

# The Future of Money is Digital. The Future of Digital Money is India

## Systematic Study, Explanation and Analysis of United Payment Interface (UPI)

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**Abstract** - This research paper delves into the transformative impact of the Unified Payments Interface (UPI) within the context of India's digital revolution. It presents a comprehensive analysis of the relationship between UPI and various economic trends from 2016 to 2022. Employing mathematical formulas and graphical representations, the study explores how UPI has reshaped India's financial landscape, driven financial inclusion, and fostered economic growth. The paper also highlights the synergy between UPI and the Digital India initiative, showcasing how technology can empower citizens and drive innovation. Furthermore, it examines the effects of UPI on different segments of the population, including the unbanked, students, and small businesses. The research also elucidates the shift from cash transactions to digital payments, elucidating its economic implications, transparency, and efficiency gains. Moreover, it provides insights into UPI's adoption by other countries and its impact on India's GDP, with an emphasis on India's use of UPI as a foreign policy tool. This research paper sheds light on the relevance of understanding UPI's multifaceted influence on economics, politics, and statistics in the digital age. In summary, it underscores the pivotal role of UPI in shaping the future of digital money in India, contributing to a more inclusive, connected, and empowered society.

**Key Words:** *United Payment Interface (UPI), PMJDY, Correlation, Mathematical Formula*

### 1. INTRODUCTION:

#### 1.1. Digital India Initiative:

The Digital India initiative, launched by the Indian government in 2015, is a comprehensive program aimed at transforming the country into a digitally empowered society and knowledge economy. This ambitious project seeks to bridge the digital divide, promote digital inclusion, and leverage technology to improve the lives of Indian citizens. Under the Digital India program, several key pillars have been established to address various facets of digital transformation. These pillars include the development of digital infrastructure, promoting digital literacy, providing digital services, and fostering a digital economy. One of the program's central goals is to ensure that high-speed internet connectivity reaches even the remotest parts of the country. This effort aims to empower citizens with access to information, education, healthcare, and government services online.

Unified Payments Interface (UPI) is a pioneering digital payment system that operates under the overarching Digital India initiative. Launched in 2016, UPI has emerged as a central element in the government's efforts to promote a cashless economy and foster financial inclusion. UPI revolutionizes the way financial transactions are conducted in India by providing a seamless, secure, and real-time platform for transferring funds. Its key strength lies in interoperability, enabling users to link multiple bank accounts and access them through a single mobile application. This ease of use has empowered individuals and businesses to conduct transactions with unprecedented convenience, reducing their reliance on traditional cash-based methods. Security is paramount in the UPI ecosystem, with robust measures such as two-factor authentication and the UPI PIN ensuring the safety of transactions. Moreover, UPI has been instrumental in extending financial services to underserved and remote areas, significantly contributing to the Digital India initiative's goal of financial inclusion. As UPI transactions continue to grow exponentially, it not only accelerates the pace of digital adoption but also promotes transparency and efficiency in financial transactions. Under the Digital India umbrella, UPI stands as a shining example of how technology can reshape the financial landscape, making digital financial services accessible and inclusive for all Indian citizens.

#### 1.2 What is UPI?

UPI, or Unified Payments Interface, is a real-time payment system and an innovative digital payment platform introduced by the National Payments Corporation of India (NPCI). It facilitates instant and secure interbank transactions in India through the use of smartphones and the internet. UPI enables individuals and businesses to make payments, transfer money, and conduct various financial transactions conveniently and efficiently.

The Digital India initiative and the Unified Payments Interface (UPI) are two pillars of India's technological transformation in the 21st century. Digital India, launched in 2015, is a comprehensive program aimed at digitally empowering the nation, fostering inclusive growth, and improving governance through technology. UPI, on the other hand, is a pioneering digital payments platform introduced in 2016, facilitating seamless and secure transactions using mobile phones. These initiatives share a common vision of leveraging technology to enhance the lives of citizens across the country. UPI, as a part of Digital India, has played a pivotal role in promoting financial inclusion by enabling even those without traditional bank accounts to participate in the digital economy. Its real-time payment capabilities have revolutionized the way people make transactions, reducing the reliance on cash and enhancing convenience and security. Moreover, UPI has been instrumental in supporting various government schemes and benefits under Digital India, such as the Direct Benefit Transfer (DBT) program, ensuring efficient and transparent disbursement of subsidies and welfare payments. It has also facilitated the digitization of government services, aligning with Digital India's goal of making government processes more accessible and citizen-friendly. Both Digital India and UPI emphasize the importance of digital literacy and skill development, recognizing that technological empowerment is not only about infrastructure but also about equipping citizens with the knowledge and skills needed to navigate the digital world effectively. Furthermore, they encourage innovation and entrepreneurship, fostering the growth of the fintech sector and the development of new digital solutions. In essence, the synergy between the Digital India initiative and UPI has resulted in a significant transformation of India's digital landscape. Together, they have propelled the nation towards a more connected, inclusive, and digitally empowered future, unlocking opportunities for individuals and businesses alike, and serving as a model for other countries embarking on similar digital journeys.

## **2. HISTORY OF UPI:**

The United Payment Interface (UPI) has transformed the landscape of digital payments in India since its inception in April 2016. Developed by the National Payments Corporation of India (NPCI), UPI emerged as a revolutionary solution to facilitate real-time interbank transactions through smartphones. Initially met with cautious adoption, UPI gained momentum with the support of the Indian government's "Digital India" initiative, which encouraged digitalization and financial inclusion. The introduction of user-friendly third-party payment apps further accelerated UPI's popularity, turning it into a household name. Its simplicity, real-time capabilities, and integration with various government schemes have made it an indispensable part of India's digital economy, bridging the gap between urban and rural areas and empowering millions with easy access to digital financial services. Today, UPI stands as a testament to India's commitment to technological innovation and financial inclusivity.

UPI has revolutionized digital payments in India, offering a seamless and secure way for individuals and businesses to conduct transactions. Its user-friendly interface, real-time processing, and interoperability have made it a popular choice for digital payments across the country.

## **3. UPI FOR ALL POPULATION GROUPS:**

### **3.1 UPI For Unbanked And Underbanked Population:**

UPI, or Unified Payments Interface, has played a significant role in facilitating access to financial services for unbanked and underbanked populations in India and other countries that have adopted similar systems. Here are several ways UPI has contributed to financial inclusion:

1. **Ease of Use:** UPI is a user-friendly and intuitive platform that allows individuals to make payments, transfer money, and perform various financial transactions using a smartphone and a registered mobile number. This ease of use has made it accessible to people who may not be literate or have limited exposure to traditional banking services.
2. **No Need for a Bank Account:** UPI does not require users to have a traditional bank account. Instead, individuals can link their UPI ID to a mobile wallet or a payment bank account, which are easier to open and maintain than a full-fledged bank account. This lowers the barrier to entry for those who may not have access to or the means to open a traditional bank account.
3. **Financial Inclusion through Mobile Phones:** UPI leverages the ubiquity of mobile phones in developing countries like India. Even in remote areas, people often have access to mobile phones. This means that they can access financial services through UPI without needing to travel long distances to reach a physical bank branch.

4. **Low Transaction Costs:** UPI transactions typically have lower fees compared to traditional banking services. This affordability makes it feasible for individuals with limited financial resources to engage in various financial activities, such as sending money to family members, paying bills, or making online purchases.
5. **Enabling Government Initiatives:** UPI has been used as a crucial platform for disbursing government subsidies, welfare payments, and other financial assistance directly to beneficiaries' bank accounts or mobile wallets. This has reduced leakages and ensured that financial aid reaches the intended recipients efficiently.
6. **Access to Digital Credit:** Many financial institutions and fintech companies have integrated with UPI to offer digital credit products. This allows individuals without a traditional credit history to access loans and credit facilities based on their UPI transaction history and other alternative data points.
7. **Micro and Small Business Inclusion:** UPI has also opened up opportunities for small businesses, street vendors, and entrepreneurs to accept digital payments, expanding their customer base and improving their financial management. This has been especially important in rural and semi-urban areas.
8. **Financial Literacy Initiatives:** The widespread adoption of UPI has prompted various organizations to launch financial literacy programs and initiatives targeted at unbanked and underbanked populations. These programs aim to educate users about responsible financial practices and the benefits of digital payments.
9. **Increased Competition:** UPI has spurred competition among banks and fintech companies to offer better financial products and services to attract unbanked and underbanked customers. This has resulted in more customer-centric solutions and improved access to financial services.

### 3.2 UPI and Students:

For students, UPI offers a host of benefits. Firstly, it simplifies peer-to-peer transactions among friends and classmates. Whether splitting bills, sharing expenses, or reimbursing each other, UPI provides an instant and hassle-free way to transfer money, eliminating the need for cash transactions or complicated bank transfers.

Secondly, UPI facilitates easy payment of college fees, hostel charges, and educational expenses. Many educational institutions and service providers now accept UPI payments, making it convenient for students to manage their financial obligations without the complexities associated with traditional banking methods.

Moreover, UPI supports online shopping and e-commerce payments, allowing students to purchase study materials, gadgets, and other essentials online. It also fosters financial discipline, as students can monitor their spending and track their expenses through UPI apps, aiding in budget management and financial planning.

## 4. **STASTICAL DATA FOR UPI:**

Majority factor that represent UPI is its consumers, transactional value and no. of banks associated with UPI with different years.

Year	Users (in Millions)	No. of Banks	Transactional Value (in 1000 Cr. Rupees)
2016	2.65	221	0.89
2017	429.15	626	57.0
2018	3746.32	1291	561.5
2019	20787.54	1696	1836.6
2020	2234.16	2003	5768.0
2021	38744.55	2869	12085.6
2022	74044.48	4059	12595.1

## 5. CASH TRANSACTION v/s DIGITAL PAYMENTS:

The shift from cash transactions to digital payments has been a transformative trend with significant economic implications. Here is an analysis of this transition:

### 1. Reduced Transaction Costs:

- 1.1 Cost Efficiency: Digital payments are often cheaper to process than cash transactions. This cost savings benefits businesses and consumers alike, as it can lead to lower fees and transaction costs.
- 1.2 Time Efficiency: Digital payments are faster than cash transactions. This time efficiency can increase productivity for businesses and save time for individuals, potentially resulting in economic gains.

### 2. Increased Financial Inclusion:

Access to Financial Services: Digital payments have expanded access to financial services, especially for individuals in remote or underserved areas. This inclusion can lead to increased savings, access to credit, and investment opportunities, which can stimulate economic growth.

### 3. Improved Transparency and Accountability:

- 3.1 Reduced Informal Economy: Digital payments leave a digital trail, making it harder to engage in off-the-books or informal economic activities. This increased transparency can lead to higher tax revenues for governments and reduce the shadow economy.
- 3.2 Reduced Corruption: Digital payments can help reduce corruption and bribery, as it becomes more challenging to make illicit payments without leaving a trace. This can enhance the efficiency and fairness of economic systems.

### 4. Enhanced Financial Data Analysis:

- 4.1 Big Data and Analytics: Digital payment systems generate vast amounts of data that can be analysed to gain insights into consumer behaviour, market trends, and economic patterns. Businesses and governments can use this data for better decision-making and policy formulation.
5. E-commerce Expansion: Digital payments have fueled the growth of e-commerce, allowing businesses to reach a broader customer base. This has led to increased sales and job creation in the online retail sector.
6. Facilitated Small Business Growth: Digital payment solutions have empowered small and medium-sized enterprises (SMEs) by enabling them to accept digital payments, reducing the reliance on cash and expanding their customer reach.
7. Reduced Risk: Digital payments often come with security features such as authentication protocols, encryption, and fraud detection mechanisms. This reduces the risk of theft and fraud, enhancing consumer confidence and economic stability.
8. Greater Control: Digital transactions provide central banks with more control over the money supply and the ability to implement monetary policies more effectively. They can also respond more swiftly to economic crises.
9. Financial Innovation and Fintech Growth: The shift to digital payments has given rise to a thriving fintech sector, fostering innovation in financial services. This innovation can lead to the creation of new financial products and services that cater to a broader range of needs.

## 6. THE PRADHAN MANTRI JAN DHAN YOJANA (PMJDY):

The Pradhan Mantri Jan Dhan Yojana (PMJDY) is a landmark financial inclusion initiative launched by the Government of India in 2014. This ambitious program aims to ensure that every household in India has access to basic banking services, promoting financial inclusion and economic empowerment. PMJDY has made significant strides in bringing unbanked and underbanked populations into the formal financial system. It offers no-frills bank accounts, RuPay debit cards, insurance coverage, and overdraft facilities to account holders, while also promoting financial literacy and direct benefit transfers. By

extending the reach of banking services and reducing financial exclusion, PMJDY has played a vital role in advancing financial well-being, reducing poverty, and fostering economic development across the country.

#### 6.1 Data for PMJDY Accounts and Transaction values:

Year	PMJDY Accounts	PMJDY Deposits(In crore rupees)
2016	24.10	42.094
2017	30.09	65.799
2018	32.54	82.039
2019	36.79	102.415
2020	40.41	130.086
2021	43.04	146.23
2022	46.25	173.594

### 7. UPI IN TAX COLLECTION PROCESSES:

The adoption of the Unified Payments Interface (UPI) in India has indeed had a significant impact on tax collection processes and compliance levels in several ways:

1. **Increased Transparency:** UPI transactions leave a digital trail, making it easier for tax authorities to monitor and track financial transactions. This increased transparency reduces the scope for tax evasion and encourages compliance.
2. **Ease of Payment:** UPI provides a convenient and efficient method for taxpayers to fulfill their tax obligations. Individuals and businesses can quickly and securely transfer funds for tax payments using UPI-enabled apps, reducing the hassle associated with traditional payment methods.
3. **Direct Benefit Transfer (DBT):** Many government subsidies and benefits are disbursed through UPI-enabled bank accounts. This linkage encourages individuals to report their income accurately to qualify for these benefits, indirectly improving tax compliance.
4. **Data Analytics:** The vast amount of transaction data generated through UPI can be analyzed to identify potential tax evaders or discrepancies in income reporting. Tax authorities can leverage data analytics to target non-compliant individuals or businesses more effectively.
5. **Reduction in Cash Transactions:** UPI has contributed to a reduction in cash transactions, which were historically associated with a higher likelihood of underreporting income. By encouraging digital payments, UPI reduces the scope for tax evasion through unreported cash transactions.
6. **Real-Time Verification:** UPI payments can be verified in real time, allowing tax authorities to cross-check reported income with actual financial transactions promptly. This real-time verification can deter tax evasion.
7. **Incentives for Digital Transactions:** The government has introduced incentives and cashback offers for digital transactions, including tax payments made through UPI. These incentives encourage individuals and businesses to adopt digital payment methods and, in turn, report their income accurately.
8. **Reduced Tax Gap:** The adoption of UPI and other digital payment methods has contributed to reducing the tax gap – the difference between potential tax collections and actual tax revenues. As compliance levels improve, tax revenues increase, bolstering the government's fiscal position.
9. **Improved Efficiency:** UPI streamlines the tax collection process by reducing paperwork and manual intervention. This efficiency benefits both taxpayers and tax authorities, as it minimizes errors and delays in processing payments and refunds.

## 8. UPI AND FOREIGN POLICY:

India's adoption of the Unified Payments Interface (UPI) has not only revolutionized domestic digital payments but has also emerged as a powerful tool in the realm of foreign policy and diplomacy. The success and versatility of UPI have garnered international attention, leading to its adoption by different countries and enabling India to leverage it as an instrument of foreign policy.

**Foreign Policy Implications:** UPI's role in India's foreign policy is multifaceted. First and foremost, it positions India as a leader in digital innovation on the global stage. As UPI gains prominence worldwide, India's reputation as a technology hub is enhanced, thereby attracting international collaborations and investments. Moreover, UPI's secure and efficient cross-border payment capabilities have positioned India as a reliable partner for international trade and economic cooperation. This has led to strengthened economic diplomacy, as India seeks to expand its trade relationships with countries adopting or considering UPI-like platforms.

However, the UPI framework had garnered attention from other countries, and some were exploring similar systems or collaborating with India to adopt UPI-like platforms. Here are a few examples:

1. **Bhutan:** In 2020, Bhutan launched its own version of UPI called "Bhutan Pay" with the support of the Royal Monetary Authority of Bhutan. It is designed to enable digital payments and fund transfers within the country.
2. **Nepal:** Nepal Rastra Bank, the central bank of Nepal, has been working on implementing a similar payment system called "Nepal Pay" to promote digital transactions and reduce the reliance on cash.
3. **UAE:** In early 2020, the United Arab Emirates announced plans to launch a digital payment system inspired by India's UPI. The UAE's central bank was considering collaborations with India for this initiative.
4. **Singapore:** In 2019, the Monetary Authority of Singapore (MAS) and the Indian government signed a memorandum of understanding (MoU) to connect India's UPI with Singapore's FAST (Fast and Secure Transfers) payment system. This collaboration aimed to facilitate instant, low-cost cross-border transactions between the two countries.

## 9. EFFECTS OF UPI ON GDP OF INDIA:

The introduction and widespread adoption of the Unified Payments Interface (UPI) in India have had profound effects on the country's Gross Domestic Product (GDP) and overall economic landscape. UPI has acted as a catalyst for economic growth in several ways.

Firstly, UPI has significantly increased financial inclusion. By simplifying digital transactions and providing easy access to banking services, UPI has brought previously unbanked or underbanked individuals and businesses into the formal financial system. This expanded participation in the financial sector contributes to higher economic activity and, consequently, an increase in GDP.

Secondly, UPI has nurtured the growth of India's digital economy. The platform has not only facilitated online payments but also boosted e-commerce, digital entrepreneurship, and the adoption of innovative financial services. As a result, the digital economy has flourished, leading to higher GDP as more economic activities migrate to the online realm. Moreover, UPI's role in reducing cash transactions cannot be overstated. With more people embracing digital payments, there is a notable decrease in cash reliance. This shift not only saves costs associated with handling physical currency but also enhances transparency and encourages greater tax compliance. These factors collectively contribute to GDP growth.

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cross-border payment capabilities have positioned India as a reliable partner for international trade and economic cooperation. This has led to strengthened economic diplomacy, as India seeks to expand its trade relationships with countries adopting or considering UPI-like platforms. Four major banks were part of UPI apps for G20 delegates mainly SBI, Axis, Canara and ICICI bank.

G20 Summit 2023 used UPI as its main feature to help foreign nationals and NRIs visiting the nation capital. UPI One World framework was implemented to let tourists pay using UPI payment method.

“UPI One World” is a new feature offered to exclusively cater inbound travellers. It is a prepaid payment instrument in which personal visiting G20 summit can easily pay various merchant across India.

However, the UPI framework had garnered attention from other countries, and some were exploring similar systems or collaborating with India to adopt UPI-like platforms. Here are a few examples:

Announcement	Entity parenting with UPI network	Countries
July 2021	Royal Monetary Authority of Bhutan	Bhutan
September 2021	Monetary Authority of Singapore, PayNow	Singapore
August 2021	Merchantrade Asia	Malaysia
September 2021	Liquid Group	Thailand Philippines Vietnam Cambodia Hong Kong Taiwan South Korea Japan
November 2021	Network International(NI)	UAE
February 2022	Gateway Payment Services, Manam Infotech	Nepal
June 2022	Lyra	France
August-September 2022	Terrapay, PayXpert	United Kingdom
October 2022	Central Bank of Oman	Oman

Moreover, National Payment Corporation of India(NPCI) are in talks with USA, other west Asian and European Countries to accept UPI. Sri Lanka is the latest country to adopt UPI, Sri Lankan President has signed an agreement on it.

**11. WHY I CHOSE THIS TOPIC:**

As a curious student with a passion for economics and a burgeoning interest in political science, I embarked on an interdisciplinary research journey centred on the Unified Payments Interface (UPI) in India. UPI's profound impact extends beyond technology; it reshapes economics by fostering financial inclusion, holds political significance as it transforms governance and citizen-state relations under the Digital India initiative, and generates extensive data ripe for statistical analysis. This research embodies my appreciation for the interconnectedness of these disciplines, revealing how UPI's emergence in the digital age intertwines economics, politics, and statistics, making it a captivating subject of study.

**12. COORLEATION AND REGRESSION IN STASTICS:**

Correlation in statistics is a fundamental concept used to quantify and describe the relationships between variables. It allows us to understand how two or more variables are related and to what extent changes in one variable correspond to changes in another. At its core, correlation provides valuable insights into patterns and associations within data.

The most commonly used measure of correlation is the Pearson correlation coefficient, denoted as "r." This coefficient assesses the strength and direction of the linear relationship between two continuous variables.

A positive value of "r" suggests a positive linear correlation, meaning that as one variable increases, the other tends to increase as well.

Conversely, a negative value of "r" indicates a negative linear correlation, where one variable tends to decrease as the other increases.

A correlation coefficient of zero signifies no linear relationship between the variables.

The formula for the Pearson correlation coefficient (commonly denoted as "r") in statistics is as follows:

$$r = \frac{n(\sum xy) - (\sum x) - (\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2]} * \sqrt{[n\sum y^2 - (\sum y)^2]}}$$

In this formula:

- 'r' represents the Pearson correlation coefficient, which measures the strength and direction of the linear relationship between two variables.
- 'n' is the number of data points (observations).
- 'x' and 'y' are the two variables for which you want to calculate the correlation.
- $\sum xy$  represents the sum of the products of the corresponding values of x and y.
- $\sum x$  and  $\sum y$  represent the sums of all the values of x and y respectively.
- $\sum x^2$  and  $\sum y^2$  represent the sums of the squares of all the values of x and y respectively.

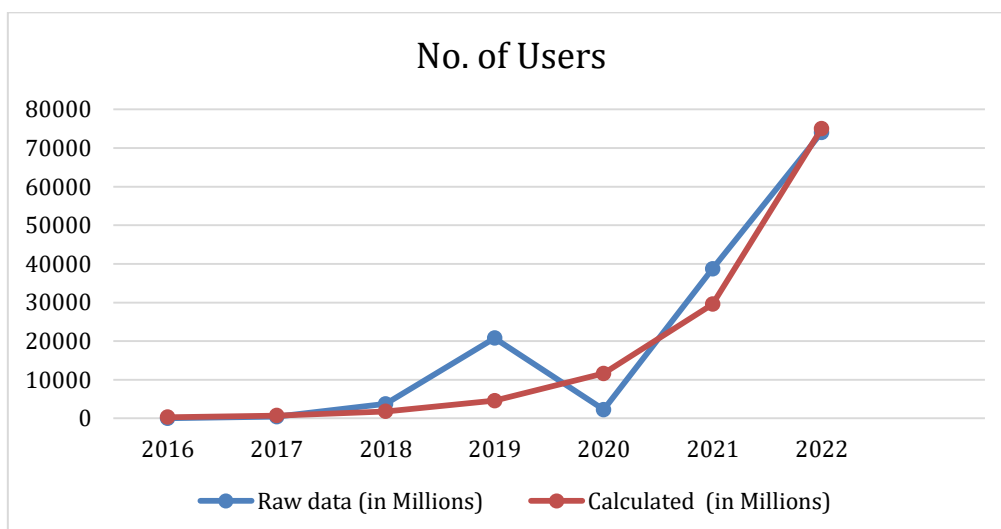
Regression analysis is a vital statistical tool that plays a central role in understanding and quantifying relationships between variables. At its core, regression seeks to model and predict the behaviour of a dependent variable based on the values of one or more independent variables. It provides a systematic way to explore and measure the impact of these independent variables on the outcome of interest. The most common form of regression is linear regression, which assumes a linear relationship between the variables.

### 13. MATHEMATICAL FORMULATION AND GRAPHS:

#### 1. UPI users from 2016 to 2022:

We consider 2016 as 1, 2017 as 2.....and 2022 as 7.

Plotting years as 1, 2, 3 , etc. on X-Axis and number of users of UPI on y-axis. After manually drawing graph and on excel. We concluded Logarithmic equation covers maximum number of plots considering  $y=A+B^x$ .





By solving using calculator we get,

$$\text{Formula: } y = 110.05 \cdot 2.54^x$$

Where “y” is no. of users and “x” is 1, 2, 3..... (1 represents 2016, 2 represents 2017 and so on).

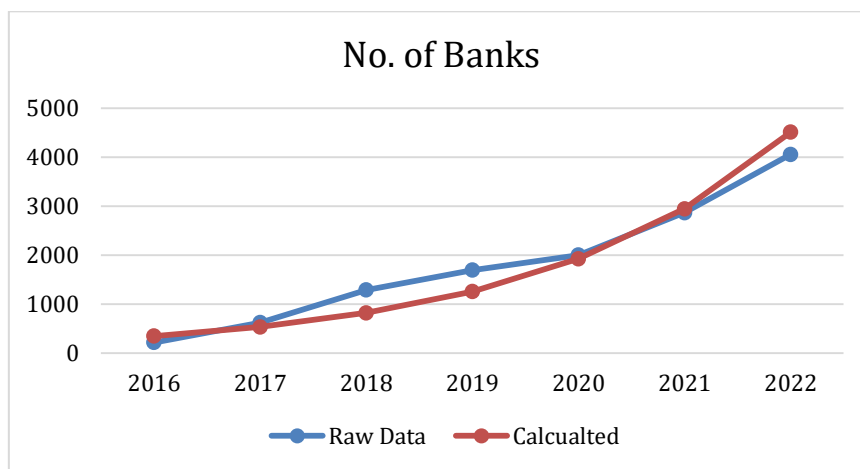
Exception: In 2020 due to surge in Covid-19, businesses were not working in full efficiency.

### 2. No. of Banks associated with UPI:

Again we consider 2016 as 1, 2017 as 2.....and 2022 as 7.

Plotting years as 1, 2, 3 , etc. on X-Axis and number of banks with UPI on y-axis.

After manually drawing graph and on excel. We concluded Logarithmic equation covers maximum number of plots considering  $y = A + B^x$ .



By solving using calculator we get,

$$\text{Formula: } y = 230 \cdot 1.53^x$$

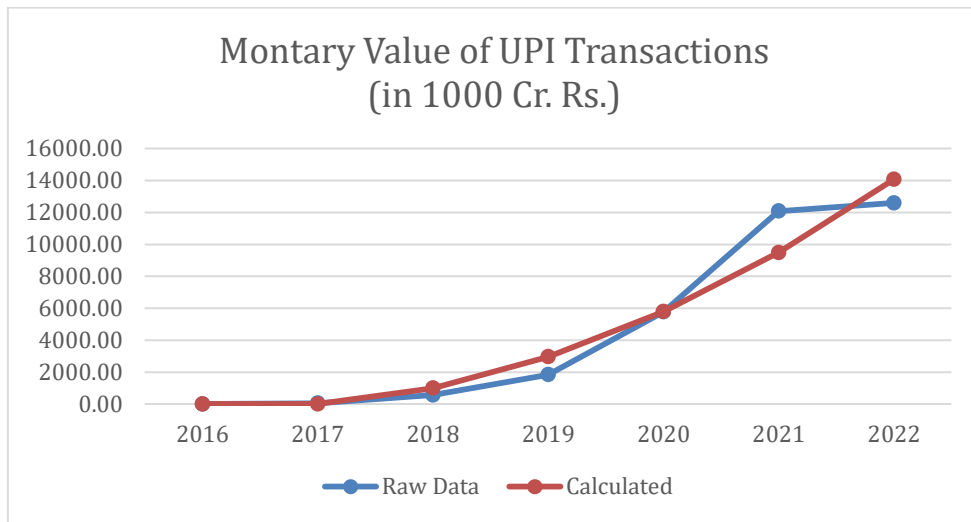
Where “y” is no. of banks and “x” is 1, 2, 3..... (1 represents 2016, 2 represents 2017 and so on).

### 3. Monetary Value of Transaction through UPI:

Again we consider 2016 as 1, 2017 as 2.....and 2022 as 7.

Plotting years as 1, 2, 3 , etc. on X-Axis and Monetary Value of UPI transactions on y-axis.

After manually drawing graph and on excel. We concluded Quadratic equation covers maximum number of plots considering  $y = Ax^2 + Bx + C$ .



By solving using calculator we get,

**Formula:  $y=436*x^2-1094*x+357.36$**

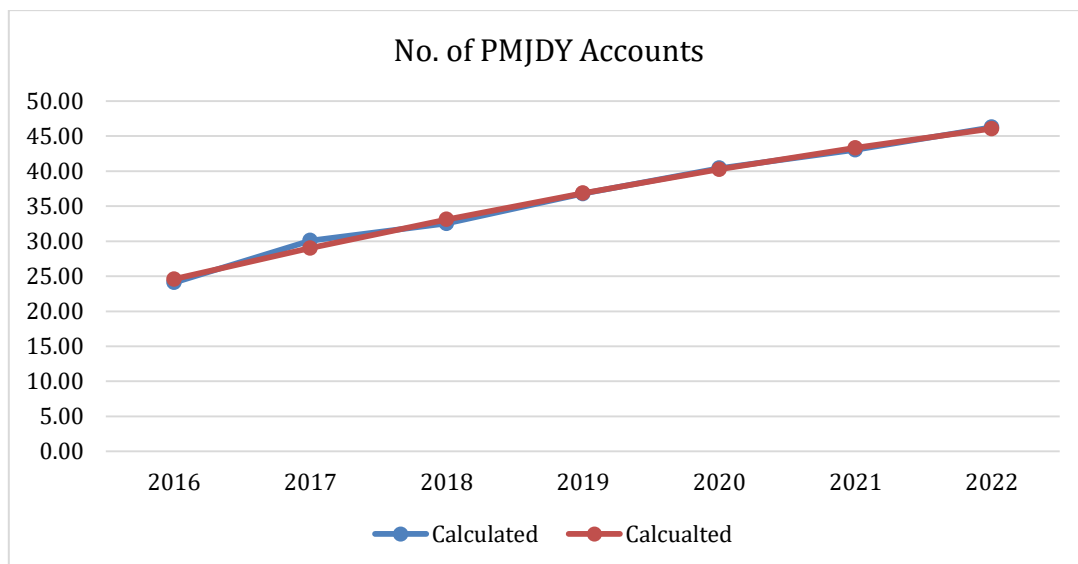
Where “y” is Monetary Value of UPI transactions and “x” is 1, 2, 3..... (1 represents 2016, 2 represents 2017 and so on).

4. PMJDY Accounts from 2016 to 2022:

We consider 2016 as 1, 2017 as 2.....and 2022 as 7.

Plotting years as 1, 2, 3, etc. on X-Axis and no. of PMJDY Accounts on y-axis.

After manually drawing graph and on excel. We concluded Quadratic equation covers maximum number of plots considering  $y=Ax^2+Bx+C$ .



By solving using calculator we get,

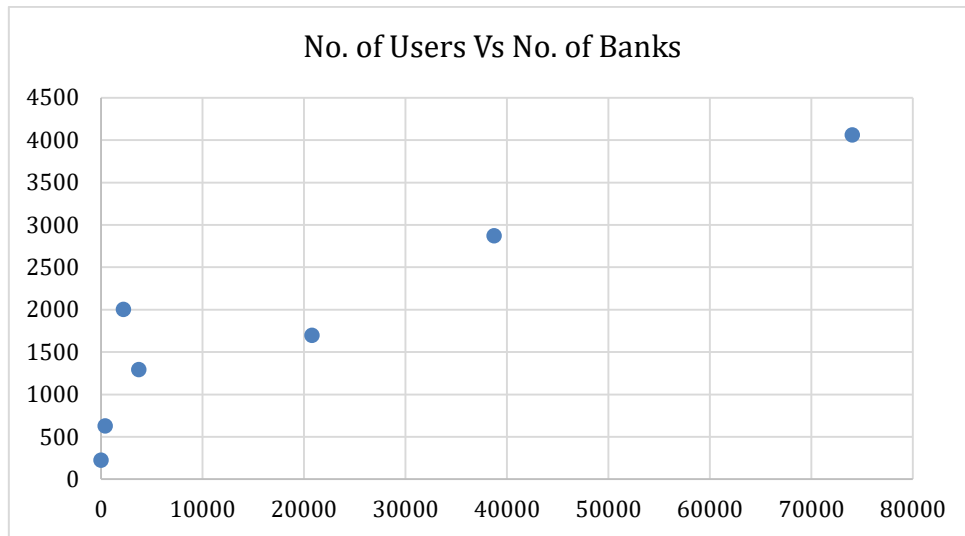
**Formula:  $y=-0.17*x^2+4.937*x+19.82$**

Where “y” is no. of PMJDY Accounts and “x” is 1, 2, 3..... (1 represents 2016, 2 represents 2017 and so on).

Coefficient of Determination come out to be 0.99.

5. No. of Users Vs No. of Banks:

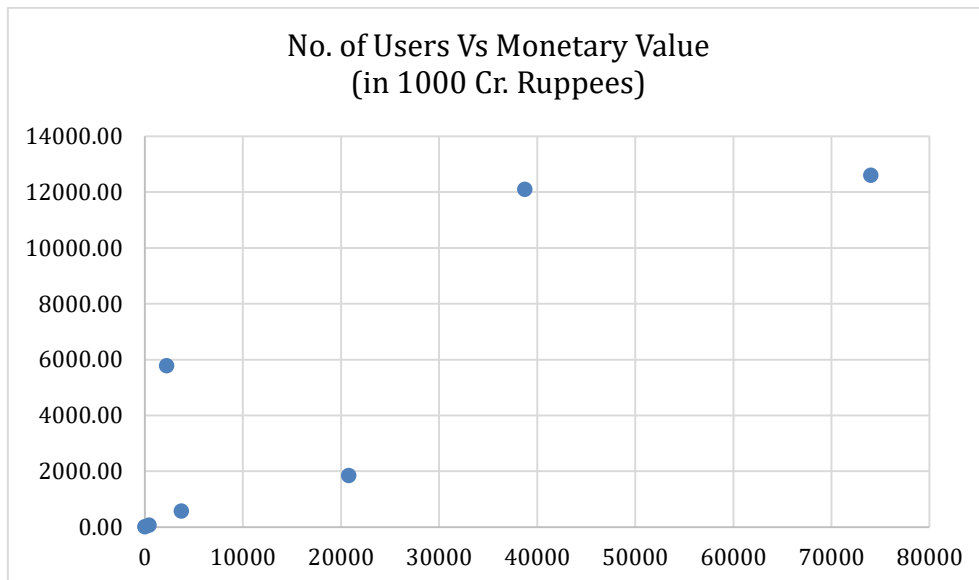
Graph between No. of users at x-Axis and No. of banks at y-axis is plotted.



Correlation Value is calculated by using above equation in 11<sup>th</sup> point.  
Correlation Factor comes out to be 0.9155.

6. No. of Users Vs Monetary Value of UPI Transaction(in 1000 Cr. Rupees):

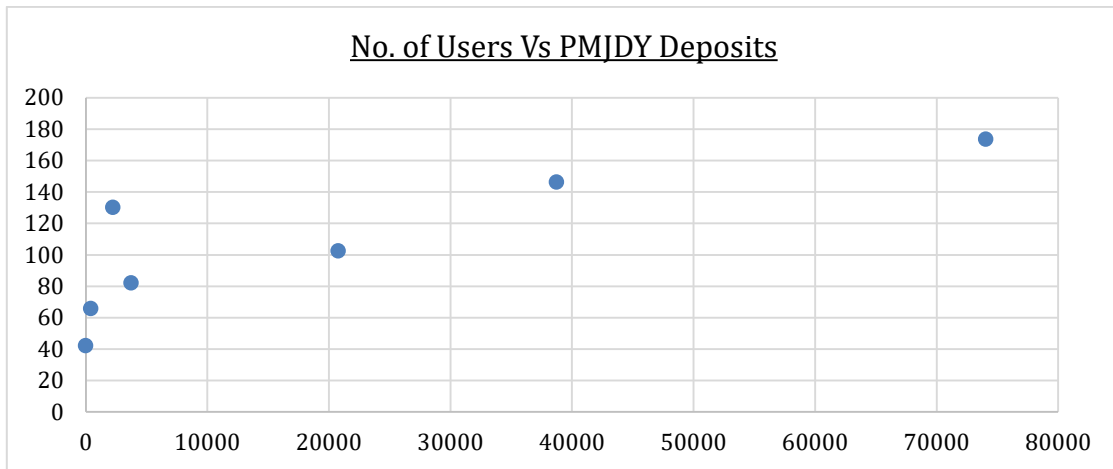
Graph between No. of users at x-Axis and monetary value at y-axis is plotted.



Correlation Value is calculated by using above equation in 11<sup>th</sup> point.  
Correlation Factor comes out to be 0.584.

7. No. of Users Vs PMJDY Deposits(in Cr. Rupees):

Graph between No. of users at x-Axis and PMJDY Deposits at y-axis is plotted.

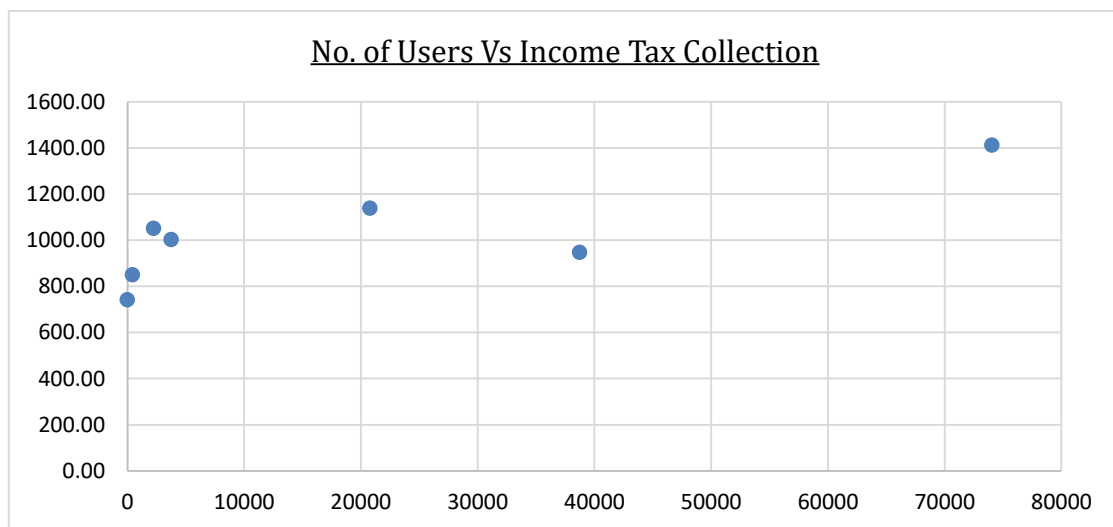


Correlation Value is calculated by using above equation in 11<sup>th</sup> point.

Correlation Factor comes out to be 0.826.

8. No. of Users Vs Income Tax Collection(in 1000 Cr. Rupees):

Graph between No. of users at x-Axis and Tax collection (in 1000 cr.rs.) at y-axis is plotted.

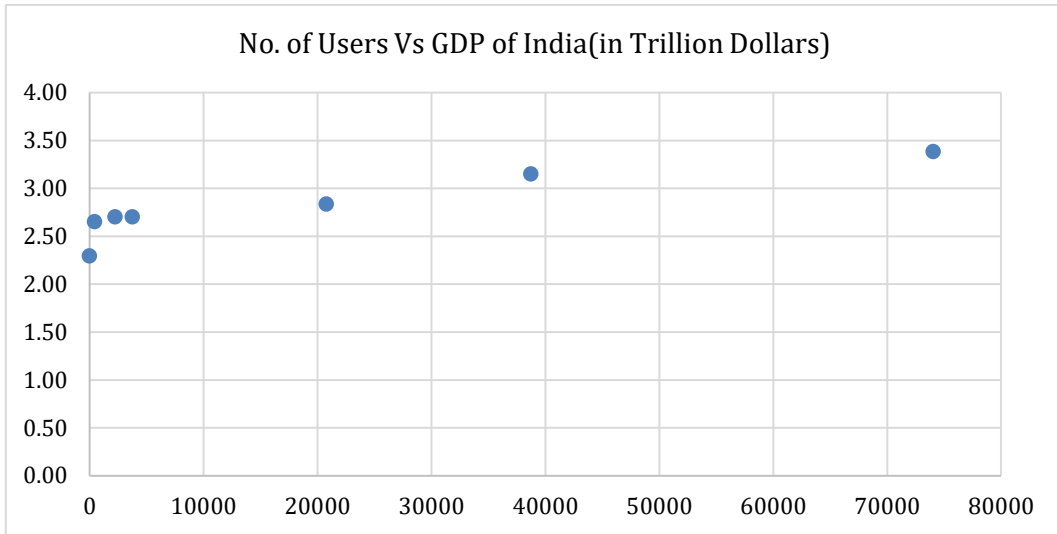


Correlation Value is calculated by using above equation in 11<sup>th</sup> point.

Correlation Factor comes out to be 0.731.

9. No. of Users Vs GDP of India(in Trillion Dollars):

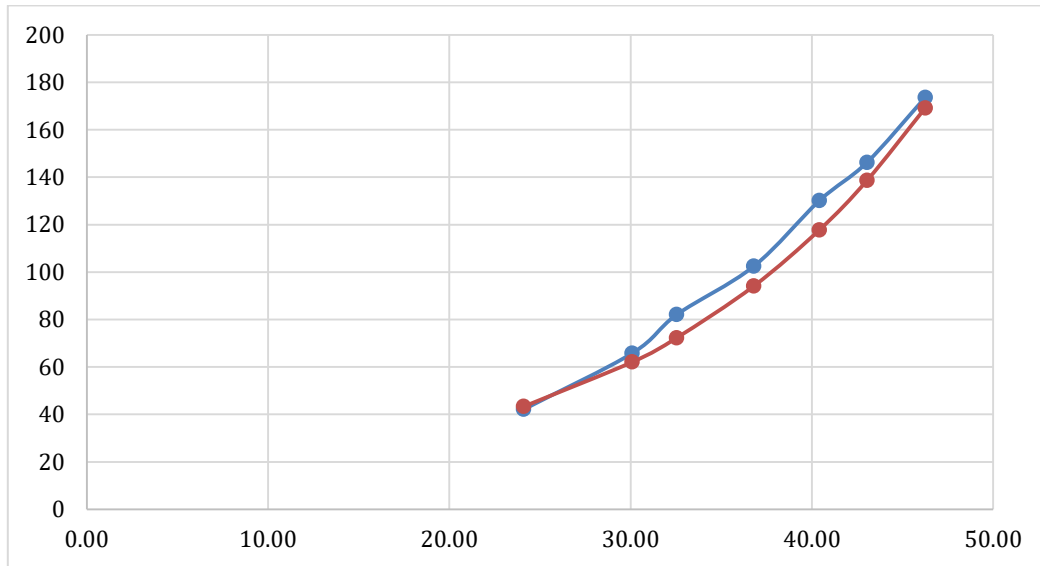
Graph between No. of users at x-Axis and GDP of India (in trillion dollars) at y-axis is plotted.



Correlation Value is calculated by using above equation in 11<sup>th</sup> point.  
Correlation Factor comes out to be 0.923.

10. PMJDY Deposits(in Crore Rs.) vs PMJDY Accounts:

Graph between PMJDY Deposits at x-Axis and PMJDY Accounts at y-axis is plotted.



Correlation Value is calculated by using above equation in 11<sup>th</sup> point.  
Correlation Factor comes out to be 0.923.  
Equation of Correlation comes out to be  $y=9.6*1.0645^x$

**14. CONCLUSION:**

Our motive to write this paper is to analysis UPI growth and its correlation with various economics factors. We are concluding this paper with our result that there is exponential growth of UPI users, banks attached with UPI and monetary transaction value. Also there is highly strong correlation between the users of UPI and

1. No. of Banks associated with UPI
2. Monetary Value of transaction associated with UPI(in 1000 crore Rs)
3. Deposits opened under The Pradhan Mantri Jan Dhan Yojana(in crore Rs.)
4. Income Tax collection (in 1000 crore Rs.)
5. GDP(in trillion dollars)

We also calculated correlation between PMJDY accounts and deposits under PMJDY (in crore Rs.). There is huge increase in monetary transaction, deposits due to UPI/digital payment.

As quoted by Mr. Amitabh Kent “Digital India is a game changer in driving economic growth and social inclusion”

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## 16. BIOGRAPHIES:

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- Editorial Intern at the Indian Express Noida
- School Captain, Welham Girls' School (WGS)
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- Rank 1 in home-state Haryana in ICSE (98.2%)
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- Founder, reAble, a disability awareness organisation
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