = the number of time periods.

(3) Random Effect Model (RE)

This model will estimate panel data where interference variables may be interconnected between time and between individuals. In the Random Effect model, the difference between intercepts is accommodated by the error terms of each company. The advantage of using the Random Effect model is to eliminate heteroscedasticity. This model is also called the Error Component Model (ECM) or Generalized Least Square (GLS) technique. In principle, the random effect model is different from the common effect and fixed effect, especially this model does not use the principle of ordinary least square, but using the principle of maximum likelihood or general least square.

How to read output on random effect is not much different with common effect or fixed effect. Only in eviews we will see two outputs that are weighted and unweighted. If we use Fixed Effects through LSDV techniques, it will show the uncertainty of the model used. This random effect model is useful to solve the problem by using residual variable. In the random effect model, residuals may be interconnected between time and between individuals or cross sections. Therefore, this model assumes that there is a difference of

intercept for each individual and the intercept is a random variable. So in the random effect model there are two residual components. The first is the residual as a whole where the residual is a combination of cross section and time series. The second residual is an individual residual which is a random characteristic of the i-th unit observation and remains at all times.

The regression equation of panel data of random effects model is as follows:

$$y_{it} = \alpha + \beta' X_{it} + u_i + \varepsilon_{it}$$

Description:
for i = 1,2, ..., N and t = 1,2, ..., T.
Where:
N = number of individuals or cross section
T = the number of time periods.
Eit = is the residual as a whole where the residual is a combination of
cross section and time series.
Ui = is the individual residual which is the random characteristic ofunit observation
the i-thand remains at all times.

In order to determine which model is best suited for the given data set we make use of the Hausman Test.

(4) Hausman Test

Objectives Hausman Test with EViews:

Hausman test or often referred to as Hausman Test is a test used to determine the best method between fixed effect or random effect. If we have entered the post-chow test stage and the result is to choose fixed effect, then it should be continued with hausman test. The requirement is to perform steps in a sequence, which is doing a fixed effect analysis first and then proceed with a random effect.

The Conclusion of Hausman test:
The conclusion that we must make when finished doing hausman test with eviews is
1. If Hausman Test accept H0 or p value> 0,05 then method we choose is random effect. Then we proceed with Lagrangian Multiplier test to determine whether we still choose Random effect or Common effect.
2. If Hausman Test receives H1 or p value <0,05 then method we choose is fixed effect

1.8 Limitation of the study:

As with any study, there may be several limitations when exploring the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability in the states of India. Some potential limitations could include:

Generalizability: The findings of the study may not be generalizable beyond the specific states of India that were included in the study. Each state in India has its unique characteristics, such as social, economic, and environmental factors that may influence the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability differently.

Data availability and quality: The study's findings may be limited by the availability and quality of data used for analysis. Data related to digitalization, financial inclusion, economic growth, and environmental sustainability may be collected from different sources and may have limitations, such as accuracy, completeness, and reliability. This could potentially impact the validity and reliability of the study's findings.

Causality vs correlation: Establishing causality can be challenging in a study that explores the dynamics between multiple complex variables. While the study may identify correlations between digitalization, financial inclusion, economic growth, and environmental sustainability, it may not be able to establish definitive causal relationships due to other unaccounted factors or limitations of the research design.

Timeframe: The study's timeframe may impact the findings and conclusions. Economic, social, and environmental dynamics are constantly changing, and the study's timeframe may not capture all relevant changes or trends in the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability.

Contextual factors: The study may not be able to account for all contextual factors that could influence the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability in the states of India. Factors such as cultural, political, regulatory, and technological context could play a significant role in shaping the outcomes of the study

1.9 Chapterisation:

Chapter 1: Introduction, literature review research gap, objective, scope of the study, research and methodology and limitation of the study.

Chapter 2: Data analysis and interpretation, Pooled OLS Regression Model, fixed effect Model, Random effect Model and Hausman Model.

Chapter 3: Summarizes the findings based on which conclusions are drawn.

CHAPTER 2

2.1 DATA ANALYSIS AND INTERPRETATION:

OBJECTIVE 1: To study the relationship between digital financial inclusion & economic growth in India.

OBJECTIVE 2: The effect of digital financial inclusion on the sustainable environment of India.

2.2 Methodology:

OBJECTIVE 1: To study the relationship between digital financial inclusion & economic growth in India.

We first analyze state wise the growth pattern of each variable over a time period of 2017 to 2022.

In our objective 1 are Dependent variable is economic growth that is measured using the Net State Domestic Product per capita and we have 11 Independent variables:

1. NO.OF FUNCTIONING OFFICIES OF CB's
2. NO.OF ATMs PER 100000 ADULTS
3. NO.OF E-TRANSACTION PER 1000 POPULATION
4. NO.OF E-SERVICES PER 1000 POPULATION
5. NO.OF TOTAL DEPOSITS
6. NO.OF LOANS/CREDITS ISSUED
7. NO.OF DEBIT CARDS OWNERNSHIP
8. LITERACY RATE %
9. TOTAL INTERNET SUBSCRIPTION
10. TELECOM SUBSCRIPTION
11. TELEDENSITY (PER 100 PEOPLE)

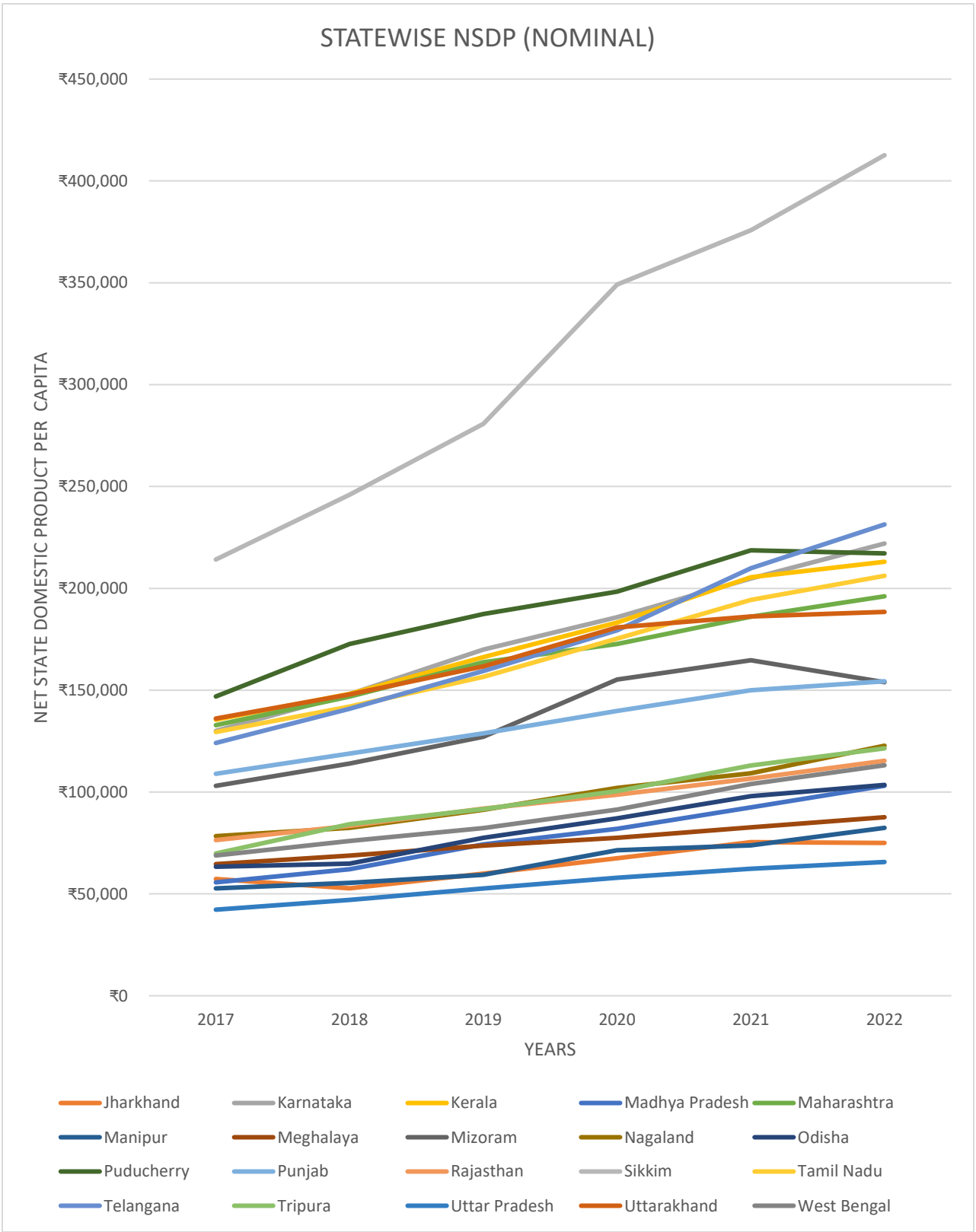
DEPENDENT VARIABLE: NET STATE DOMESTIC PRODUCT PER CAPITA

State/Union territory	NSDP Per Capita	NSDP Per Capita	NSDP Per Capita	NSDP Per Capita	NSDP Per Capita	NSDP Per Capita
	2017	**2018**	**2019**	**2020**	**2021**	**2022**
Andaman & Nicobar Islands	₹ 1,26,344	₹ 1,37,064	₹ 1,53,904	₹ 1,78,709	₹ 2,04,254	₹ 2,19,653
Andhra Pradesh	₹ 93,903	₹ 1,08,002	₹ 1,20,676	₹ 1,38,299	₹ 1,54,031	₹ 1,69,320
Arunachal Pradesh	₹ 1,14,789	₹ 1,16,985	₹ 1,24,129	₹ 1,38,836	₹ 1,55,103	₹ 1,82,240
Assam	₹ 52,895	₹ 60,817	₹ 66,330	₹ 75,151	₹ 81,034	₹ 90,123
Bihar	₹ 28,671	₹ 30,404	₹ 34,045	₹ 36,850	₹ 40,715	₹ 44,230
Chandigarh	₹ 2,12,594	₹ 2,30,009	₹ 2,52,236	₹ 2,80,512	₹ 3,07,812	₹ 3,28,002
Chhattisgarh	₹ 72,936	₹ 72,991	₹ 83,285	₹ 89,690	₹ 98,254	₹ 1,05,089
Delhi	₹ 2,47,209	₹ 2,70,261	₹ 2,95,558	₹ 3,18,323	₹ 3,38,730	₹ 3,56,151
Goa	₹ 2,89,185	₹ 3,34,576	₹ 3,78,953	₹ 4,11,740	₹ 4,23,716	₹ 4,35,949
Gujarat	₹ 1,27,017	₹ 1,39,254	₹ 1,56,295	₹ 1,76,961	₹ 1,97,457	₹ 2,12,428
Haryana	₹ 1,47,382	₹ 1,64,963	₹ 1,84,982	₹ 2,08,437	₹ 2,23,015	₹ 2,40,507
Himachal Pradesh	₹ 1,23,299	₹ 1,35,512	₹ 1,50,290	₹ 1,65,497	₹ 1,74,804	₹ 1,85,728
Jammu & Kashmir*	₹ 62,327	₹ 74,950	₹ 78,960	₹ 87,710	₹ 98,738	-
Jammu & Kashmir-U.T.	-	-	-	-	-	₹ 1,01,891
Jharkhand	₹ 57,301	₹ 52,754	₹ 60,018	₹ 67,484	₹ 75,421	₹ 75,016
Karnataka	₹ 1,30,024	₹ 1,48,108	₹ 1,69,898	₹ 1,85,840	₹ 2,04,804	₹ 2,22,002
Kerala	₹ 1,35,537	₹ 1,48,133	₹ 1,66,246	₹ 1,83,252	₹ 2,05,437	₹ 2,13,041
Madhya Pradesh	₹ 55,678	₹ 62,080	₹ 74,324	₹ 81,966	₹ 92,486	₹ 1,03,103
Maharashtra	₹ 1,32,836	₹ 1,46,815	₹ 1,63,726	₹ 1,72,663	₹ 1,86,074	₹ 1,96,100
Manipur	₹ 52,717	₹ 55,447	₹ 59,345	₹ 71,507	₹ 73,795	₹ 82,437
Meghalaya	₹ 64,638	₹ 68,836	₹ 73,753	₹ 77,504	₹ 82,653	₹ 87,653
Mizoram	₹ 1,03,049	₹ 1,14,055	₹ 1,27,107	₹ 1,55,222	₹ 1,64,708	₹ 1,53,902
Nagaland	₹ 78,367	₹ 82,466	₹ 91,347	₹ 1,02,003	₹ 1,09,198	₹ 1,22,759
Odisha	₹ 63,345	₹ 64,835	₹ 77,507	₹ 87,055	₹ 98,005	₹ 1,03,512
Puducherry	₹ 1,46,921	₹ 1,72,727	₹ 1,87,356	₹ 1,98,358	₹ 2,18,673	₹ 2,17,138
Punjab	₹ 1,08,970	₹ 1,18,858	₹ 1,28,780	₹ 1,39,835	₹ 1,49,974	₹ 1,54,385
Rajasthan	₹ 76,429	₹ 83,426	₹ 91,924	₹ 98,698	₹ 1,06,624	₹ 1,15,356
Sikkim	₹ 2,14,148	₹ 2,45,987	₹ 2,80,729	₹ 3,49,163	₹ 3,75,773	₹ 4,12,627
Tamil Nadu	₹ 1,29,494	₹ 1,42,028	₹ 1,56,595	₹ 1,75,276	₹ 1,94,373	₹ 2,06,165
Telangana	₹ 1,24,104	₹ 1,40,840	₹ 1,59,395	₹ 1,79,358	₹ 2,09,848	₹ 2,31,378
Tripura	₹ 69,857	₹ 84,267	₹ 91,596	₹ 1,00,444	₹ 1,13,016	₹ 1,21,456
Uttar Pradesh	₹ 42,267	₹ 47,118	₹ 52,671	₹ 57,944	₹ 62,350	₹ 65,666

Uttarakhand	₹ 1,36,099	₹ 1,47,936	₹ 1,61,752	₹ 1,80,858	₹ 1,86,207	₹ 1,88,441
West Bengal	₹ 68,876	₹ 75,992	₹ 82,291	₹ 91,401	₹ 1,03,944	₹ 1,13,163

TABLE: STATEWISE NET STATE DOMESTIC PRODUCT PER CAPITA

source: https://rbi.org.in/Scripts/Statistics.aspx


STATEWISE NSDP (NOMINAL)
₹450,000
₹400,000
₹350,000
₹300,000
₹250,000
₹200,000
₹150,000
₹100,000
₹50,000
₹0
NET STATE DOMESTIC PRODUCT PER CAPITA
2017
2018
2019
2020
2021
2022
YEARS
Jharkhand
Karnataka
Kerala
Madhya Pradesh
Maharashtra
Manipur
Meghalaya
Mizoram
Nagaland
Odisha
Puducherry
Punjab
Rajasthan
Sikkim
Tamil Nadu
Telangana
Tripura
Uttar Pradesh
Uttarakhand
West Bengal

NSDP per capita is a measure of the economic output per person in a state, and it reflects the economic well-being of the population. It is influenced by various factors such as economic growth, population growth, and inflation.

Historically, states in India have shown significant variations in NSDP per capita, with some states having higher levels of economic development compared to others. States such as Maharashtra, Gujarat, Karnataka, and Tamil Nadu, which are known for their industrial and services sectors, have tended to have higher NSDP per capita compared to other states. These states have traditionally been among the top performers in terms of economic development and have shown relatively higher NSDP per capita.

On the other hand, states in the northeastern region and some of the central and eastern states like Bihar, Jharkhand, and Uttar Pradesh have faced challenges in terms of lower NSDP per capita, which can be attributed to factors such as lower industrialization, limited infrastructure, and agrarian economies.

Additionally, the COVID-19 pandemic has had a significant impact on the global and Indian economy, which may have affected the NSDP per capita trends during the period from 2017 to 2021.

INDEPENDENT VARIABLES:

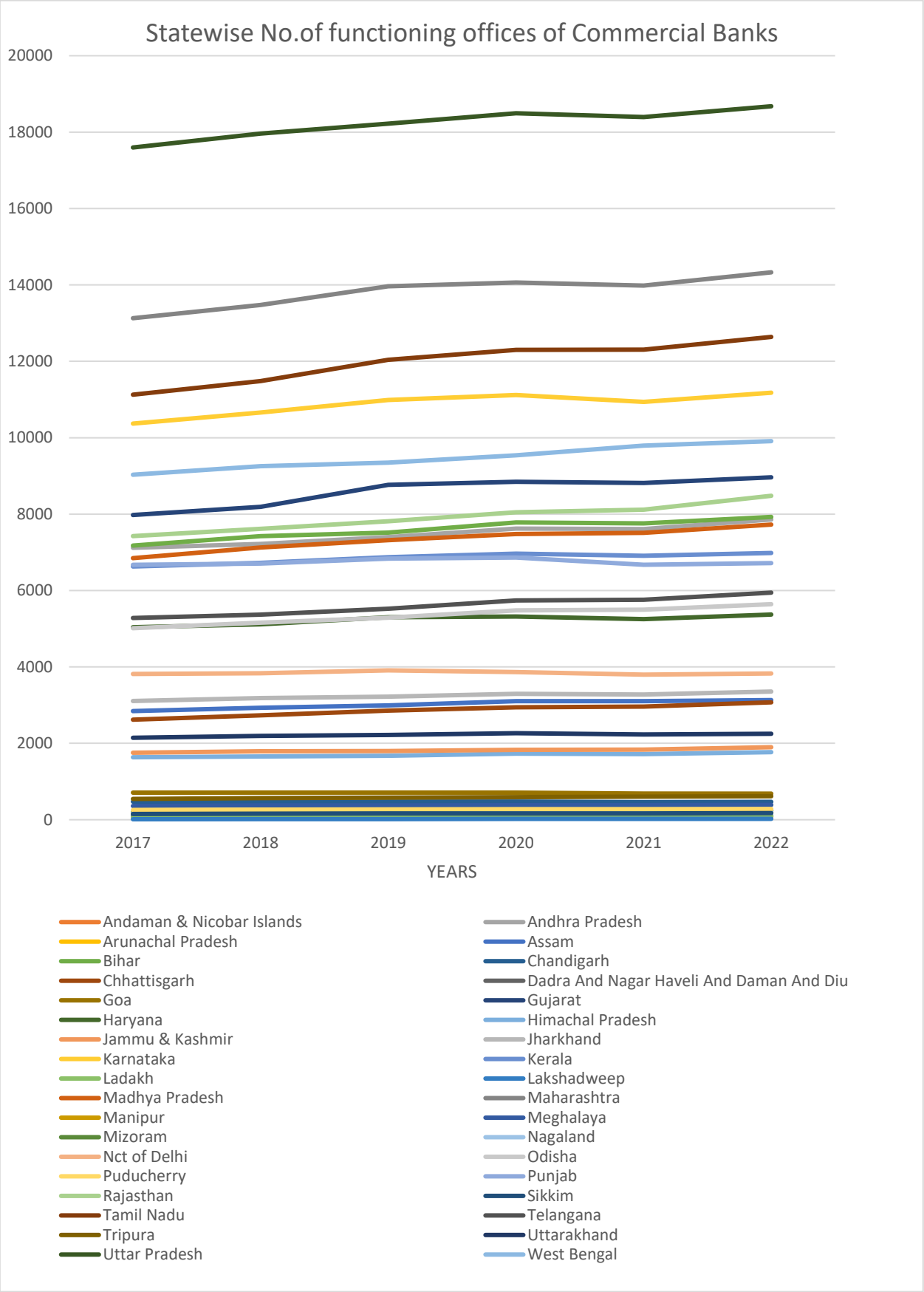
1. NO.OF FUNCTIONING OFFICIES OF CB's

State	2017	2018	2019	2020	2021	2022
Andaman & Nicobar Islands	68	71	74	75	73	76
Andhra Pradesh	7119	7222	7399	7621	7610	7859
Arunachal Pradesh	159	171	174	180	177	194
Assam	2844	2932	2993	3101	3106	3132
Bihar	7177	7423	7514	7780	7757	7926
Chandigarh	472	463	475	475	464	466
Chhattisgarh	2619	2735	2854	2943	2961	3073
Dadra And Nagar Haveli And Daman And Diu	108	108	111	106	103	104
Goa	709	710	710	707	683	682
Gujarat	7977	8189	8769	8846	8815	8963
Haryana	5039	5117	5302	5318	5254	5371
Himachal Pradesh	1635	1658	1677	1728	1716	1769
Jammu & Kashmir	1754	1792	1797	1830	1836	1898
Jharkhand	3108	3182	3224	3297	3278	3355
Karnataka	10370	10660	10989	11118	10937	11178
Kerala	6629	6721	6871	6965	6912	6983

Ladakh	61	67	70	77	81	92
Lakshadweep	13	14	14	22	22	23
Madhya Pradesh	6848	7126	7317	7479	7511	7726
Maharashtra	13129	13473	13964	14062	13982	14330
Manipur	182	206	212	223	233	251
Meghalaya	360	372	373	382	384	387
Mizoram	195	203	208	218	225	232
Nagaland	171	181	185	192	190	202
Nct of Delhi	3815	3836	3910	3862	3798	3830
Odisha	5014	5159	5287	5482	5496	5642
Puducherry	256	266	272	278	274	280
Punjab	6673	6708	6836	6863	6676	6716
Rajasthan	7425	7616	7811	8049	8116	8480
Sikkim	150	157	163	165	164	174
Tamil Nadu	11127	11483	12042	12297	12306	12639
Telangana	5281	5366	5523	5738	5757	5945
Tripura	544	566	578	592	604	615
Uttarakhand	2145	2195	2219	2265	2233	2249
Uttar Pradesh	17598	17961	18220	18494	18396	18677
West Bengal	9031	9253	9349	9540	9791	9911

TABLE: STATEWISE NO.OF FUNCTIONING OFFICIES OF CB's

source: https://rbi.org.in/Scripts/Statistics.aspx


Statewise No.of functioning offices of Commercial Banks
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
2017
2018
2019
2020
2021
2022
YEARS
Andaman & Nicobar Islands
Andhra Pradesh
Arunachal Pradesh
Assam
Bihar
Chandigarh
Chhattisgarh
Dadra And Nagar Haveli And Daman And Diu
Goa
Gujarat
Haryana
Himachal Pradesh
Jammu & Kashmir
Jharkhand
Karnataka
Kerala
Ladakh
Lakshadweep
Madhya Pradesh
Maharashtra
Manipur
Meghalaya
Mizoram
Nagaland
Nct of Delhi
Odisha
Puducherry
Punjab
Rajasthan
Sikkim
Tamil Nadu
Telangana
Tripura
Uttarakhand
Uttar Pradesh
West Bengal

There has been a rise in commercial banks for the states Uttar Pradesh, Maharashtra, Tamil Nadu, Karnataka, West Bengal and Gujarat. While some states have shown constant growth such as Delhi, Goa, Tripura, Meghalaya, Lakshadweep, Chandigarh, Sikkim for the year 2017 to 2022.

The rise in the number of commercial banks can be related to economic growth in several ways:

Increased Access to Credit: Commercial banks play a crucial role in providing credit to businesses and individuals, which can spur economic growth. As the number of commercial banks increases, it can potentially result in increased competition among banks, leading to more favorable lending terms and increased access to credit for businesses and individuals. This can facilitate business expansion, investment in infrastructure, and consumption, which can contribute to economic growth.

Enhanced Financial Intermediation: Commercial banks act as intermediaries between savers and borrowers, channeling funds from depositors to borrowers through various financial products and services. With more commercial banks, there may be a greater availability of financial intermediation services, such as loans, mortgages, and investment options. This can promote savings and investment, which can stimulate economic growth by mobilizing funds for productive purposes.

Increased Financial Inclusion: The expansion of commercial banks can also contribute to increased financial inclusion, which refers to the availability of financial services to previously underserved or excluded segments of the population. This can include providing banking services to rural areas, low-income communities, and small and medium-sized enterprises (SMEs), among others. Increased financial inclusion can promote economic growth by providing opportunities for savings, credit, and investment to a wider segment of the population, which can foster entrepreneurial activity and economic participation.

Enhanced Competition and Innovation: The rise in the number of commercial banks can lead to increased competition in the banking sector. Competition can spur banks to innovate and offer new financial products and services, which can benefit consumers and businesses. Innovation in financial services can contribute to economic growth by improving efficiency, reducing costs, and promoting technological advancements.

Improved Financial Stability: While a higher number of commercial banks may increase competition and innovation, it also requires effective regulatory oversight to ensure financial stability. Regulatory measures, such as prudential norms, capital adequacy requirements, and risk management standards, can help ensure that the increased number of commercial banks does not result in excessive risk-taking or financial instability. A stable and well-regulated banking sector is important for economic growth as it promotes investor confidence, fosters financial stability, and reduces systemic risks.

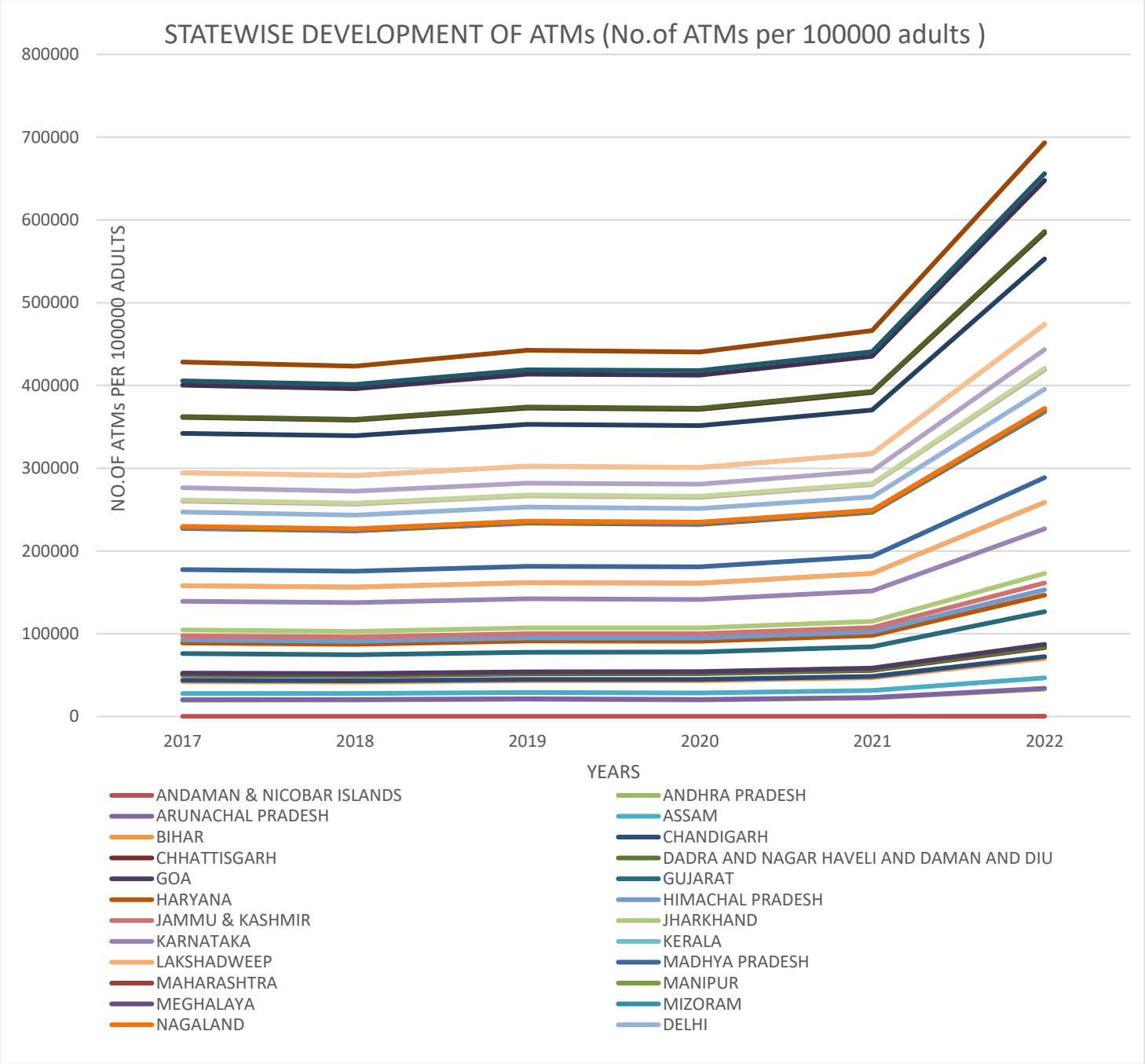
It's important to note that the relationship between the rise in the number of commercial banks and economic growth is complex and multifaceted. It depends on various factors,

including the regulatory environment, market conditions, and overall economic policies. While the expansion of commercial banks can have positive effects on economic growth, it also requires effective regulation and supervision to mitigate potential risks and ensure sustainable growth.

2. NO.OF ATMs PER 100000 ADULTS

States	2017	2018	2019	2020	2021	2022
ANDAMAN & NICOBAR ISLANDS	232	212	224	236	248	375
ANDHRA PRADESH	19578	19783	20693	19842	22159	32838
ARUNACHAL PRADESH	488	412	440	501	532	820
ASSAM	7651	7444	7572	7954	8472	12645
BIHAR	14572	13906	14497	14829	15648	23546
CHANDIGARH	1322	1406	1501	1458	1516	2171
CHHATTISGARH	6392	6229	6591	6867	7305	10863
DADRA AND NAGAR HAVELI AND DAMAN AND DIU	270	502	540	558	579	902
GOA	2048	1998	1976	1933	1972	2997
GUJARAT	23639	22747	23715	23685	25911	39525
HARYANA	12790	12621	13498	13230	13661	19987
HIMACHAL PRADESH	3536	3618	3582	3743	4246	6463
JAMMU & KASHMIR	4956	5243	5339	5204	5269	8290
JHARKHAND	7310	6695	6777	6971	7539	11486
KARNATAKA	34470	34821	35357	34291	36710	53899
KERALA	18706	18738	19411	19691	21074	31869
LAKSHADWEEP	30	36	36	130	40	69
MADHYA PRADESH	19672	19165	19680	19747	20662	29926
MAHARASHTRA	49595	48833	52311	51373	53069	79557
MANIPUR	670	662	672	728	784	1163
MEGHALAYA	822	778	806	813	892	1366
MIZORAM	342	360	358	350	352	527
NAGALAND	640	600	604	626	645	980
DELHI	17453	16525	16950	16385	15979	23243
ODISHA	13339	13395	13534	13853	15037	23479
PUDUCHERRY	1055	1053	1115	1125	1195	1804
PUNJAB	14922	14457	14289	14597	15239	22555
RAJASTHAN	17946	18757	20241	20031	20608	30146
SIKKIM	388	372	390	384	434	680
TAMIL NADU	47216	47947	50292	50377	52601	78702

TELANGANA	19480	18831	19766	19762	21280	31421
TRIPURA	996	954	1129	1199	1131	1714
UTTAR PRADESH	37801	36952	39715	40048	42428	61682
UTTARAKHAND	5181	5162	5317	5331	5544	8219
WEST BENGAL	22852	22103	23614	22669	25347	37345
TOTAL	428360	423317	442532	440521	466108	693254



A sudden rise in the no. of ATMs for the year 2021 has been noticed for each and every union territory and state.

The rise in the number of Automated Teller Machines (ATMs) is not directly linked to economic growth, but it can be indicative of certain factors that may impact economic growth. Here are some potential ways in which the rise in the number of ATMs may be related to economic growth:

Increased Financial Inclusion: The availability of ATMs can improve access to banking services, particularly in areas where physical bank branches may be limited or inaccessible. As the number of ATMs increases, it can indicate efforts to promote financial inclusion by making banking services more accessible to a wider population, including those in remote or underserved areas. This can empower individuals to conveniently access their accounts, make transactions, and manage their finances, which can contribute to financial inclusion and economic participation.

Growing Demand for Cash Transactions: ATMs are primarily used for cash withdrawals, and an increase in the number of ATMs may indicate a growing demand for cash transactions in the economy. This could be due to various reasons such as increased consumer spending, cash-based transactions in certain sectors or regions, or preference for cash as a means of payment. The rise in ATM numbers may reflect efforts by banks and financial institutions to meet this demand by expanding their ATM networks.

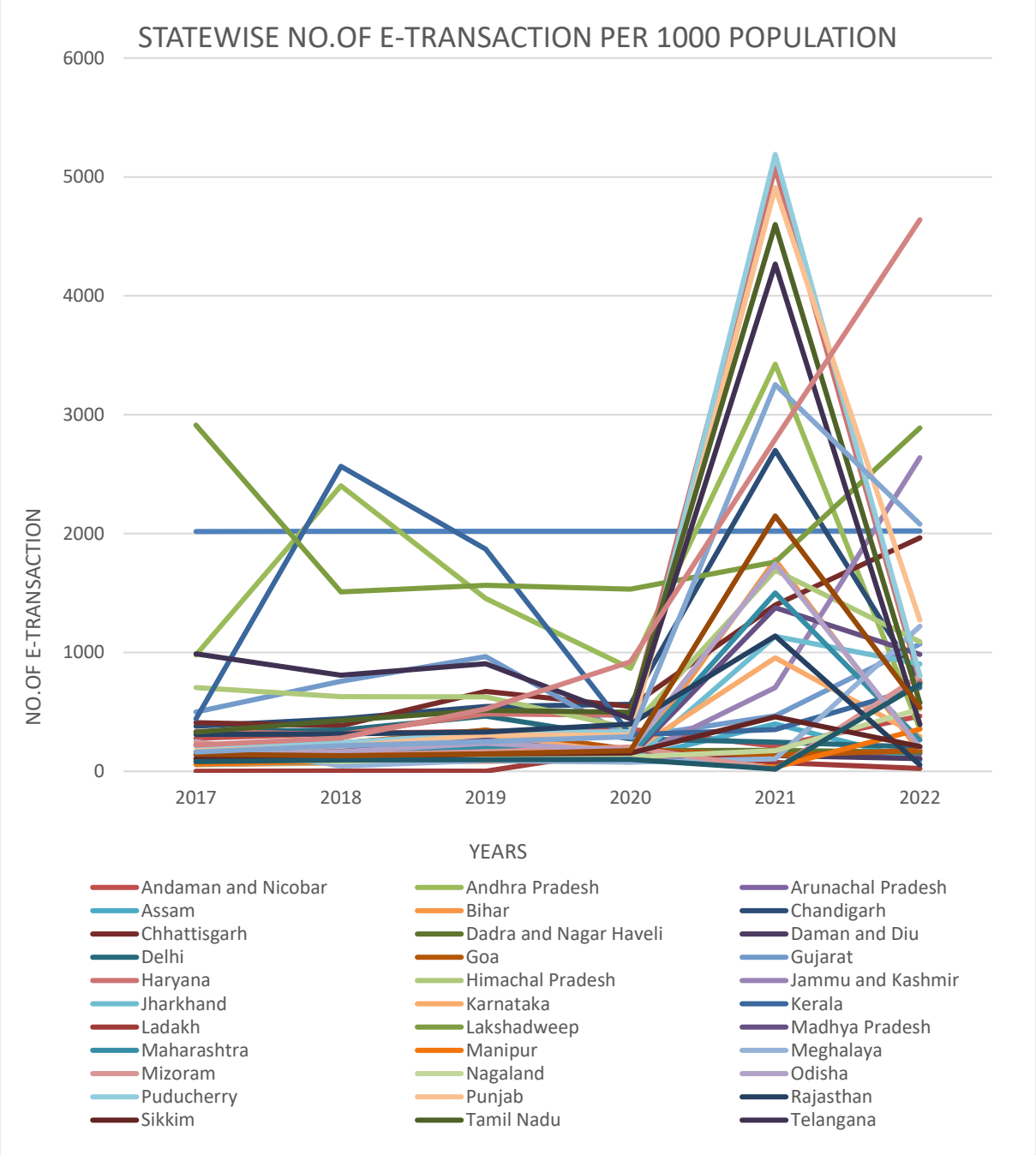
Convenience and Customer Service: The increase in the number of ATMs may also reflect efforts by banks and financial institutions to provide better customer service and convenience to their customers. ATMs allow customers to access their accounts and perform basic banking transactions outside of regular banking hours, providing greater flexibility and convenience. The expansion of ATM networks can indicate banks' efforts to enhance their customer service offerings and improve the overall banking experience for their customers.

Technological Advancements: The rise in the number of ATMs can also be indicative of technological advancements in the banking and financial sector. With the advent of newer technologies, such as mobile banking, internet banking, and digital wallets, the use of ATMs may evolve to incorporate advanced features such as biometric authentication, contactless transactions, and personalized services. The expansion of ATM networks may reflect banks' adoption of new technologies and their efforts to keep up with changing customer preferences and market trends.

3. NO. OF E-TRANSACTION PER 1000 POPULATION

State	2017	2018	2019	2020	2021	2022
Andaman and Nicobar	278.09	318.45	335.1	354.28	211.32	464.92
Andhra Pradesh	978.15	2402.14	1453.42	864.91	3424.53	356.98
Arunachal Pradesh	63.63	84.16	86.12	87.84	168.78	145.95
Assam	75.48	93.73	161.82	107.75	398.66	90.16
Bihar	55.05	70.12	92.92	79.22	1779.79	163.63
Chandigarh	379.73	441.95	545.2	564.65	2699.49	748.55
Chhattisgarh	409.68	383.16	672.76	545.67	1398.1	1964.29
Dadra and Nagar Haveli	139.77	178.77	120.38	174.35	177.14	159.44
Daman and Diu	164.87	151.04	130.34	140.55	132.82	106.8
Delhi	333.26	345.73	464.62	272.09	246.02	204.07
Goa	215.87	236.53	347.26	183.84	133.46	175.17
Gujarat	499.23	757.86	965.36	284.03	466.4	1070.78
Haryana	334.61	310.83	483.89	471.62	5076.57	752.92
Himachal Pradesh	704.36	627.46	625.75	360.92	1690.55	1090.4
Jammu and Kashmir	80.18	98.37	138.17	106.77	705.13	2638.32
Jharkhand	57.95	77.18	144.97	77.51	1134.84	902.9
Karnataka	161.86	155.83	291.27	159.28	954.67	293
Kerala	440.44	2565.28	1868.53	308.18	351.22	705.45
Ladakh	0.49	2.37	0.66	189.01	74.7	24.69
Lakshadweep	2911.89	1509.13	1564.94	1531.85	1761.77	2887.6
Madhya Pradesh	223.51	173.22	265.75	123.36	1376.24	983.52
Maharashtra	106.29	124.16	206.84	135.54	1500.53	264.7
Manipur	60.42	83.09	86.21	96.88	34.44	354.39
Meghalaya	250.8	45.12	90.79	76.85	105.34	1220
Mizoram	242.52	137.15	164.33	204.97	16.04	803
Nagaland	109.21	82.89	120.92	121.19	174.84	522.85
Odisha	135.14	163.68	236.93	173.31	1744.76	202.17
Puducherry	212.63	239.56	323.11	333.37	5189.07	804.65
Punjab	172.44	211.1	305.32	305.77	4910.31	1271.66
Rajasthan	310.75	313.5	331.51	397.68	1138.45	54.21
Sikkim	106.83	114.49	146.52	154.26	458.07	207.78
Tamil Nadu	329.56	428.54	511.89	497.02	4599.17	575.35
Telangana	988.41	807.49	905.35	441.96	4266.93	394.19

Tripura	80.99	95.05	97.92	100.18	19.25	733.42
Uttar Pradesh	144.06	131.38	145.56	173.69	2148.06	536.97
Uttarakhand	162.13	215.63	250.67	292.42	3253.03	2078.36
West Bengal	220.63	279.28	525.19	920.65	2794.59	4639.71
TOTAL	12140.91	14455.42	15208.29	11413.42	56715.08	30592.95



The rise in the number of e-transactions can benefit economic growth in several ways:

Increased Efficiency and Cost Savings: E-transactions can streamline financial processes, reduce transaction costs, and improve overall efficiency in business operations. Digital payments and other e-transactions can eliminate the need for physical handling of cash or paper-based transactions, reducing the time and effort required for financial transactions. This can result in cost savings for businesses, as well as individuals, and contribute to improved cash flow management, reduced operational costs, and increased efficiency in business operations.

Enhanced Financial Inclusion: E-transactions can provide individuals, particularly those who are underserved or have limited access to traditional banking services, with greater access to formal financial services. This can include digital payments, remittances, and other financial transactions that can be conducted electronically. Improved financial inclusion can promote economic growth by enabling individuals to participate more actively in the formal economy, manage their finances, and engage in transactions that support economic activity.

Stimulated Consumption and Business Activities: E-transactions can facilitate online shopping, bill payments, and other transactions, which can stimulate consumption and business activities. Digital payments can provide consumers with convenient and secure options for making purchases, paying bills, and conducting other transactions, which can increase consumption levels and drive economic activity. E-commerce, online marketplaces, and other digital platforms can also facilitate business activities, such as sales, transactions, and supply chain management, which can contribute to economic growth.

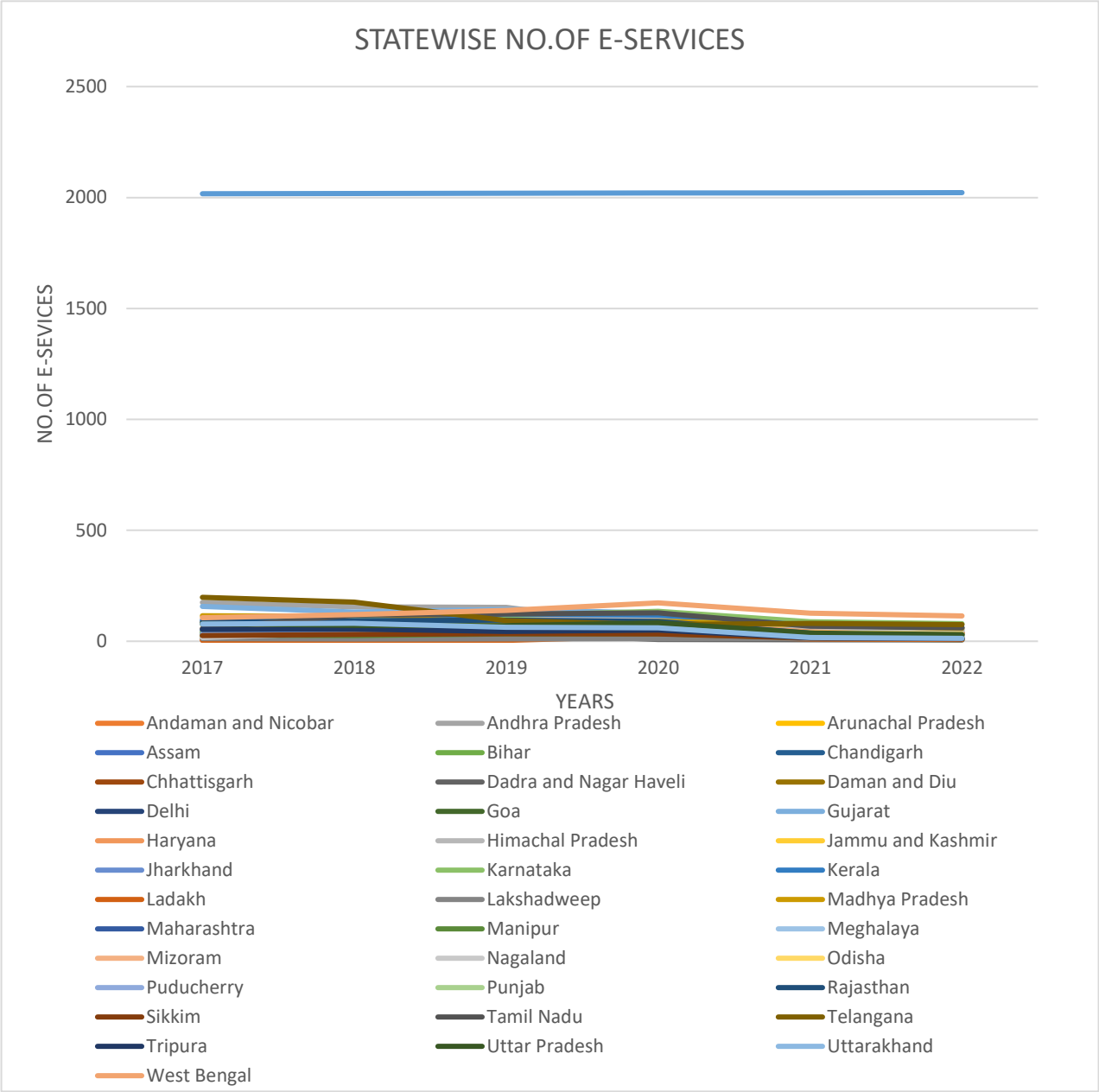
Fostered Innovation and Technological Advancements: The growth of e-transactions can spur innovation and technological advancements in the financial sector, including the development of new payment methods, financial technologies (fintech), and digital infrastructure. This can lead to increased competition, efficiency, and customer-centric services, which can contribute to economic growth by fostering innovation, entrepreneurship, and competitiveness.

Improved Data for Decision Making: E-transactions generate data that can be used for decision making, including consumer spending patterns, business activities, and overall economic trends. This data can provide valuable insights for businesses, policymakers, and other stakeholders to make informed decisions and strategies for economic growth.

Reduced Informal Economy: E-transactions can contribute to reducing the size of the informal economy, which is characterized by unreported or underreported economic activities. By promoting formal transactions and digital payments, e-transactions can help bring economic activities into the formal economy, leading to increased transparency, accountability, and tax compliance. This can result in a broader tax base, increased government revenue, and improved public services, which can support economic growth.

4. NO.OF E-SERVICES PER 1000 POPULATION

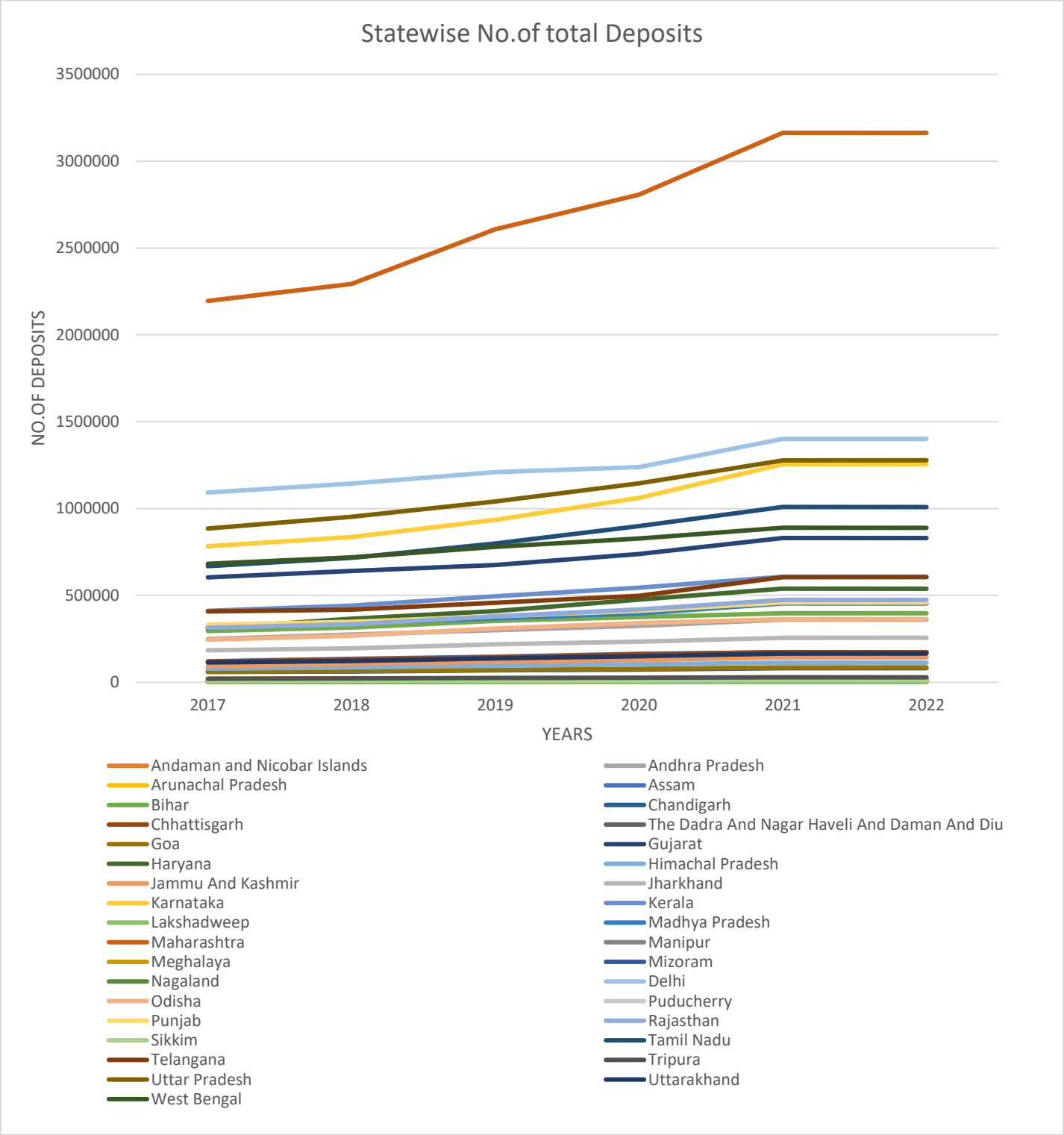
State	2017	2018	2019	2020	2021	2022
Andaman and Nicobar	6	11	27	51	38	36
Andhra Pradesh	175	155	153	68	68	37
Arunachal Pradesh	17	35	38	39	18	13
Assam	49	77	75	72	17	26
Bihar	42	52	44	52	12	7
Chandigarh	38	59	63	64	30	28
Chhattisgarh	32	65	74	67	48	39
Dadra and Nagar Haveli	19	32	36	8	7	6
Daman and Diu	25	27	40	44	13	9
Delhi	81	120	106	97	52	33
Goa	38	34	56	60	44	33
Gujarat	157	131	144	127	59	51
Haryana	86	88	88	89	48	38
Himachal Pradesh	90	103	103	107	66	47
Jammu and Kashmir	43	46	49	49	22	16
Jharkhand	46	49	53	53	17	13
Karnataka	40	66	116	135	88	79
Kerala	95	80	123	118	72	62
Ladakh	4	4	4	24	11	8
Lakshadweep	12	10	11	12	13	12
Madhya Pradesh	115	111	84	90	73	58
Maharashtra	78	70	72	69	22	14
Manipur	28	25	33	34	16	13
Meghalaya	54	56	64	57	20	14
Mizoram	57	55	56	61	24	19
Nagaland	17	39	44	46	15	13
Odisha	82	86	82	69	38	33
Puducherry	33	45	48	48	18	13
Punjab	77	104	60	66	32	25
Rajasthan	87	93	95	89	37	12
Sikkim	26	30	34	33	15	12
Tamil Nadu	57	118	123	128	68	60
Telangana	198	176	93	76	81	75
Tripura	53	55	44	50	16	12
Uttar Pradesh	79	72	71	83	37	30
Uttarakhand	78	81	63	61	17	13
West Bengal	106	120	139	173	127	114



5. NO.OF TOTAL DEPOSITS

State	2017	2018	2019	2020	2021	2022
Andaman and Nicobar Islands	4101.734	4683.351	5186	5811	6043	6167
Andhra Pradesh	249228.7	274565.9	300452	324873	359770	359894
Arunachal Pradesh	11865.72	13448.93	16659	17171	19525	19649
Assam	120975.7	134287.1	147091	164299	173014	173138
Bihar	295173	314811.2	353169	375707	397492	397616
Chandigarh	59618.02	61928.4	68300	72552	81320	81444
Chhattisgarh	118872.5	132428.8	142656	160542	173217	173341

The Dadra And Nagar Haveli And Daman And Diu	7882.484	8473.058	9049	9979	11586	11710
Goa	61693.22	65275.43	71135	76533	85771	85895
Gujarat	603972.7	640357.9	674922	738912	830161	830285
Haryana	309629.1	366392.9	409974	475352	538565	538689
Himachal Pradesh	78523.05	84896.18	95529	103545	112344	112468
Jammu And Kashmir	93345.84	103991.1	118122	128026	142897	143021
Jharkhand	184171.6	195691.1	218585	234106	256070	256194
Karnataka	783250.4	835662.2	934364	1061242	1256023	1256147
Kerala	411408.1	441923.5	495762	545024	607649	607773
Lakshadweep	960.762	997.309	1096	1115	1239	1363
Madhya Pradesh	313014.3	341432.7	368951	396779	453372	453496
Maharashtra	2195511	2292825	2607845	2807751	3163108	3163232
Manipur	7773.512	9018.742	9927	10369	12323	12447
Meghalaya	20449.94	21502.62	24063	23756	25821	25945
Mizoram	7165.789	8467.946	9255	11332	12000	12124
Nagaland	9421.838	10014.09	11183	12242	12579	12703
Delhi	1092455	1144642	1210108	1238245	1400864	1400988
Odisha	245280.6	268905.4	309554	341140	363567	363691
Puducherry	14606.37	16241.51	17818	20043	22138	22262
Punjab	330956.2	347797.4	379577	410987	459027	459151
Rajasthan	313673	334008.2	379008	420150	474438	474562
Sikkim	6954.44	8532.845	9632	10130	10604	10728
Tamil Nadu	668507.2	716716.5	798738	899038	1008731	1008855
Telangana	407653.8	417817.3	458581	498184	605468	605592
Tripura	20481.36	22020.23	24880	26487	28400	28524
Uttar Pradesh	885163.3	953577.9	1041507	1144902	1277878	1278002
Uttarakhand	114114.2	122535.9	137040	149549	165333	165457
West Bengal	682175.3	718580.3	779291	827832	889011	889135



A rise in the no.of deposits has been recorded in majority of the states for the year 2017 to 2022.

The rise in the number of deposits can be related to economic growth in several ways:

Increased Savings and Investment: A rise in the number of deposits indicates that individuals, households, and businesses are saving and investing their money, which can contribute to economic growth. Deposits in banks and other financial institutions can provide a source of funds for lending and investment, which can support productive activities, such as business expansion, infrastructure development, and capital investment. Higher savings and investments can lead to increased capital formation, which is an essential driver of economic growth.

Expanded Access to Financial Services: An increase in the number of deposits may indicate that more individuals and businesses are gaining access to formal financial services, such as savings accounts, fixed deposits, and other deposit-based products. Improved access to financial services can promote financial inclusion, allowing individuals and businesses to manage their finances, save, and invest in a more structured and productive manner. This can contribute to economic growth by facilitating capital accumulation and investment.

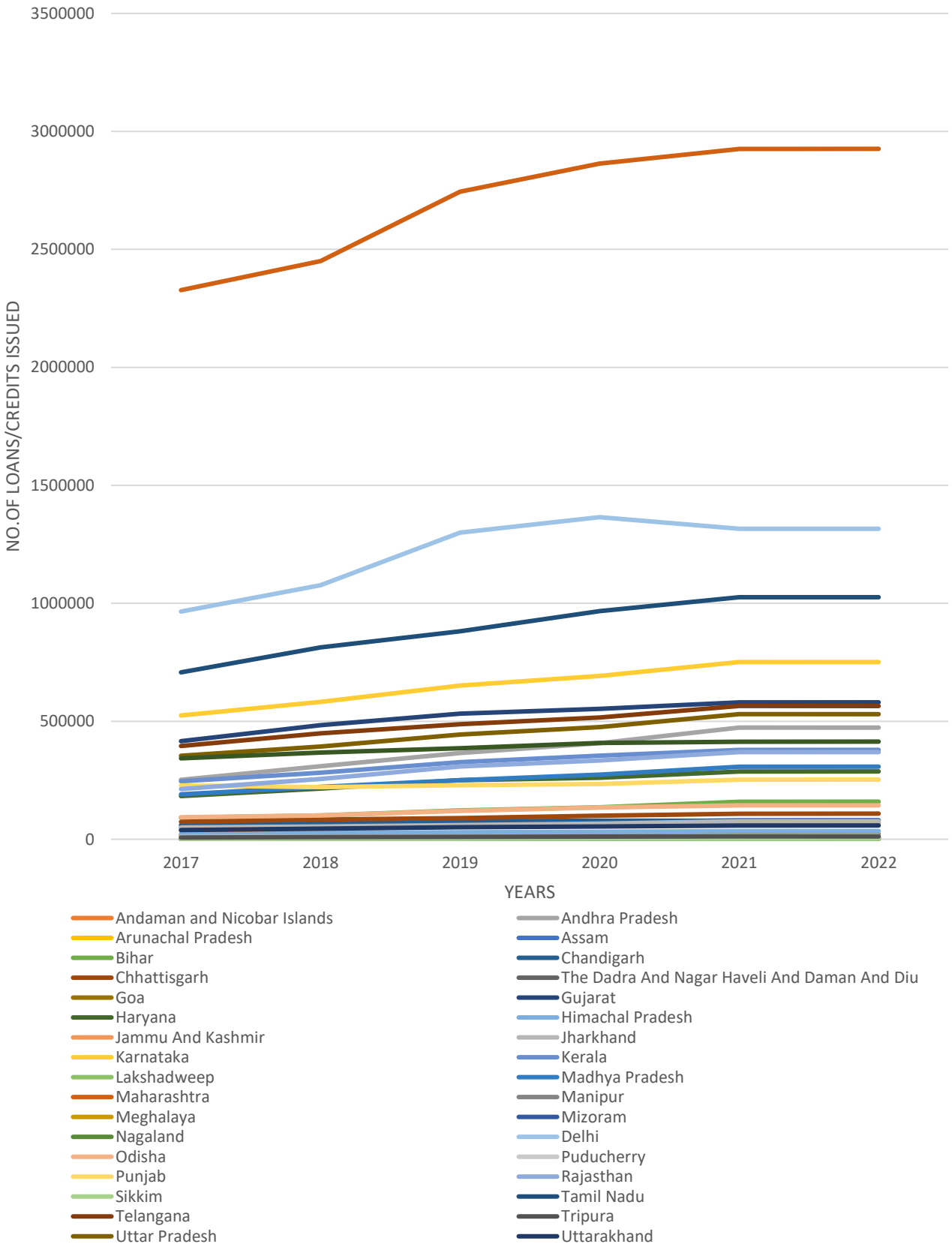
Strengthened Banking System: A rise in the number of deposits can also indicate a stronger and more stable banking system. Deposits are an important source of funding for banks, which they can use to lend and invest in productive activities. A robust banking system with a healthy deposit base can support lending, investment, and economic activity, leading to economic growth.

Increased Confidence and Trust in Financial Institutions: A rise in the number of deposits can indicate increased confidence and trust in financial institutions. When individuals and businesses deposit their money in banks, it signifies their confidence in the safety and security of their funds, as well as their trust in the financial system. This can lead to increased stability in the financial system, reduced risk of financial crises, and enhanced investor confidence, which can support economic growth.

Facilitated Capital Mobilization: Deposits can help mobilize capital by channeling savings into productive investments. Banks and other financial institutions can use the deposits they receive to lend to individuals, businesses, and other borrowers for investment purposes. This can facilitate capital mobilization and allocation, which can contribute to economic growth by supporting productive activities, creating jobs, and promoting economic development.

6. NO.OF LOANS/CREDITS ISSUED

State	2017	2018	2019	2020	2021	2022
Andaman and Nicobar Islands	1578.545	1842.981	2173.182	2381.34	2795.21	2927.21
Andhra Pradesh	252039.7	309165.2	365356.6	407142.1	473132.5	473264.5
Arunachal Pradesh	2843.018	3361.87	3833.636	4277.235	4920.116	5052.116
Assam	48753.82	57185.99	65150.07	70625.11	80870.84	81002.84
Bihar	91293.77	101253	122446.4	135678.8	159317.8	159449.8
Chandigarh	60025.46	69673.14	76110.93	78689.98	78152.88	78284.88
Chhattisgarh	74178.54	83655.7	90253.06	100163.7	108588.2	108720.2
The Dadra And Nagar Haveli And Daman And Diu	2316.343	2946.304	3585.459	4458	4089	4221
Goa	15856.09	17426.6	18802.82	19241.71	21037.73	21169.73
Gujarat	415845.9	483920.8	532149.7	552428.2	580273.1	580405.1
Haryana	183071	214887.8	250429.4	260618.6	287498.8	287630.8
Himachal Pradesh	23338.56	26373.2	29432.96	31305.93	34770.08	34902.08
Jammu And Kashmir	37194.15	44585.48	53696.56	58663.03	69301.57	69433.57
Jharkhand	49963.03	54268.41	60470.46	66703.37	76370.9	76502.9
Karnataka	524756.5	582491.1	651148.7	692032	750843.4	750975.4
Kerala	245826.6	282033.7	326845.9	354383.8	378761.9	378893.9
Lakshadweep	80.495	82.351	88.927	96.577	97.226	229.226
Madhya Pradesh	190639.1	222152.6	250692.1	274404.6	307614.2	307746.2
Maharashtra	2327351	2450160	2744200	2863779	2926015	2926147
Manipur	3005.326	4021.002	4899.853	5930.79	7115.395	7247.395
Meghalaya	5290.029	5843.604	6479.951	8374.382	9718.883	9850.883
Mizoram	2606.841	3029.248	3404.827	4087.024	5038.069	5170.069
Nagaland	2969.765	3478.515	3958.916	4595.673	5432.014	5564.014
Delhi	965047.3	1076998	1300026	1365110	1315663	1315795
Odisha	93366.4	101018.9	119893.1	134861.8	143676.4	143808.4
Puducherry	9336.484	10357.95	11890.19	12822.64	14337.49	14469.49
Punjab	228314.4	220941.4	228852.7	234737.6	252684.6	252816.6
Rajasthan	212778.8	255727.7	308470.9	334448.5	369374.3	369506.3
Sikkim	1905.318	2272.17	2731.218	3158.715	3799.589	3931.589
Tamil Nadu	707383.3	813599.8	880961.4	966505.9	1025781	1025913
Telangana	395359.3	448649.2	487494.6	516130.9	564592.5	564724.5
Tripura	7354.498	8972.762	10370.29	11245.92	11952.19	12084.19
Uttar Pradesh	354026.7	392665.6	444368.1	475156.6	530105.6	530237.6
Uttarakhand	39093.96	44608.37	51461.95	54637.47	58347.81	58479.81
West Bengal	343078.9	367322.6	385464.5	408143.8	413826.6	413958.6


STATEWISE NO.OF LOANS/CREDITS ISSUED
NO.OF LOANS/CREDITS ISSUED
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
2017
2018
2019
2020
2021
2022
YEARS
Andaman and Nicobar Islands
Andhra Pradesh
Arunachal Pradesh
Assam
Bihar
Chandigarh
Chhattisgarh
The Dadra And Nagar Haveli And Daman And Diu
Goa
Gujarat
Haryana
Himachal Pradesh
Jammu And Kashmir
Jharkhand
Karnataka
Kerala
Lakshadweep
Madhya Pradesh
Maharashtra
Manipur
Meghalaya
Mizoram
Nagaland
Delhi
Odisha
Puducherry
Punjab
Rajasthan
Sikkim
Tamil Nadu
Telangana
Tripura
Uttar Pradesh
Uttarakhand

The rise in the number of loans during the COVID-19 pandemic can have both positive and negative implications for economic growth, depending on the context and factors involved. Here are some possible ways in which the two may be related:

Stimulating Economic Growth: In some cases, the increase in loans during COVID-19 may be a result of government stimulus measures, such as fiscal policies aimed at providing financial assistance to individuals, businesses, and sectors impacted by the pandemic. These loans can help to stimulate economic growth by injecting liquidity into the economy, supporting consumer spending, and supporting businesses to maintain operations or invest in growth opportunities. Increased borrowing and lending can facilitate economic activity, create jobs, and contribute to economic recovery.

Addressing Financial Distress: On the other hand, the rise in loans during the pandemic may also be a response to financial distress faced by households and businesses. Many individuals and businesses have experienced income losses, job losses, and reduced cash flow due to the economic impact of COVID-19. As a result, loans may be taken out to cover basic expenses, bridge temporary gaps in income, or manage financial hardships. In such cases, the increase in loans may not necessarily indicate economic growth, but rather be a coping mechanism to address economic challenges during the pandemic.

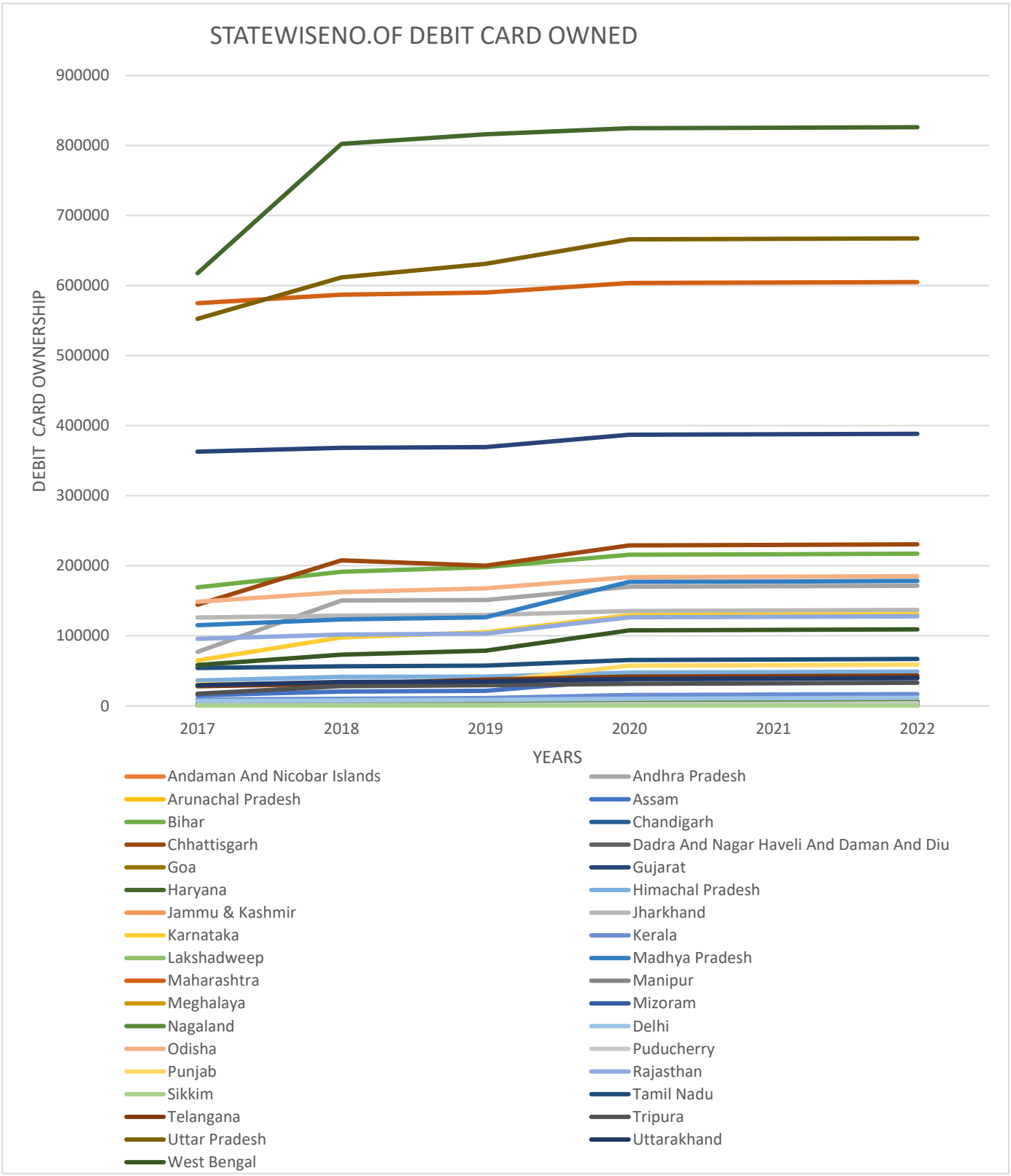
Debt Burden and Risk: An increase in loans during the pandemic could also potentially result in a higher debt burden for individuals, businesses, and governments, which may have long-term implications for economic growth. High levels of debt can lead to increased interest payments, reduced spending capacity, and limited investment opportunities, which could hinder economic growth in the long run. Additionally, if loans are taken on by borrowers who are at higher risk of default, it could pose risks to the stability of the financial system and overall economic health.

Varying Sectoral Impacts: The relationship between the rise in loans during COVID-19 and economic growth can also vary across different sectors of the economy. Some sectors, such as healthcare, pharmaceuticals, and e-commerce, may have experienced increased demand during the pandemic and may have been able to access loans for expansion and growth. However, sectors such as travel, hospitality, and small businesses may have faced more challenges in obtaining loans and may have had to rely on loans for survival rather than growth.

7. NO.OF DEBIT CARDS OWNERNSHIP

State	2017	2018	2019	2020	2021	2022
Andaman And Nicobar Islands	1510.222	2095.226	2257	2337.905	2987.905	3757.905
Andhra Pradesh	77079.56	150508.5	151247	170097.4	170747.4	171517.4
Arunachal Pradesh	2037.037	2473.806	2482.045	2846.476	3496.476	4266.476
Assam	15159.48	20347.26	21594	37980.71	38630.71	39400.71
Bihar	169252.9	191474.7	198101.9	215892.1	216542.1	217312.1
Chandigarh	2430.926	3900	4120.636	4341.524	4991.524	5761.524
Chhattisgarh	144486.6	207951.2	200015.5	229265.4	229915.4	230685.4
Dadra And Nagar Haveli And Daman And Diu	684.7407	758.0968	538.4615	1154	1804	2574
Goa	572.8889	970	981.5455	1960.952	2610.952	3380.952
Gujarat	363019.9	368372.1	369515.4	387031.6	387681.6	388451.6
Haryana	617695.6	802361.1	815984.2	824838.1	825488.1	826258.1
Himachal Pradesh	36229.74	41479.19	41933.95	47456.05	48106.05	48876.05
Jammu & Kashmir	780.56	779.55	645.34	844.35	920.32	820.33
Jharkhand	126187	128950.1	129748.8	135626.2	136276.2	137046.2
Karnataka	64924.52	97672.61	105084.8	129379	130029	130799
Kerala	9173.778	10238	11087.5	15359.19	16009.19	16779.19
Lakshadweep	21	21	21	21	23	29
Madhya Pradesh	115158.4	123415.9	126400.5	177000	177650	178420
Maharashtra	574942.6	587126.8	590166.5	603679.4	604329.4	605099.4
Manipur	3329.444	3856	3989.045	5649.762	6299.762	7069.762
Meghalaya	1968.593	2852.258	3019.545	5291.952	5941.952	6711.952
Mizoram	551.7778	602.2581	634.2727	677	694	713
Nagaland	2561.852	4690.333	4755.364	4941.524	5591.524	6361.524
Delhi	7102.444	7956.355	8579.182	10167.24	10817.24	11587.24
Odisha	148662.8	162466.5	167705.3	183717	184367	185137
Puducherry	1142.704	1246.194	1266.682	2337.429	2987.429	3757.429
Punjab	30966	32568.32	34024.91	57511.29	58161.29	58931.29
Rajasthan	95743	101944.1	103228.9	126443.6	127093.6	127863.6
Sikkim	99.37037	122	136.1364	308	403	414
Tamil Nadu	54141.74	56532.71	57546.09	65619.19	66269.19	67039.19
Telangana	28012.37	31526.97	37560.73	41883.57	42533.57	43303.57
Tripura	17351.67	28322.29	29577.14	31616.33	32266.33	33036.33
Uttar Pradesh	552627.3	611898.7	631008.7	666044.7	666694.7	667464.7
Uttarakhand	29491.59	34260.94	34669.27	38637.52	39287.52	40057.52

West Bengal	58337.41	73168.42	78834	107855.3	108505.3	109275.3



8. LITERACY RATE %

State/Union Terriority	2017	2018	2019	2020	2021	2022
Andaman & Nicobar Island	94%	87%	86.63%	86.63%	89.63%	92.63%
Andhra pradesh	91.80%	67%	67.02%	67.02%	70.02%	73.02%
Arunachal Pradesh	91.30%	65%	65.38%	65.38%	68.38%	71.38%
Assam	88.70%	72%	72.19%	72.19%	75.19%	78.19%
Bihar	87.20%	62%	61.80%	61.80%	64.80%	67.80%
Chandigarh	87.10%	86%	86.05%	86.05%	89.05%	92.05%
Chhattisgarh	86.60%	70%	70.28%	70.28%	73.28%	76.28%
Dadra & Nagar Haveli	86.20%	76%	76.24%	76.24%	79.24%	82.24%
Goa	85.80%	89%	88.70%	88.70%	89.21%	92.21%
Gujarat	82.80%	78%	78.03%	78.03%	91.70%	94.70%
Haryana	82.30%	76%	75.55%	75.55%	81.03%	84.03%
Himachal pradesh	81.40%	83%	82.80%	82.80%	78.55%	81.55%
Jammu & Kashmir	80.10%	67%	67.16%	67.16%	85.80%	88.80%
Jharkhand	79.60%	66%	66.41%	66.41%	70.16%	73.16%
Karnataka	79.20%	75%	75.36%	75.36%	69.41%	72.41%
Kerala	78.80%	94%	94.00%	94.00%	78.36%	81.36%
Lakshadweep	78%	92%	91.85%	91.85%	97.00%	100.00%
Madhya pradesh	76.30%	69%	69.32%	69.32%	94.85%	97.85%
Maharashtra	76.20%	82%	82.34%	82.34%	72.32%	75.32%
Manipur	75.80%	77%	76.94%	76.94%	85.34%	88.34%
Meghalaya	75.60%	74%	74.43%	74.43%	79.94%	82.94%
Mizoram	75.40%	91%	91.33%	91.33%	77.43%	80.43%
Nagaland	74.40%	80%	79.55%	79.55%	94.33%	97.33%
Delhi	72.90%	86%	86.21%	86.21%	82.55%	85.55%
Odisha	72.20%	73%	72.87%	72.87%	75.87%	78.87%
Puducherry	70.30%	86%	85.85%	85.85%	88.85%	91.85%
Punjab	69.30%	76%	75.84%	75.84%	78.84%	81.84%
Rajasthan	67.70%	66%	66.11%	66.11%	69.11%	72.11%
Sikkim	67.20%	81%	81.42%	81.42%	84.42%	87.42%
Tamil Nadu	67%	80%	80.09%	80.09%	83.09%	86.09%
Telangana	66%	82%	83%87.5%	89.00%	87.00%	86.00%
Tripura	66.40%	87%	87.22%	87.22%	69.54%	72.54%
Uttar Pradesh	66.10%	68%	67.68%	67.68%	90.22%	93.22%
Uttrakhand	65.40%	79%	78.82%	78.82%	70.68%	73.68%
West Bengal	61.80%	76%	76.26%	76.26%	79.26%	82.26%

Literacy rate has a significant impact on economic growth through various channels:

Workforce Productivity: A literate population is better equipped to participate in the labor market and engage in higher-skilled jobs, leading to increased productivity. Literate individuals are more likely to be able to understand and follow instructions, communicate effectively, and utilize information, which can enhance their job performance and contribute to overall economic productivity.

Human Capital Development: Literacy is a key component of human capital, which refers to the skills, knowledge, and abilities of individuals. Higher literacy rates indicate a more educated and skilled workforce, which can drive economic growth by increasing the availability of a skilled labor force, fostering innovation, and promoting entrepreneurship.

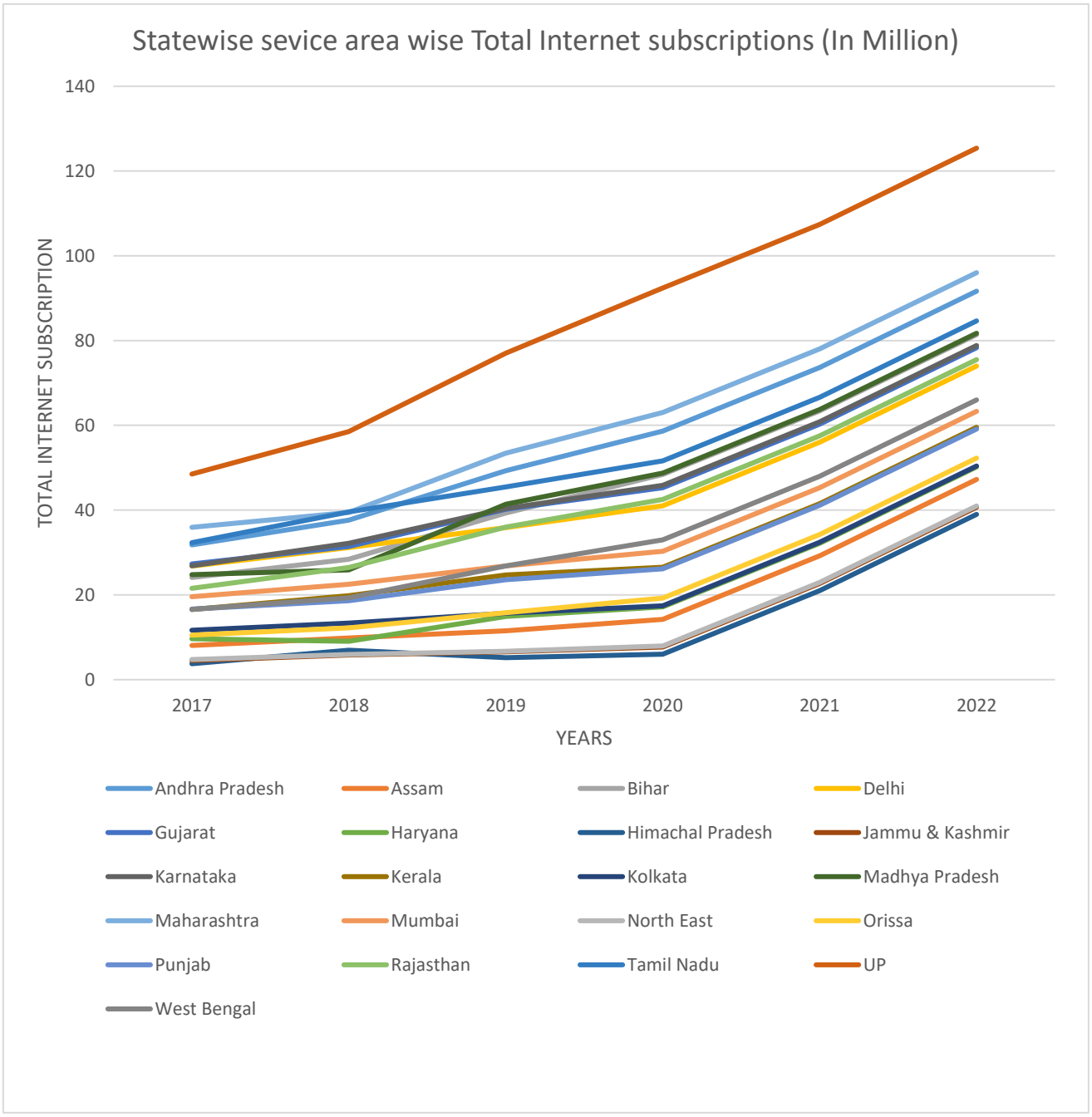
Education and Skills Acquisition: Literacy is often considered a foundation for education and skill development. A literate population is more likely to have access to educational opportunities, which can lead to higher levels of education and vocational training. Education and skills are critical for acquiring specialized knowledge, technical expertise, and advanced skills that are in demand in the labor market, driving economic growth through the development of a skilled workforce.

Poverty Alleviation: Literacy can be a powerful tool in poverty alleviation efforts. Literate individuals are better positioned to access information, make informed decisions, and engage in economic activities that can help them escape poverty. As poverty rates decrease, it can lead to increased consumer spending, investment, and entrepreneurship, which can drive economic growth.

Social Development: Literacy is often associated with improved health outcomes, reduced fertility rates, and increased gender equality, which are important dimensions of social development. Improved health and reduced fertility rates can positively impact workforce participation and productivity, while gender equality can enhance women's economic empowerment and labor force participation, ultimately contributing to economic growth.

9. TOTAL INTERNET SUBSCRIPTION

States	2017	2018	2019	2020	2021	2022
Andhra Pradesh	31.8	37.61	49.29	58.65	73.65	91.65
Assam	8.07	9.81	11.53	14.24	29.24	47.24
Bihar	24.1	28.4	39.34	48.39	63.39	81.39
Delhi	26.79	31.14	35.86	40.99	55.99	73.99
Gujarat	27.3	31.43	40.18	45.31	60.31	78.31
Haryana	9.63	9.05	14.9	17.18	32.18	50.18
Himachal Pradesh	3.76	6.94	5.17	6	21	39
Jammu & Kashmir	4.51	5.81	6.6	7.68	22.68	40.68
Karnataka	26.87	32.14	40.39	45.83	60.83	78.83
Kerala	16.55	19.8	24.71	26.54	41.54	59.54
Kolkata	11.66	13.35	15.66	17.41	32.41	50.41
Madhya Pradesh	24.77	25.88	41.4	48.72	63.72	81.72
Maharashtra	35.94	39.45	53.47	63.01	78.01	96.01
Mumbai	19.57	22.48	26.85	30.3	45.3	63.3
North East	4.75	5.94	6.7	7.97	22.97	40.97
Orissa	10.51	12.2	15.81	19.27	34.27	52.27
Punjab	16.65	18.63	23.58	26.13	41.13	59.13
Rajasthan	21.55	26.46	35.97	42.5	57.5	75.5
Tamil Nadu	32.32	39.57	45.48	51.64	66.64	84.64
UP	48.51	58.54	77.03	92.39	107.3	125.3
West Bengal	16.58	19.31	26.83	33	48	66



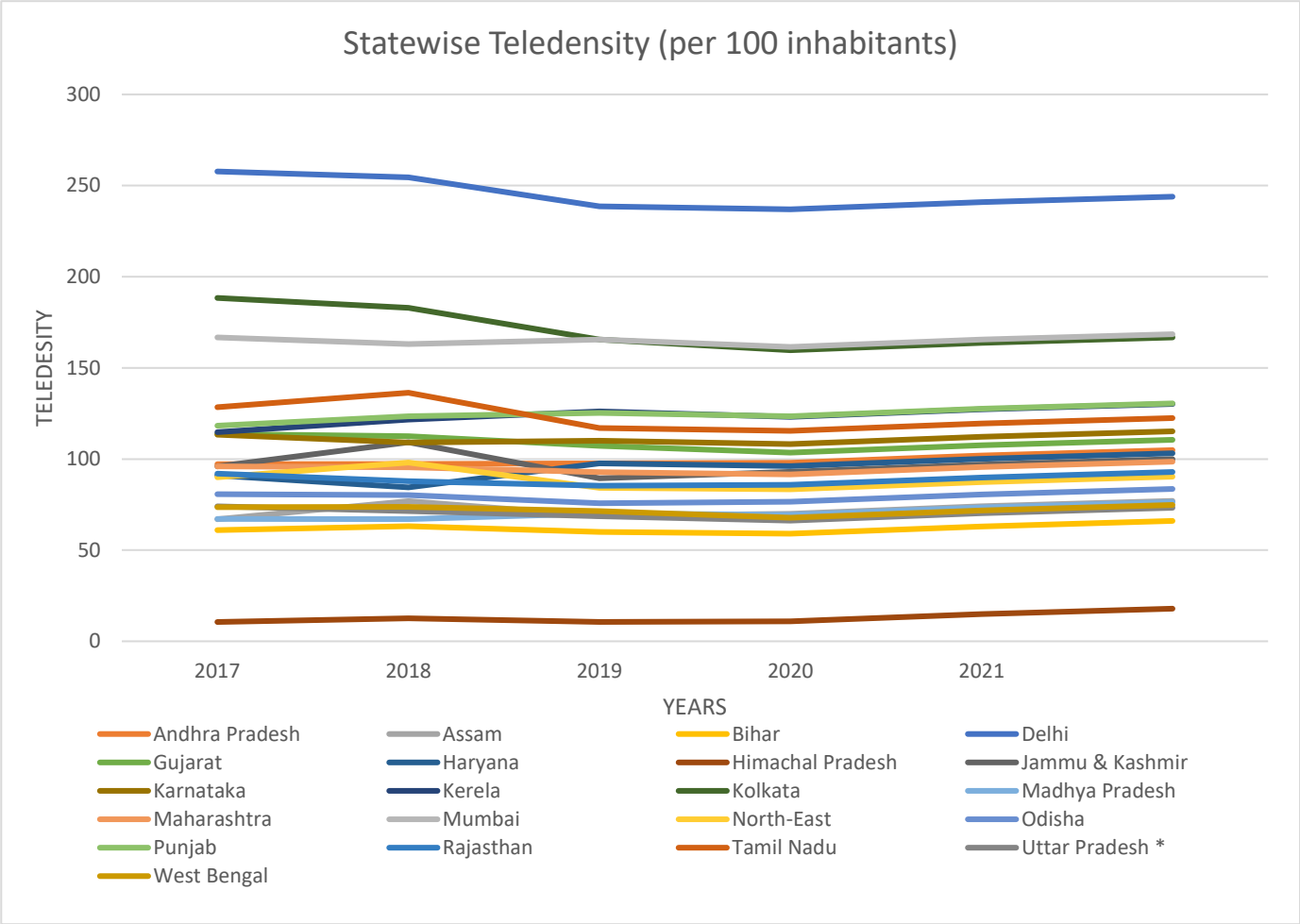
It has been noted that the number of internet connection has increased by a large amount in all the states from the year 2020 onwards.

Internet access has the potential to bridge the digital divide and promote social and economic inclusion. Increased internet subscriptions can provide opportunities for marginalized and underserved populations to access information, services, and economic opportunities that were previously inaccessible. This can contribute to reducing inequality and fostering inclusive economic growth by enabling broader participation in the digital economy.

The rise in internet subscriptions can be closely linked to economic growth through its impacts on the digital economy, innovation and entrepreneurship, productivity and efficiency, access to information and knowledge, and digital inclusion. Internet access has the potential to drive economic growth by creating new opportunities, fostering innovation, enhancing productivity, and promoting inclusive economic participation.

11. TELEDENSITY (PER 100 PEOPLE)

STATES	2017	2018	2019	2020	2021	2022
Andhra Pradesh	97.18	97.21	97.55	97.88	101.88	104.88
Assam	66.97	76.87	68.81	70.01	74.01	77.01
Bihar	60.99	63.16	59.95	59.04	63.04	66.04
Delhi	257.76	254.49	238.57	236.99	240.99	243.99
Gujarat	113.71	112.45	107.21	103.51	107.51	110.51
Haryana	91.01	84.44	97.66	96.14	100.14	103.14
Himachal Pradesh	10.58	12.58	10.63	10.89	14.89	17.89
Jammu & Kashmir	95.91	109.19	89.43	92.91	96.91	99.91
Karnataka	113.39	109.05	110.04	108.19	112.19	115.19
Kerela	114.75	121.61	126.15	123.19	127.19	130.19
Kolkata	188.37	182.97	165.51	159.69	163.69	166.69
Madhya Pradesh	67.07	67.02	70.11	69.4	73.4	76.4
Maharashtra	95.88	95.5	92.83	91.55	95.55	98.55
Mumbai	166.77	163.01	165.62	161.48	165.48	168.48
North-East	89.94	98.06	84.17	83.37	87.37	90.37
Odisha	80.74	80.28	75.74	76.58	80.58	83.58
Punjab	118.28	123.45	125.35	123.52	127.52	130.52
Rajasthan	92.02	87.83	85.34	85.88	89.88	92.88
Tamil Nadu	128.41	136.36	116.94	115.45	119.45	122.45
Uttar Pradesh *	74.03	71.36	68.63	66.2	70.2	73.2
West Bengal	73.59	73.73	71.39	67.8	71.8	74.8



The tele density amount has been constant FY 2017 to 2022 throughout majority of the states.

Teledensity, which refers to the number of telephone connections per hundred individuals in a population, can be linked to economic growth in several ways:

Communication and Connectivity: Teledensity reflects the level of communication and connectivity within a population. Increased teledensity can improve communication channels, allowing businesses and individuals to connect and interact more easily. This can lead to increased business transactions, collaborations, and economic interactions, fostering economic growth by facilitating trade, investment, and entrepreneurship.

Access to Information and Services: Higher teledensity can enable greater access to information and services, including financial services, healthcare, education, and government services. This can empower individuals with access to vital resources, enabling them to make informed decisions, access opportunities, and engage in economic activities more effectively. Improved access to information and services can contribute to economic growth by enhancing productivity, efficiency, and decision-making.

Market Expansion: Teledensity can enable businesses to reach a wider customer base, including remote and underserved areas. This can lead to market expansion, creating new business opportunities, and fostering economic growth by increasing demand, generating employment, and promoting entrepreneurship. Increased teledensity can also facilitate e-commerce, allowing businesses to reach customers beyond geographic boundaries, leading to increased trade and economic growth.

MODEL BASED ANALYSIS:

Panel data, also known as longitudinal or time-series cross-sectional data, refers to data collected from multiple observations of the same individuals, entities, or units over time. There are several methods that can be used to estimate panel data models, including:

The Pooled Ordinary Least Squares (OLS) regression model is a statistical method used to estimate a regression model using panel data or cross-sectional data without accounting for individual-specific or entity-specific fixed effects or time-specific effects. In a Pooled OLS model, all the observations from different entities or units are combined into a single dataset, and a standard OLS regression is performed on that combined dataset.

The Pooled OLS model assumes that there is no systematic heterogeneity across different entities or units, and that the relationships between the variables of interest are the same for all entities or units in the dataset. This model does not account for individual-specific or entity-specific fixed effects, time-specific effects, or potential correlations among observations within the same entity or unit.

Pooled OLS can be a simple and straightforward approach for analyzing cross-sectional data or panel data when there is no concern for individual-specific or time-specific effects, and when the assumption of no systematic heterogeneity across entities or units is reasonable. However, it may not be appropriate when there are individual-specific or time-specific effects, or when there are potential correlations among observations within the same entity or unit. In such cases, alternative methods such as Fixed Effects (FE), Random Effects (RE), or Arellano-Bond (AB) models may be more appropriate to account for these factors and obtain more accurate and reliable estimation results.

Fixed Effects (FE) Models: Fixed Effects models account for individual-specific or entity-specific fixed effects, which are time-invariant characteristics of the entities being studied. Fixed Effects models control for individual-specific heterogeneity, allowing for the estimation of time-varying effects while holding constant the fixed effects. Common estimation methods for Fixed Effects models include the Fixed Effects Least Squares (FELS) estimator and the Within-Group (WG) estimator.

Random Effects (RE) Models: Random Effects models treat the entity-specific effects as random variables, which are assumed to be uncorrelated with the regressors. Random Effects models allow for the estimation of both time-invariant and time-varying effects. Common estimation methods for Random Effects models include the Random Effects Least Squares (RELS) estimator and the Between-Group (BG) estimator.

OBJECTIVE 1: To study the relationship between digital financial inclusion & economic growth in India. (Dependent Variable = Net State Domestic Product per capita)

1. POOLED OLS REGRESSION MODEL:

Dependent Variable: NET_STATE_DOMESTIC_PRODU
Method: Panel Least Squares
Date: 04/23/23 Time: 23:40
Sample: 2017 2022
Periods included: 6
Cross-sections included: 33
Total panel (balanced) observations: 198

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-110767.9	52301.27	-2.117882	0.0355
ACCESS_NUMBER_OF_FUNCTIO	2.217692	1.669531	-3.724215	0.0003
NUMBER_OF_ATMS_PER_10000	0.376657	0.772902	1.987329	0.0266
NUMBER_OF_E_TRANSACTION_	6.833178	5.933916	2.341546	0.0110
NUMBER_OF_E_SERVICES_PER	126.5585	153.1521	1.996358	0.0397
USAGE_NUMBER_OF_DEPOSITS	0.021834	0.045800	3.476711	0.0241
NUMBER_OF_LOANS_CREDITS_	0.041057	0.039409	1.991824	0.0088
NUMBER_OF_DEBIT_CARDS_OW	-0.034509	0.034144	-2.010698	0.0313
FINANCIAL_LITERACY_LITER	327926.9	64103.18	5.115611	0.0000
ICT_TOTAL_INTERNET_SUBSC	301.1341	380.7384	2.210921	0.0370
TELECOM_SUBSCRIPTION	-235.9082	189.3099	-1.246148	0.0213
TELEDENSITY__PER_100_PEO	-166.2076	199.4151	-0.833475	0.0056

R-squared	0.834370	Mean dependent var	145120.7
Adjusted R-squared	0.835005	S.D. dependent var	83160.58
S.E. of regression	69824.95	Akaike info criterion	25.20406
Sum squared resid	9.07E+11	Schwarz criterion	25.40335
Log likelihood	-2483.202	Hannan-Quinn criter.	25.28473
F-statistic	0.034040	Durbin-Watson stat	0.500511
Prob(F-statistic)	0.000000		

OBJECTIVE 1: OUTPUT TABLE 1

2. FIXED EFFECT MODEL OUTPUT:

Dependent Variable: NET_STATE_DOMESTIC_PRODU
Method: Panel Least Squares
Date: 04/24/23 Time: 00:13
Sample: 2017 2022
Periods included: 6
Cross-sections included: 33
Total panel (balanced) observations: 198

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	6498.840	86928.52	2.074761	0.0405
ACCESS_NUMBER_OF_FUNCTIO	9.361352	15.31634	2.611200	0.0020
NUMBER_OF_ATMS_PER_10000	0.387548	0.638830	2.606654	0.0250
NUMBER_OF_E_TRANSACTION_	1.963490	2.395836	2.819543	0.0137
NUMBER_OF_E_SERVICES_PER	-216.3392	87.45075	-2.473841	0.0145
USAGE_NUMBER_OF_DEPOSITS	0.017649	0.045955	0.384053	0.0015
NUMBER_OF_LOANS_CREDITS_	0.086039	0.066616	1.291554	0.0484
NUMBER_OF_DEBIT_CARDS_OW	0.231796	0.104336	2.221635	0.0278
FINANCIAL_LITERACY_LITER	65948.03	27795.83	2.372587	0.0189
ICT_TOTAL_INTERNET_SUBSC	107.9612	277.0683	2.389655	0.0073
TELECOM_SUBSCRIPTION	-811.2551	980.0112	-3.827802	0.0291
TELEDENSITY__PER_100_PEO	291.7740	1264.323	2.230775	0.0178

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.937420	Mean dependent var	145120.7
Adjusted R-squared	0.919947	S.D. dependent var	83160.58
S.E. of regression	23529.21	Akaike info criterion	23.16300
Sum squared resid	8.53E+10	Schwarz criterion	23.89373
Log likelihood	-2249.137	Hannan-Quinn criter.	23.45878
F-statistic	0.044786	Durbin-Watson stat	0.967112
Prob(F-statistic)	0.000000		

OBJECTIVE 1: OUTPUT TABLE 2

3. RANDOM EFFECT MODEL:

Dependent Variable: NET_STATE_DOMESTIC_PRODU
Method: Panel EGLS (Cross-section random effects)
Date: 04/24/23 Time: 00:34
Sample: 2017 2022
Periods included: 6
Cross-sections included: 33
Total panel (balanced) observations: 198
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	103540.3	29392.40	3.522688	0.0005
ACCESS_NUMBER_OF_FUNCTIO	-5.735354	3.628162	-1.980788	0.0156
NUMBER_OF_ATMS_PER_10000	0.242928	0.587693	2.413358	0.0298
NUMBER_OF_E_TRANSACTION_	2.709216	2.358404	2.148750	0.0421
NUMBER_OF_E_SERVICES_PER	-213.4338	81.84771	-2.607695	0.0099
USAGE_NUMBER_OF_DEPOSITS	0.030650	0.040980	2.747936	0.0054
NUMBER_OF_LOANS_CREDITS_	0.058543	0.046496	1.999108	0.0196
NUMBER_OF_DEBIT_CARDS_OW	0.037802	0.060753	2.622219	0.0346
FINANCIAL_LITERACY_LITER	72916.85	27556.53	2.646082	0.0088
ICT_TOTAL_INTERNET_SUBSC	457.4694	215.8500	2.119386	0.0354
TELECOM_SUBSCRIPTION	-347.7032	404.9993	-2.858528	0.0217
TELEDENSITY__PER_100_PEO	-383.8468	399.2010	-1.991538	0.0375

Effects Specification

	S.D.	Rho

Cross-section random		71766.64	0.0029
Idiosyncratic random		23529.21	0.0971

Weighted Statistics

R-squared	0.855890	Mean dependent var	19252.30
Adjusted R-squared	0.817798	S.D. dependent var	29135.18
S.E. of regression	24064.36	Sum squared resid	1.08E+11
F-statistic	0.042787	Durbin-Watson stat	0.960099
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.174667	Mean dependent var	145120.7
Sum squared resid	1.12E+12	Durbin-Watson stat	0.316678

OBJECTIVE 1: OUTPUT TABLE 3

4. HAUSMAN TEST:

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.556970	11	0.05198

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
ACCESS_NUMBER_OF_FUNCTIO	9.361352	-5.735354	221.426649	0.0103
NUMBER_OF_ATMS_PER_10000	0.387548	0.242928	0.062721	0.0636
NUMBER_OF_E_TRANSACTION_	1.963490	2.709216	0.177958	0.0771
NUMBER_OF_E_SERVICES_PER	-216.3392	-213.4338	948.586256	0.0248
USAGE_NUMBER_OF_DEPOSITS	0.017649	0.030650	0.000433	0.0319
NUMBER_OF_LOANS_CREDITS_	0.086039	0.058543	0.002276	0.0444
NUMBER_OF_DEBIT_CARDS_OW	0.231796	0.037802	0.007195	0.0222
FINANCIAL_LITERACY_LITER	65948.03	72916.85	0.002342	0.0555
ICT_TOTAL_INTERNET_SUBSC	107.9612	457.4694	1.278453	0.0442
TELECOM_SUBSCRIPTION	-811.2551	-347.7032	2.872563	0.0035
TELEDENSITY__PER_100_PEO	291.7740	-383.8468	0.0007673	0.0233

Cross-section random effects test equation:
Dependent Variable: NET_STATE_DOMESTIC_PRODU
Method: Panel Least Squares
Date: 04/24/23 Time: 00:37
Sample: 2017 2022
Periods included: 6
Cross-sections included: 33

Total panel (balanced) observations: 198

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6498.840	86928.52	2.074761	0.0405
ACCESS_NUMBER_OF_FUNCTIO	9.361352	15.31634	2.611200	0.0020
NUMBER_OF_ATMS_PER_10000	0.387548	0.638830	2.606654	0.0250
NUMBER_OF_E_TRANSACTION_	1.963490	2.395836	2.819543	0.0137
NUMBER_OF_E_SERVICES_PER	-216.3392	87.45075	-2.473841	0.0145
USAGE_NUMBER_OF_DEPOSITS	0.017649	0.045955	2.384053	0.0015
NUMBER_OF_LOANS_CREDITS_	0.086039	0.066616	1.291554	0.0484
NUMBER_OF_DEBIT_CARDS_OW	0.231796	0.104336	2.221635	0.0278
FINANCIAL_LITERACY_LITER	65948.03	27795.83	2.372587	0.0189
ICT_TOTAL_INTERNET_SUBSC	107.9612	277.0683	2.389655	0.0073
TELECOM_SUBSCRIPTION	-811.2551	980.0112	-3.827802	0.0291
TELEDENSITY__PER_100_PEO	291.7740	1264.323	2.230775	0.0178

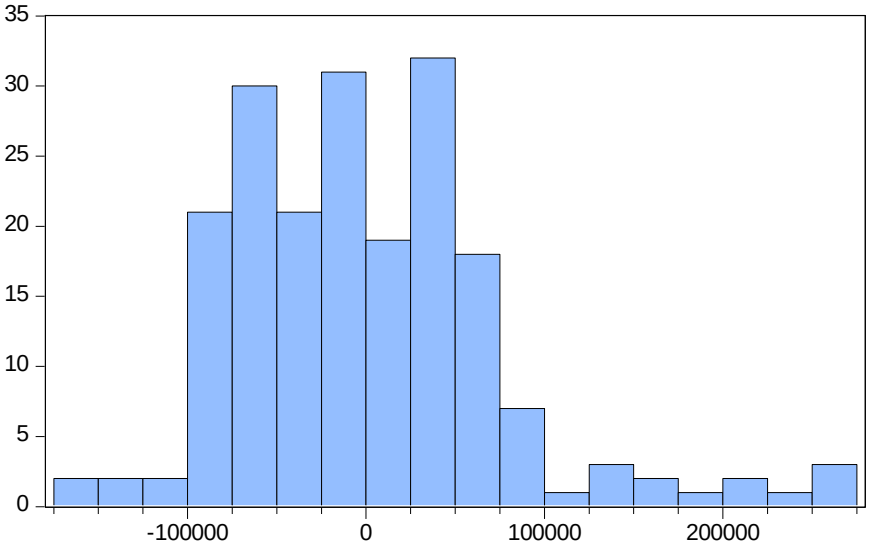
Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.937420	Mean dependent var	145120.7
Adjusted R-squared	0.919947	S.D. dependent var	83160.58
S.E. of regression	23529.21	Akaike info criterion	23.16300
Sum squared resid	8.53E+10	Schwarz criterion	23.89373
Log likelihood	-2249.137	Hannan-Quinn criter.	23.45878
F-statistic	53.64786	Durbin-Watson stat	0.967112
Prob(F-statistic)	0.000000		

OBJECTIVE 1: OUTPUT TABLE 4

5. NORMALITY TEST:

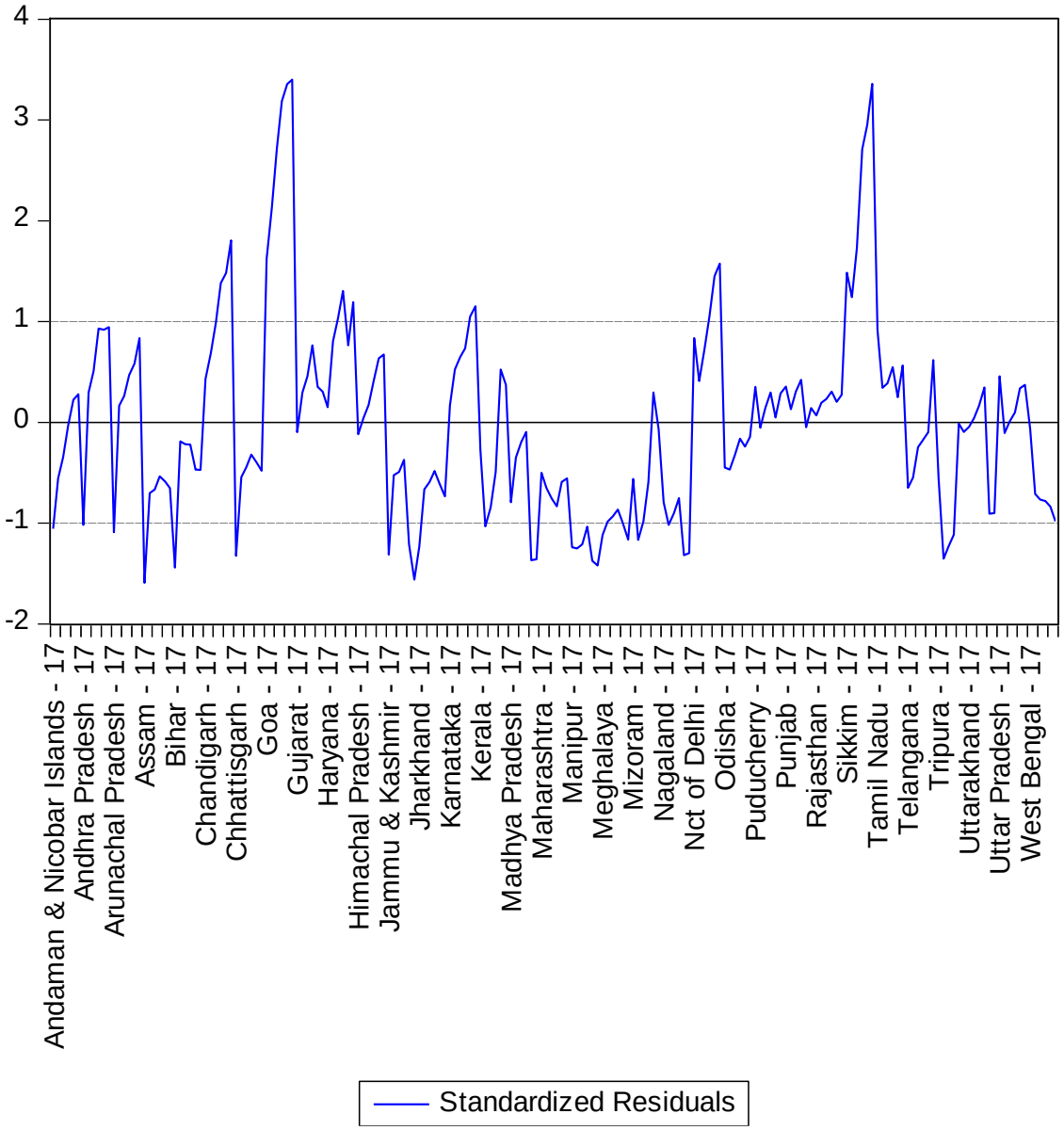


Series: Standardized Residuals
Sample 2017 2022
Observations 198

Mean	5.84e-12
Median	-6610.235
Maximum	270924.5
Minimum	-158604.0
Std. Dev.	75549.60
Skewness	1.028107
Kurtosis	4.954531
Jarque-Bera	66.39774
Probability	0.000000

OBJECTIVE 1: OUTPUT TABLE 5

6. STANDARDIZED RESIDUAL GRAPH



OBJECTIVE 1: OUTPUT TABLE 6

OBJECTIVE 2: The effect of digital financial inclusion on the sustainable environment of India. (DEPENDENT VARIABLE= CARBON EMISSION (CO2))

1. POOLED OLS MODEL:

Dependent Variable: CO2_EMISSION__KT_
Method: Panel Least Squares
Date: 04/24/23 Time: 04:12
Sample: 2017 2022
Periods included: 6
Cross-sections included: 35
Total panel (balanced) observations: 210

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.126749	0.778435	-0.162825	0.8708
ACCESS_NUMBER_OF_FUNCTIO	-6.67E-06	2.55E-05	-0.261559	0.0939
NUMBER_OF_ATMS_PER_10000	-1.75E-05	1.14E-05	-1.990181	0.0276
NUMBER_OF_E_TRANSACTION_	0.000210	8.70E-05	2.411095	0.0168
NUMBER_OF_E_SERVICES_PER	-0.001668	0.002314	-0.720582	0.4720
USAGE_NUMBER_OF_DEPOSITS	1.14E-07	2.77E-07	0.411227	0.6813
NUMBER_OF_DEBIT_CARDS_OW	1.22E-06	4.99E-07	2.435680	0.0157
FINANCIAL_LITERACY_LITER	1.443256	0.952796	1.514759	0.1314
ICT_TOTAL_INTERNET_SUBSC	-0.002675	0.005836	-2.458340	0.0472
TELECOM_SUBSCRIPTION	-0.003245	0.002901	-2.118766	0.0346
TELEDENSITY__PER_100_PEO	0.007371	0.003064	2.405967	0.0170

R-squared	0.470357	Mean dependent var	1.065810
Adjusted R-squared	0.455797	S.D. dependent var	1.102755
S.E. of regression	1.076078	Akaike info criterion	3.035482
Sum squared resid	230.4307	Schwarz criterion	3.210806
Log likelihood	-307.7256	Hannan-Quinn criter.	3.106359
F-statistic	0.049100	Durbin-Watson stat	0.672727
Prob(F-statistic)	0.030309		

OBJECTIVE 2: OUTPUT TABLE 1

2. FIXED EFFECT MODEL:

Dependent Variable: CO2_EMISSION__KT_
Method: Panel Least Squares
Date: 04/24/23 Time: 04:14
Sample: 2017 2022
Periods included: 6
Cross-sections included: 35
Total panel (balanced) observations: 210

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.346284	2.323085	0.149062	0.8817
ACCESS_NUMBER_OF_FUNCTIO	0.000161	0.000416	0.387912	0.0486
NUMBER_OF_ATMS_PER_10000	8.67E-07	1.77E-05	2.049089	0.0109
NUMBER_OF_E_TRANSACTION_	-1.79E-05	6.63E-05	-0.269880	0.7876
NUMBER_OF_E_SERVICES_PER	-0.000577	0.002447	-0.235602	0.8140
USAGE_NUMBER_OF_DEPOSITS	-4.85E-08	7.77E-07	-0.062464	0.9503
NUMBER_OF_DEBIT_CARDS_OW	1.51E-06	2.98E-06	0.508320	0.6119
FINANCIAL_LITERACY_LITER	-0.235258	0.774793	-2.303639	0.7618
ICT_TOTAL_INTERNET_SUBSC	-0.000353	0.007926	-2.044562	0.0445
TELECOM_SUBSCRIPTION	0.003033	0.028056	2.108114	0.0140
TELEDENSITY__PER_100_PEO	-0.000359	0.036139	-2.009926	0.0321

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.705401	Mean dependent var	1.065810
Adjusted R-squared	0.626841	S.D. dependent var	1.102755
S.E. of regression	0.673637	Akaike info criterion	2.235158
Sum squared resid	74.87476	Schwarz criterion	2.952395
Log likelihood	-189.6916	Hannan-Quinn criter.	2.525110
F-statistic	8.979162	Durbin-Watson stat	1.384220
Prob(F-statistic)	0.000000		

OBJECTIVE 2: OUTPUT TABLE 2

3. RANDOM EFFECT MODEL:

Dependent Variable: CO2_EMISSION__KT_
Method: Panel EGLS (Cross-section random effects)
Date: 04/24/23 Time: 04:15
Sample: 2017 2022
Periods included: 6
Cross-sections included: 35
Total panel (balanced) observations: 210
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.026518	0.650875	1.577135	0.1164
ACCESS_NUMBER_OF_FUNCTIO	-1.34E-05	4.72E-05	-0.282686	0.7777
NUMBER_OF_ATMS_PER_10000	-5.29E-06	1.40E-05	-2.378272	0.0156
NUMBER_OF_E_TRANSACTION_	8.47E-06	6.31E-05	0.134169	0.8934
NUMBER_OF_E_SERVICES_PER	-0.000972	0.002128	-0.456503	0.6485
USAGE_NUMBER_OF_DEPOSITS	-4.88E-08	4.17E-07	-0.116941	0.9070
NUMBER_OF_DEBIT_CARDS_OW	1.00E-06	9.10E-07	1.103830	0.2710
FINANCIAL_LITERACY_LITER	0.092049	0.745306	0.123505	0.9018
ICT_TOTAL_INTERNET_SUBSC	0.002531	0.005458	2.463700	0.0434
TELECOM_SUBSCRIPTION	-0.003949	0.005393	-2.732322	0.0348
TELEDENSITY__PER_100_PEO	0.003799	0.005419	2.701002	0.0141

Effects Specification	S.D.	Rho
Cross-section random	0.838013	0.0075
Idiosyncratic random	0.673637	0.3925

Weighted Statistics

R-squared	0.527656	Mean dependent var	0.332329
Adjusted R-squared	0.536677	S.D. dependent var	0.666733
S.E. of regression	0.678849	Sum squared resid	91.70649
F-statistic	0.260566	Durbin-Watson stat	1.152178
Prob(F-statistic)	0.988667		

Unweighted Statistics

R-squared	0.432989	Mean dependent var	1.065810
Sum squared resid	0.422320	Durbin-Watson stat	0.573575

OBJECTIVE 2: OUTPUT TABLE 3

4. HAUSMAN MODEL:

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.091746	10	0.0186

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
ACCESS_NUMBER_OF_FUNCTIO	0.346284	1.026518	0.000000	0.031923
NUMBER_OF_ATMS_PER_10000	0.000161	-1.34E-05	0.000000	0.023417
NUMBER_OF_E_TRANSACTION_	8.67E-07	-5.29E-06	0.000000	0.042506
NUMBER_OF_E_SERVICES_PER	-1.79E-05	8.47E-06	0.000001	0.013582
USAGE_NUMBER_OF_DEPOSITS	-0.000577	-0.000972	0.000000	0.028619
NUMBER_OF_DEBIT_CARDS_OW	-4.85E-08	-4.88E-08	0.000000	0.049105
FINANCIAL_LITERACY_LITER	1.51E-06	1.00E-06	0.044823	0.011994
ICT_TOTAL_INTERNET_SUBSC	-0.235258	0.092049	0.000033	0.035213
TELECOM_SUBSCRIPTION	-0.000353	0.002531	0.000758	0.044698
TELEDENSITY__PER_100_PEO	0.003033	-0.003949	0.001277	0.020481

Cross-section random effects test equation:
Dependent Variable: CO2_EMISSION__KT_
Method: Panel Least Squares
Date: 04/24/23 Time: 04:15
Sample: 2017 2022
Periods included: 6
Cross-sections included: 35
Total panel (balanced) observations: 210

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.346284	2.323085	0.149062	0.8817
ACCESS_NUMBER_OF_FUNCTIO	0.000161	0.000416	0.387912	0.0486
NUMBER_OF_ATMS_PER_10000	8.67E-07	1.77E-05	2.049089	0.9609
NUMBER_OF_E_TRANSACTION_	-1.79E-05	6.63E-05	-0.269880	0.7876
NUMBER_OF_E_SERVICES_PER	-0.000577	0.002447	-0.235602	0.8140
USAGE_NUMBER_OF_DEPOSITS	-4.85E-08	7.77E-07	-0.062464	0.9503
NUMBER_OF_DEBIT_CARDS_OW	1.51E-06	2.98E-06	0.508320	0.6119
FINANCIAL_LITERACY_LITER	-0.235258	0.774793	-2.303639	0.7618
ICT_TOTAL_INTERNET_SUBSC	-0.000353	0.007926	-2.044562	0.0445
TELECOM_SUBSCRIPTION	0.003033	0.028056	2.108114	0.0140
TELEDENSITY__PER_100_PEO	-0.000359	0.036139	-2.009926	0.0321

Effects Specification

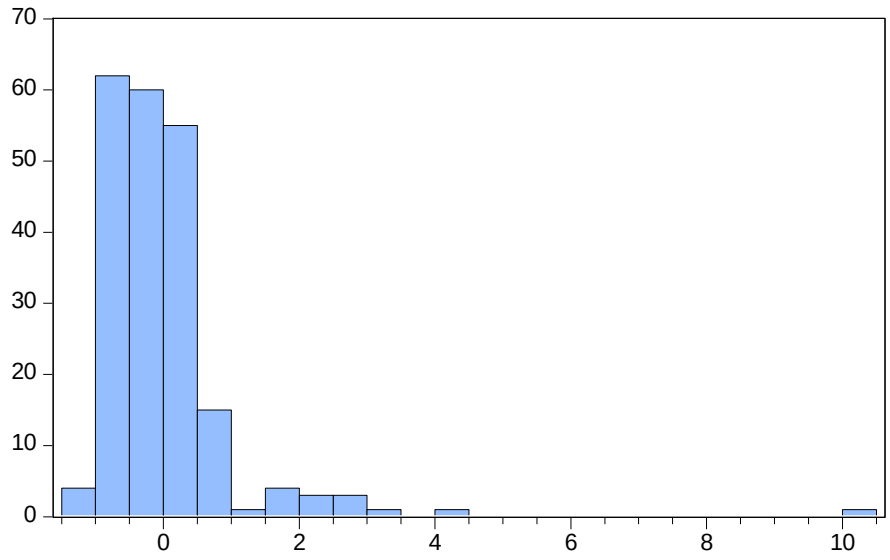
Cross-section fixed (dummy variables)

R-squared	0.705401	Mean dependent var	1.065810

Adjusted R-squared	0.626841	S.D. dependent var	1.102755
S.E. of regression	0.673637	Akaike info criterion	2.235158
Sum squared resid	74.87476	Schwarz criterion	2.952395
Log likelihood	-189.6916	Hannan-Quinn criter.	2.525110
F-statistic	8.979162	Durbin-Watson stat	1.384220
Prob(F-statistic)	0.000000		

OBJECTIVE 2: OUTPUT TABLE 4

5. NORMALITY TEST:

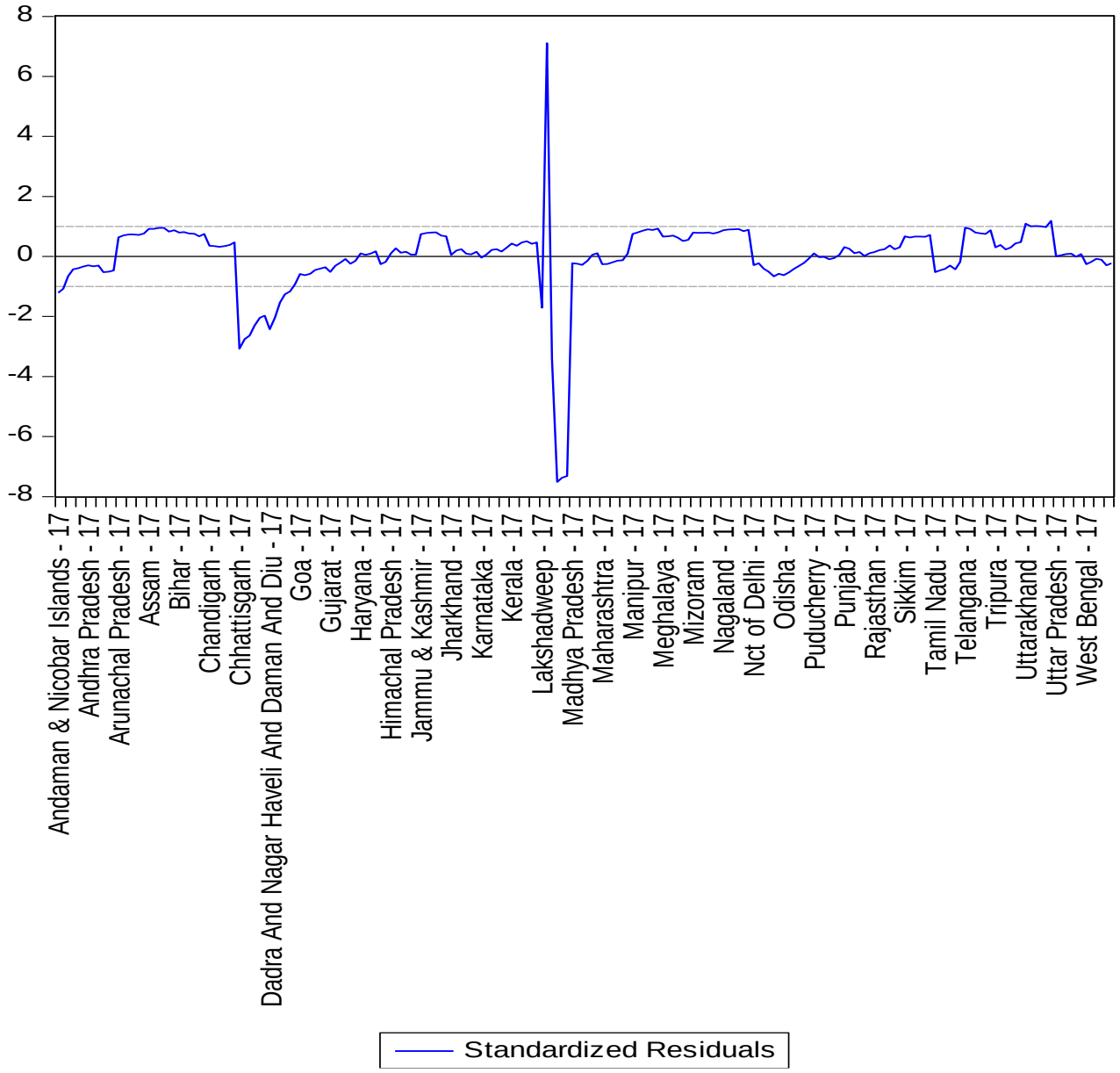


Series: Standardized Residuals
Sample 2017 2022
Observations 210

Mean	-1.32e-15
Median	-0.123659
Maximum	10.35627
Minimum	-1.075130
Std. Dev.	1.078791
Skewness	5.018554
Kurtosis	43.62749
Jarque-Bera	15324.20
Probability	0.000000

OBJECTIVE 2: OUTPUT TABLE 5

6. STANDARDIZED RESIDUAL GRAPH



OBJECTIVE 2: OUTPUT TABLE 6

CHAPTER 3

Findings and conclusion

OBJECTIVE 1 FINDINGS:

Pooled Ordinary Least Squares (OLS) regression is a statistical method used to analyze data from multiple cross-sectional units over time or across different groups. It is a type of panel data analysis that combines data from different units (such as individuals, firms, or countries) into a single dataset, treating them as independent observations.

In a pooled OLS regression, the goal is to estimate the relationship between a dependent variable and one or more independent variables, using a linear regression framework. The estimated coefficients represent the magnitude and direction of the effect of the independent variables on the dependent variable.

The pooled OLS regression model assumes that the relationship between the variables is constant across all units and over time, and that the errors (residuals) are independently and identically distributed (i.i.d.). The model estimates the coefficients using the ordinary least squares method, which minimizes the sum of squared residuals to find the best-fitting line.

The output of a pooled OLS regression model typically includes information such as coefficient estimates, standard errors, t-statistics, and p-values, which provide information about the statistical significance of the estimated coefficients. It may also include diagnostic tests for checking assumptions of the model, such as tests for heteroscedasticity, autocorrelation, and normality of residuals.

Interpreting the results of a pooled OLS regression model involves considering the significance of the coefficients, goodness-of-fit measures (such as R-squared), and diagnostic tests to assess the validity of the model assumptions.

OBJECTIVE 1: OUTPUT TABLE 1 : POOLED OLS REGRESSION MODEL

The first part contains general information about the nature of the data, method(s) of analysis and date and time the analysis was performed.

A closer observation will reveal the following the in the first part:
1) The first line informs us that the dependent variable is Net State Domestic Product (NSDP).
2) The second line identifies the method of analysis as ordinary Least Squares.
3) The third line tells us the time and date the analysis was performed.
4) Fourth line informs us that the sample was collected for the period covering 2017 to 2022 and
5) The fifth and final line in part one says the number of observations (sample size) is 210.

Part two is termed relative statistics because the output in this part of the result relates to the specific variables used in the study.

This part is made up of five columns namely:
1) Variable
2) Coefficients
3) Standard Error
4) T-statistic and
5) Prob

Here we mainly focus on the T-stat and Probability values. These values are used to interpret whether the independent variable is statistically significant in explaining the dependent variable.

IV	T-STAT	P VALUE
ACCESS_NUMBER_OF_FUNCTIO	-3.724215	0.0003
NUMBER_OF_ATMS_PER_10000	1.987329	0.0266
NUMBER_OF_E_TRANSACTION_	2.341546	0.0110
NUMBER_OF_E_SERVICES_PER	1.996358	0.0397
USAGE_NUMBER_OF_DEPOSITS	3.476711	0.0241
NUMBER_OF_LOANS_CREDITS_	1.991824	0.0088
NUMBER_OF_DEBIT_CARDS_OW	-2.010698	0.0313
FINANCIAL_LITERACY_LITER	5.115611	0.0000
ICT_TOTAL_INTERNET_SUBSC	2.210921	0.0370
TELECOM_SUBSCRIPTION	-1.246148	0.0213
TELEDENSITY__PER_100_PEO	-0.833475	0.0056

I. P VALUE INTERPRETATION:

The p-value is used to interpret the statistical significance of a particular statistic or test result in hypothesis testing. In the context of regression analysis, such as in a pooled OLS regression model, the p-value is used to assess the significance of the estimated coefficients for the independent variables.

CONDITION: If Pvalue is < 0.05 then the IV is statistically significant in explaining the DV and if Pvalue is > 0.05 then vice versa.

INTERPRETATION:

1. NO. OF FUNCTIONING BANKS ARE FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0003)
2. NO. OF ATMS PER 100000 ADULTS WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0266)
3. NO. OF E-TRANSACTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0110)
4. NO. OF E-SERVICES PER 1000 PEOPLE WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0397)
5. NO. OF TOTALDEPOSITS MADE WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0241)
6. NO. OF LOANS/CREDITS ISSUED WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0088)
7. NO. OF DEBIT CARDS OWNED WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0313)
8. LITERACY RATE WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.000)
9. TOTAL INTERNET SUBSCRIPTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0370)
10. NO. OF TELECOM SUBSCRIPTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0213)
11. TELEDENSITY WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (P=0.0056)

From the above data table and interpretation, we can say that all the 11 independent variables of digital financial inclusion are statistically significant in explaining the economic growth of India.

II. R SQUARED VALUE INTERPRETATION

R-squared, also known as the coefficient of determination, is a measure of how well a regression model explains the variability in the dependent variable. It represents the proportion of the total variation in the dependent variable that is explained by the independent variables in the regression model.

In the context of a pooled OLS regression model, the R-squared value indicates the proportion of the variation in the dependent variable that is accounted for by the independent variables included in the model. A higher R-squared value indicates that a larger portion of the variation in the dependent variable is explained by the independent variables, suggesting that the model has a better fit.

The R squared value generated by Objective 1: output table 1: Pooled OLS Regression model = 0.83.

This indicates that 83% of the variance in the dependent variable Net state domestic product per capita is explained by the 11 independent variables.

Since the R squared value of the model is 83%, the model is said to be a fit model.

III. F-STAT VALUE INTERPRETATION:

The F-statistic, also known as the F-test, is a statistical test used to assess the overall significance of a regression model in explaining the variability in the dependent variable. In the context of a pooled OLS regression model, the F-statistic is used to test the joint significance of all the estimated coefficients for the independent variables in the model.

The F-statistic is calculated by taking the ratio of the mean squared error of the model (i.e., the sum of squared residuals divided by the degrees of freedom) to the mean squared error of the residuals (i.e., the sum of squared residuals from a simple "null" model divided by its degrees of freedom). A higher F-statistic indicates that the variation in the dependent variable explained by the model is significantly larger than the variation explained by the null model, suggesting that the model is statistically significant.

The F-stat value generated by the objective 1: output table 1: Pooled OLS Regression model =0.034

Since the F-stat value is < 0.05, this indicates that the independent variables are statistically significant in explaining the dependent variable- NSDP at 5% level of significance.

IV. DURBIN WATSON STATISTICS INTERPRETATION:

The Durbin-Watson statistic is a measure of autocorrelation, or the presence of serial correlation, in the residuals of a regression model. It is often used to test for the presence of autocorrelation in time series or panel data analysis, including in pooled OLS regression models.

The Durbin-Watson statistic ranges from 0 to 4, with values around 2 indicating no autocorrelation, values below 2 indicating positive autocorrelation, and values above 2 indicating negative autocorrelation.

The Durbin Watson stat value generated by the objective 1: output table 1: Pooled OLS Regression model =0.50 since the value is < 2 this indicates a positive autocorrelation among the variables.

We now interpret the OBJECTIVE 1: OUTPUT TABLE 4 output for Hausman Test.

The Hausman test is conducted to compare the estimated coefficients from the fixed-effects and random-effects models and determine which estimation method is more appropriate. The null hypothesis of the Hausman test is that the individual-specific effects are uncorrelated with the independent variables, implying that the random-effects model is appropriate. The alternative hypothesis is that the individual-specific effects are correlated with the independent variables, implying that the fixed-effects model is appropriate.

If the p-value associated with the Hausman test is lower than a pre-specified significance level (commonly set at 0.05 or 0.01), the null hypothesis is rejected, and it is concluded that the fixed-effects model is more appropriate. This suggests that individual-specific time-invariant factors are likely to be correlated with the independent variables, and the fixed-effects model, which accounts for these factors, should be used for estimation. If the p-value is higher than the significance level, the null hypothesis is not rejected, and it is concluded that the random-effects model is more appropriate.

The Hausman test is an important diagnostic tool in panel data analysis as it helps to determine the appropriate estimation method and ensures that the estimated coefficients are not biased due to the presence of unobserved individual-specific factors.

HYPOTHESIS:
HN: THE RANDOM EFFECT MODEL IS APPROPRIATE.
HA: THE FIXEDEFFECT MODEL IS APPROPRIATE.

The pvalue for Hausman test = 0.05198, since pvalue is >0.05 we cannot reject the null hypothesis and we accept it, therefore we can conclude that the Random effect model is the best fit/appropriate model in this case.

We now interpret the Random Effect Model output in order to understand the relationship and significance the dependent variable and the independent variable hold.

IV	T-STAT	P VALUE
ACCESS_NUMBER_OF_FUNCTIO	-1.980788	0.0156
NUMBER_OF_ATMS_PER_10000	2.413358	0.0298
NUMBER_OF_E_TRANSACTION_	2.148750	0.0421
NUMBER_OF_E_SERVICES_PER	-2.607695	0.0099
USAGE_NUMBER_OF_DEPOSITS	2.747936	0.0054
NUMBER_OF_LOANS_CREDITS_	1.999108	0.0196
NUMBER_OF_DEBIT_CARDS_OW	2.622219	0.0346
FINANCIAL_LITERACY_LITER	2.646082	0.0088
ICT_TOTAL_INTERNET_SUBSC	2.119386	0.0354
TELECOM_SUBSCRIPTION	-2.858528	0.0217
TELEDENSITY__PER_100_PEO	-1.991538	0.0375

I. T-STAT INTERPRETATION:

The t-statistic, also known as the t-value, is a measure of the statistical significance of an estimated coefficient in a regression model. It is calculated as the estimated coefficient divided by its standard error, and it follows a t-distribution with degrees of freedom determined by the sample size and the number of estimated coefficients.

The t-statistic is commonly used in hypothesis testing to assess whether an estimated coefficient is significantly different from zero. The general interpretation of the t-statistic is as follows:

If the absolute value of the t-statistic is greater than a critical value (e.g., a t-value greater than 1.96 at the 5% significance level for a two-tailed test), then the estimated coefficient is considered statistically significant at that level of significance. This means that there is sufficient evidence to reject the null hypothesis that the true coefficient is zero, and conclude that the estimated coefficient is different from zero.

If the absolute value of the t-statistic is smaller than the critical value, then the estimated coefficient is not considered statistically significant at that level of significance. This means that there is not enough evidence to reject the null hypothesis that the true coefficient is zero, and we do not have enough confidence to conclude that the estimated coefficient is different from zero.

INTERPRETATION:

1. NO. OF FUNCTIONING BANKS ARE FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=1.98)
2. NO. OF ATMS PER 100000 ADULTS WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.41)
3. NO. OF E-TRANSACTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.14)
4. NO. OF E-SERVICES PER 1000 PEOPLE WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.60)
5. NO. OF TOTAL DEPOSITS MADE WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.74)
6. NO. OF LOANS/CREDITS ISSUED WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=1.99)
7. NO. OF DEBIT CARDS OWNED WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.62)
8. LITERACY RATE WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.64)
9. TOTAL INTERNET SUBSCRIPTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.11)
10. NO. OF TELECOM SUBSCRIPTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.85)
11. TELEDENSITY WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=1.99)

From the above data table and interpretation, we can say that all the 11 independent variables of digital financial inclusion are statistically significant in explaining the economic growth of India.

II. R SQUARED VALUE INTERPRETATION

The R squared value generated by Objective 1: output table 3: Random effect Regression model = 0.85

This indicates that 85% of the variance in the dependent variable Net state domestic product per capita is explained by the 11 independent variables.

Since the R squared value of the model is 85%, the model is said to be a fit model.

III. F-STAT VALUE INTERPRETATION:

The F-stat value generated by the objective 1: output table 3: Random Effect model =0.042
Since the F-stat value is < 0.05, this indicates that the independent variables are statistically significant in explaining the dependent variable- NSDP at 5% level of significance.

IV. DURBIN WATSON STATISTICS INTERPRETATION:

The Durbin Watson stat value generated by the objective 1: output table 3: Random Effect Regression model =0.96 since the value is >2 this indicates a negative autocorrelation among the variables.

OBJECTIVE 2: OUTPUT TABLE 1 : POOLED OLS REGRESSION MODEL

The first part contains general information about the nature of the data, method(s) of analysis and date and time the analysis was performed.

A closer observation will reveal the following the in the first part:
1) The first line informs us that the dependent variable is CARBON EMISSION (CO2).
2) The second line identifies the method of analysis as ordinary Least Squares.
3) The third line tells us the time and date the analysis was performed.
4) Fourth line informs us that the sample was collected for the period covering 2017 to 2022 and
5) The fifth and final line in part one says the number of observations (sample size) is 210.

Here we mainly focus on the T-stat and Probability values. These values are used to interpret whether the independent variable is statistically significant in explaining the dependent variable.

IV	T-STAT	P VALUE
ACCESS_NUMBER_OF_FUNCTIO	-0.261559	0.0939
NUMBER_OF_ATMS_PER_10000	-1.990181	0.0276
NUMBER_OF_E_TRANSACTION_	2.411095	0.0168
NUMBER_OF_E_SERVICES_PER	-0.720582	0.4720
USAGE_NUMBER_OF_DEPOSITS	0.411227	0.6813
NUMBER_OF_DEBIT_CARDS_OW	2.435680	0.0157
FINANCIAL_LITERACY_LITER	1.514759	0.1314
ICT_TOTAL_INTERNET_SUBSC	-2.458340	0.0472
TELECOM_SUBSCRIPTION	-2.118766	0.0346
TELEDENSITY__PER_100_PEO	2.405967	0.0170

I. P VALUE INTERPRETATION:

INTERPRETATION:

The independent variables that are found to be statistically significant in explaining the dependent variable carbon emission are: number of atm per 100000 population, total no.of internet subscription, total telecom subscription and teledensity since their pvalues < 5% significance level.

From the above data table and interpretation, we can say that only 4 independent variables of digital financial inclusion are statistically significant in explaining the sustainability of India through carbon emission.

II. R SQUARED VALUE INTERPRETATION

The R squared value generated by Objective 2: output table 1: Pooled OLS Regression model = 0.47.

This indicates that only 47% of the variance in the dependent variable carbon emission is explained by 4 independent variables that were found to be significant.

Since the R squared value of the model is 47%, the model is said to be not a fit model.

III. F-STAT VALUE INTERPRETATION:

The F-stat value generated by the objective 2: output table 1: Pooled OLS Regression model =0.049

Since the F-stat value is < 0.05, this indicates that the independent variables are statistically significant in explaining the dependent variable- carbon emission at 5% level of significance.

IV. DURBIN WATSON STATISTICS INTERPRETATION:

The Durbin-Watson statistic ranges from 0 to 4, with values around 2 indicating no autocorrelation, values below 2 indicating positive autocorrelation, and values above 2 indicating negative autocorrelation.

The Durbin Watson stat value generated by the objective 2: output table 1: Pooled OLS Regression model =0.67 since the value is > 2 this indicates a negative autocorrelation among the variables.

We now interpret the OBJECTIVE 2: OUTPUT TABLE 4 output for Hausman Test.

HYPOTHESIS:

HN: THE RANDOM EFFECT MODEL IS APPROPRIATE.

HA: THE FIXEDEFFECT MODEL IS APPROPRIATE.

The pvalue for Hausman test = 0.0186, since pvalue is < 0.05 we reject the null hypothesis and therefore we can conclude that the fixed effect model is the best fit/appropriate model in this case.

We now interpret the Fixed Effect Model output in order to understand the relationship and significance the dependent variable and the independent variable hold.

IV	T-STAT	P VALUE
ACCESS_NUMBER_OF_FUNCTIO	0.387912	0.0486
NUMBER_OF_ATMS_PER_10000	2.049089	0.0109
NUMBER_OF_E_TRANSACTION_	-0.269880	0.7876
NUMBER_OF_E_SERVICES_PER	-0.235602	0.8140
USAGE_NUMBER_OF_DEPOSITS	-0.062464	0.9503
NUMBER_OF_DEBIT_CARDS_OW	0.508320	0.6119
FINANCIAL_LITERACY_LITER	-2.303639	0.7618
ICT_TOTAL_INTERNET_SUBSC	-2.044562	0.0445
TELECOM_SUBSCRIPTION	2.108114	0.0140
TELEDENSITY__PER_100_PEO	-2.009926	0.0321

I. T-STAT INTERPRETATION:

INTERPRETATION:

1. NO. OF ATMS PER 100000 ADULTS WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.04)
2. TOTAL INTERNET SUBSCRIPTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.044)
3. NO. OF TELECOM SUBSCRIPTION WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.10)
4. TELEDENSITY WAS FOUND TO BE STATISTICALLY SIGNIFICANT IN EXPLAINING NET STATE DOMESTIC PRODUCT AT 5% LEVEL SIGNIFICANCE (TSTAT=2.00)

Rest all independent variables were found to be statistically insignificant is explaining the dependent variable carbon emission.

II. R SQUARED VALUE INTERPRETATION

The R squared value generated by Objective 1: output table 2: Fixed effect Regression model = 0.70

This indicates that only 70% of the variance in the dependent variable carbon emission is explained by the independent variables that are statistically significant.

Since the R squared value of the model is only 70%, the model is said to be a moderate fit model.

III. F-STAT VALUE INTERPRETATION:

The F-stat value generated by the objective 1: output table 2: Fixed Effect model =8.97

Since the F-stat value is < 0.05, this indicates that the independent variables and model is not able to statistically explain the dependent variable- carbon emission.

IV. DURBIN WATSON STATISTICS INTERPRETATION:

The Durbin Watson stat value generated by the objective 1: output table 2: Fixed Effect Regression model =1.38 since the value is < 2 this indicates a positive autocorrelation among the variables.

CONCLUSION:

In conclusion, the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability in India are complex and multifaceted. While digitalization has the potential to drive financial inclusion and economic growth, and contribute to environmental sustainability through increased efficiency and reduced paper-based processes, it also presents challenges and risks that need to be addressed.

One key positive aspect is that digitalization has helped expand financial inclusion in India. Digital financial services, such as mobile banking and digital payment platforms, have enabled access to financial services for previously unbanked and underserved populations. This has promoted financial inclusion, allowing more individuals and businesses to participate in the formal economy, save, invest, and access credit, which can contribute to economic growth.

Moreover, digitalization has the potential to drive economic growth in India by promoting innovation, entrepreneurship, and productivity. Digital technologies can optimize supply chains, streamline business processes, and enhance market access, creating new opportunities for economic growth, job creation, and poverty reduction.

Additionally, digitalization has the potential to contribute to environmental sustainability in India. Digital platforms can facilitate remote working, reducing the need for commuting and decreasing carbon emissions. Digital solutions can also enable better resource management, such as optimizing energy consumption in buildings, water management, and waste reduction through digital monitoring and analytics.

However, there are also challenges and risks associated with digitalization in India. There are concerns about the digital divide, with marginalized populations, including rural communities and low-income households, having limited access to digital infrastructure and skills, which can exacerbate inequality. Cybersecurity and data privacy are also critical concerns, as increased digitization can lead to vulnerabilities and risks, including data breaches, fraud, and misuse of personal information.

Furthermore, the rapid pace of digitalization can result in environmental challenges, such as increased electronic waste, energy consumption from data centers, and carbon emissions associated with the production and disposal of digital devices.

To ensure that the dynamics between digitalization, financial inclusion, economic growth, and environmental sustainability in India are positive, it is crucial to adopt a holistic and integrated approach. This includes addressing the digital divide through infrastructure development, digital literacy, and targeted policies to include marginalized

populations. Strengthening cybersecurity and data privacy regulations to protect individuals and businesses is also critical.

Additionally, promoting responsible digitalization that considers environmental sustainability, such as promoting green technologies and reducing electronic waste, is essential. Leveraging digital solutions to optimize resource management, promote sustainable practices, and mitigate environmental impacts can contribute to India's long-term sustainability goals.

In conclusion, while digitalization has the potential to drive financial inclusion, economic growth, and environmental sustainability in India, it is crucial to address challenges and risks to ensure that the benefits are realized equitably and sustainably for all stakeholders.

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