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GOING CASHLESS: A STUDY ON IMPACT OF DIGITAL PAYMENTS ON THE ECONOMY OF INDIA

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Abstract: In the recent years, various efforts have been taken by individuals and the government to introduce a cashless system of making payments in the economy of India. Under this initiative, the government of India launched the 'Digital India' campaign and encouraged the citizen of India to indulge in electronic methods of making payments. This was done in a two-fold manner; by introducing simpler platforms for on-the-go payments such as e-wallets and Unified Interface Payments, and by providing incentives to those indulging in electronic methods of payments in the form of discounts and cashbacks. As a result of these efforts taken by both private and public players in the market, the usage of cash has substantially reduced in the country. It has been commonly observed by various scholars and researchers that most developed economies transact on the electronic platform. This is majorly due to its network, speed and reliability. This paper aims to identify the relationship between digital payments and its impact on the economy of India. For the purpose of analysis debit and credit card transactions along with the more recently introduced UPI transactions have been considered. GDP at constant prices has been taken as the dependent variable. Data has been collected for the years 2011 to 2019. Analysis revealed that out of debit and credit card transactions, debit card transactions have a greater impact on the GDP of the country. UPI has not yet been developed and used enough to make a significant impact on the economic growth of the country.

Keywords: **Digital Payments, Economic Growth, GDP at constant prices, Card Payments, UPI transactions.**

INTRODUCTION

Digital payments can be defined as a set of seamless transactions involving the transfer of funds from one party to another without the use of physical or paper money. Such transactions utilize online networks to facilitate online transfers and thereby ease the process of purchase and sale while ensuring security of transactions, and utilization of accountable incomes *(Digital transaction; Jake Frankenfield, 2018).* The global payments scenario has been evolving at a rapid pace since the past decade; the emergence and growth of financial technology firms (fintech) has accelerated the development process of the various digital payment platforms available to consumers *(Digital Payments 2020; Alpesh Shah, Prateek Roongta, Chilman Jain, Vibha Kaushik, Abhishek Awadhiya, 2016).* Although initial investments in the digital payments sector were concentrated on the financial technology industry, with the advent of cloud computing, non-tech firms have also begun to invest in these technologies *(Harvard University; Wilbur Chen, Suraj Srinivasan, 2019).*

With greater ease and convenience in the setting up process of data infrastructure through rental services provided by institutions such as Amazon web Services, more and more firms have begun to invest in renting data infrastructure in order to provide multiple payment options to their clients and consumers. As according to a report by McKinsey in the year 2018, digital payments accounted for an 11% increase in the year 2017 alone, which topped $1.9 trillion in global revenue, indicating that cashless payments were accelerating at an incredible pace *(McKinsey; Sukriti Bansal, Philip Bruno, Oliver, Madhav, Marc, 2018).*

Cash is no longer a major factor affecting the growth and development of economies. Economies have consciously and consistently begun moving away from the transaction of physical money to more cashless and online transactions. This not only enables economies to keep a track on the incomes of their citizen, but also allows people to process transactions in a faster and safer manner. Among developing economies like India and Bangladesh, the adoption of digital payment methods has significantly accelerated the economy while among the advanced nations, digital payments constitute as much as 98% of the gross transactions *(Marcus, Godfrey, Michael, and Mohammed; 2019).* This indicates a positive impact of the adoption of online payment mechanisms on the growth of economies.

LITERATURE REVIEW

The Indian scenario of digital payments is relatively new but is gaining exponential momentum. The central government launched the "Digital India" campaign in 2015. Since then, digitization and online payments have observed a gradual upward trend. Under the Pradhan Mantri Jan Than Yojana, approximately 260 million unique bank accounts were created, ensuring nearly 100% of the Indian households have at least one working account *(Deloitte; 2016).* Apart from the creation of bank accounts, the Indian market has indicated substantial growth in terms of internet subscription and smart-phone usage. Indians, on an average use 8.3GB of data per month, which

is next to an average use of 5.5GB per month in China *(Mckinsey; 2019).* As according to a report, it is predicted that digital productivity is set to create an approximate of 60-65 million jobs by the year 2025 *(Mckinsey; 2019).*

Indians currently use online payment wallets majorly for the payment of utility bills, for online shopping and for online purchase of movie tickets *(Ibef, 2019).* Micro transactions have begun to dominate the digital payment space in India with about half of the person-to-merchant transactions are under INR 100 *(Digital Payments 2020; Alpesh Shah, Prateek Roongta, Chilman Jain, Vibha Kaushik, Abhishek Awadhiya, 2016).* Mobile banking transactions have grown to a value of INR 84,782 crores from a value of INR 79,910 crores within a span of one month between August and September 2019 *(Business Standard; 2019).* As according to Fidelity National Informations Systems (FIS), the Indian ecosystem for digital payments has evolved at a much greater speed than 25 other nations included in the survey. The survey included nations like UK, China and Japan *(Ibef, 2019).*

In order to calculate annualized per capita transaction volume, RBI, the Reserve Bank of India uses the following metric:
Annualized Per Capita Transaction Volume = 12 X (Total Volume of Digital Payments for the month)/Population

For India, this metric has indicated tremendous growth in a span of five years from 2014 through 2018. Annual per capita digital transactions have increased from 2.4 in 2014-15 to 22 in 2018-19 *(RBI; 2019).*
India is a developing economy, and most of its citizen reside in the rural areas of the country that have very minimal access to changes in trends. Digitization of payment, similarly, is a trend change that has been captured by the urban population much more effectively than by the rural segments of the country. As according to a report in 2018, 44% of urban consumers have begun to utilize digital modes of payment as compared to only 16% of the rural population *(Financial Express; 2018).* Although, the Indian government has been taking substantial efforts in order to encourage consumers into utilizing online payment methods, as of 2016, only 55000 rural merchants and about 2.5 million consumers have learnt to use digital modes of payments *(Dr Ravi CS, 2017).*

As according to the Internet And mobile Association of India, about 281 million active users have been identified in the country, out of which only 98 million are regular users in the rural parts of the nation *(Arpita, Arjun; 2018).* Various financial technology firms have begun to focus on the Indian rural market as a part of their developmental programs thereby improving the bandwidth of mobile wallets and online payment methods *(Shakir, Wasim, Saifuddin; 2017).* Adhar enabled payments system (AEPS) has been introduced in the rural parts of India in order to allow the poor and the illiterate to make and record payments with the use of only their fingerprint, thereby making it an alternative to the password or the IPIN *(Dr Ravi CS; 2017).*

The usage of digital platforms has been observed to be on the rise due to a substantial fall in the prices. The total number of internet users has increased from 236 million in the year 2014, to about 560 million in the year 2018. Similarly, the number of cashless transactions per person have risen from 2.2 in 2014 to 18 in 2018 *(McKinsey; 2019)*, thereby indicating an upward trend. Various modes of online payments include NEFT, RTGS, IMPS, UPI, BHIM, Credit and Debit card payments and e-wallets among others currently available in India.

With an aim to understand the degree of penetration of digital payments network in India, the Reserve bank of India decided to constitute a committee that would analyze the deepening of the 'digital India' program and would also identify various alternative measures that could be taken to enhance the functioning of digital networks in the country, to increase consumer awareness on digital networks and to enhance the safety of such systems int he country *(RBI; 2019).*

OBJECTIVES

The major objectives of this research are as follows:

1. To understand and analyze the degree of utilization of digital payment methods in India.
2. To identify the impact of such payments on the growth of the Indian economy.

Data for this research has been collected through secondary sources including reports and researches published by various organizations such as McKinsey, Boston Consultancy Group, and Visa, research papers, and government journals. Data has also been collected through reports published by the Reserve Bank of India.

METHODOLOGY

This research attempts to identify a relationship between digital payments and economic growth in the country. The time period in consideration for this research is from the year, 2011 through 2019. In the case of Unified interface payments (UPI), the time period for analysis has been considered from 2016 to 2019. In this study, the impact of debit and credit card transactions on the gross domestic product of the country has been analyzed. A comparison of variability in performance by including or not including unified payments systems in the model for computing the impact of digital payments on the Gross domestic product (GDP) of the country has also been analyzed.

Gross domestic product at constant prices have been used as a proxy to measure economic performance in the country. Data for GDP at constant prices has been acquired from the Reserve Bank of India Database on Indian Economy. Data on debit and credit card transactions have been acquired from the Reserve Bank of India data releases. Card transactions include both, Automatic Teller Machine (ATM) and Point of Sale (POS) transactions. Information on the volume of UPI transactions has been acquired from National Payments Corporation of India Product Statistics.

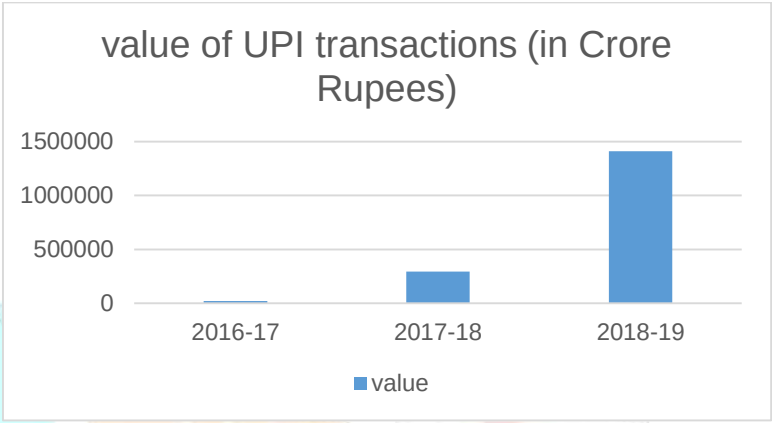
Quarterly data for Gross domestic product has been considered for the analysis. Monthly data on card transactions, acquired from Reserve Bank of India data releases and unified interface payments data acquired from National Payments Corporation of India Product Statistics have been converted into quarterly data for the purpose of the analysis. Data for Gross domestic product and unified payments interface transactions (UPI) was available in crores, while that for debit and credit card transactions was available in million rupees. All values have been converted to rupees in crores for the purpose of the research.

A multiple regression model has been used for the purpose of analyzing available data and predicting a relation between digital payments and economic growth. The variables assumed in the analysis include *Y*, which represents the Gross domestic product at constant prices. X_1 represents credit card transactions, both at the ATM and at the Point of Sale. Further, X_2 represents debit card transactions, both at the ATM and at the Point of Sale. As data for UPI transactions have been available only for a period of three years, a separate analysis of the same has been carried out.

ANALYSIS

Degree of utilization

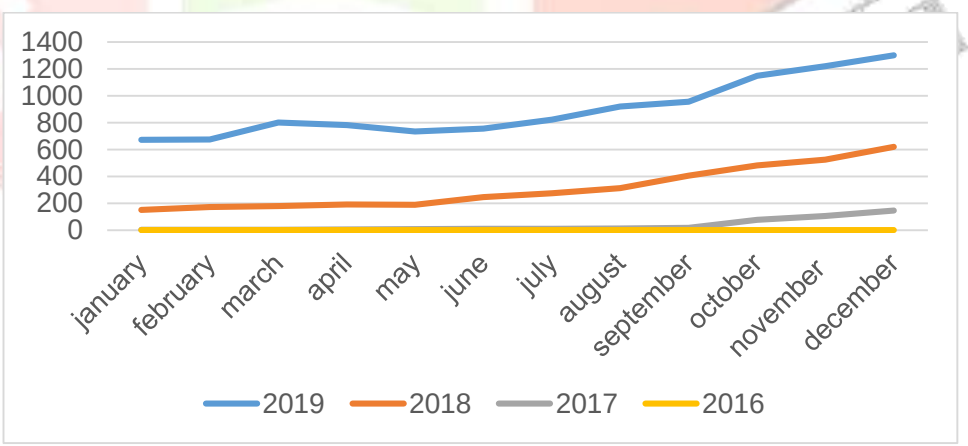
UPI or Unified Payments Interface was launched in India on the 11th of April, 2016 and has since then come a long way in terms of volume and value of transactions carried out on UPI. An analysis of the various modes of digital payments used in the country, UPI or Unified payments interface topped the results accounting for two out of every three transactions in locations outside of the six major cities in India. The data analysis as reported by the Hindu indicated that data was collected from about 3 lakh villages across the country. 90% of these transactions were carried out on Google Pay and PhonePe, with Google Pay leading the way.



Graph 1: Value of UPI transactions

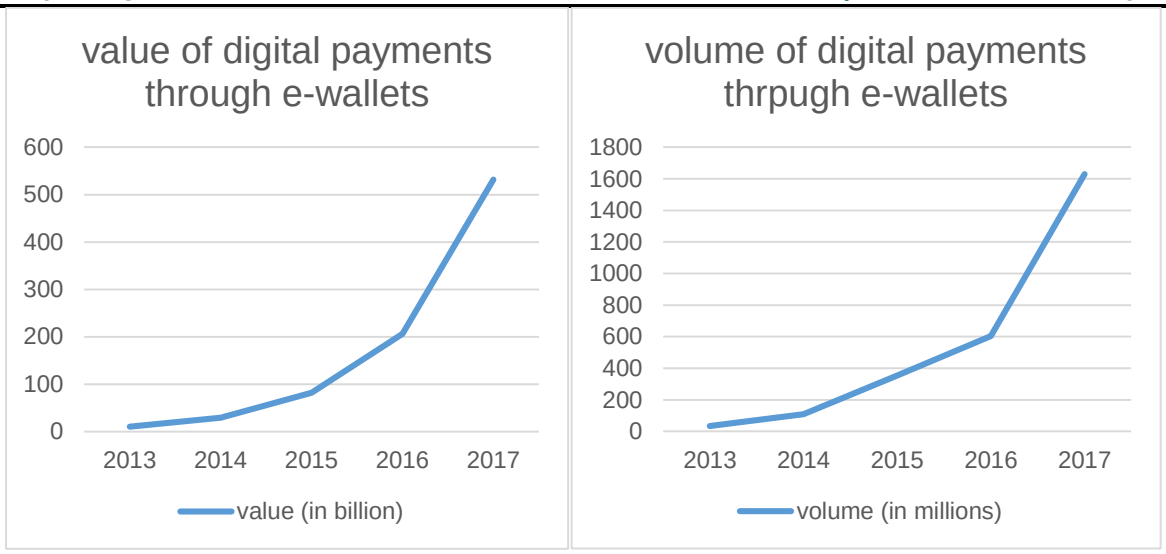
UPI payments in India amounted for over 1000 transactions in the above-mentioned locations amounting to about 17.29 lakh crore rupees with about 80% of the transactions recorded in the third year of analysis. 2016-17 recorded about 22,425 crore worth of online transactions through UPI. This number increased greatly to 2.95 lakh crore rupees in 2017-18 and then to 14.11 lakh rupees in 2018-19.

As according to data collected from the National Payments Corporation of India (NPCI), the monthly data on volume of transactions on the Unified Payments Interface from August 2016 to November 2019 and projected data for December 2019 is as follows:



Graph 2: Volume of UPI transactions (in millions)

It is evident that each year's performance is better than that of the previous year. India is thus steadily moving towards more frequent usage of digital platforms for making payments. The degree of penetration of online payment methods can be analyzed by combining the volume of transactions through UPI and those through e-wallets. the following chart indicates the value and volume of transactions through e-wallets.



Graph 3: value and volume of payments through e-wallets

The above two charts indicate similarity in direction of growth, indicating that digital payments through mobile wallets have increased consistently in both value and volume. There is no one-sided growth in the acceptance and reliability of digital modes of payment in the country.

In a report published by RBI in May 2019, it states that digital transactions in India have grown by a factor of 10 in the last five years *(RBI, 2019).*

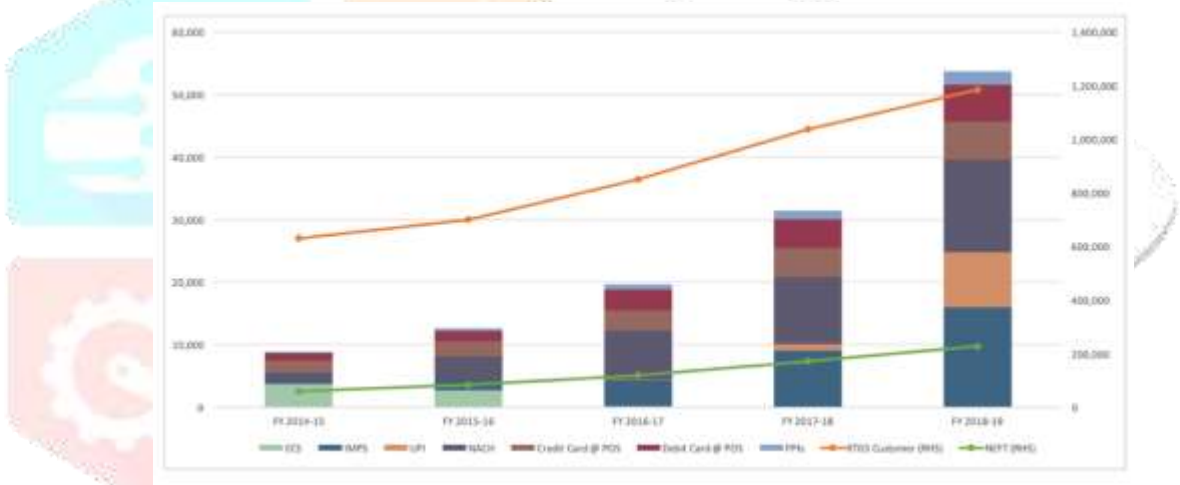


Fig 1: Digital payments by value (source: RBI)

The above figure indicates the increase in usage of various digital payment platforms in the country. National Electronic Funds Transfer (NEFT) and Real Time Gross Settlement (RTGS) transactions in the country have picked up pace since the introduction of Unified Payments System (UPI) and e-wallets in the country. Although net-banking facilities have been open for usage, most Indians have indicated their preference towards cash transactions.

The currency in circulation to GDP ratio indicates the GDP generated by cash transactions in an economy. It was observed that this ratio fell in the year the government announced demonetization. Since then, the cash in circulation to GDP ratio has been increasing and has almost reached the pre-demonetization levels. This indicates the inclination of Indians towards the usage of cash.

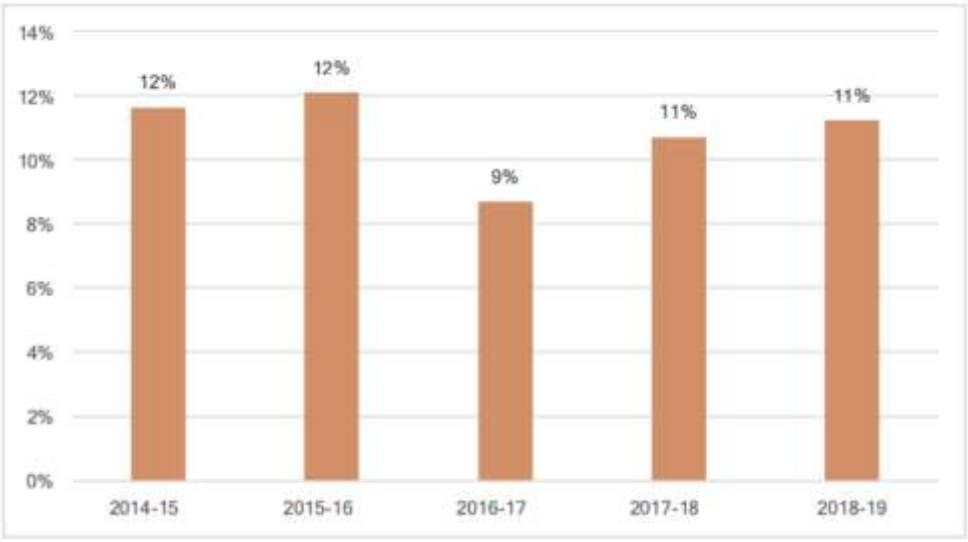
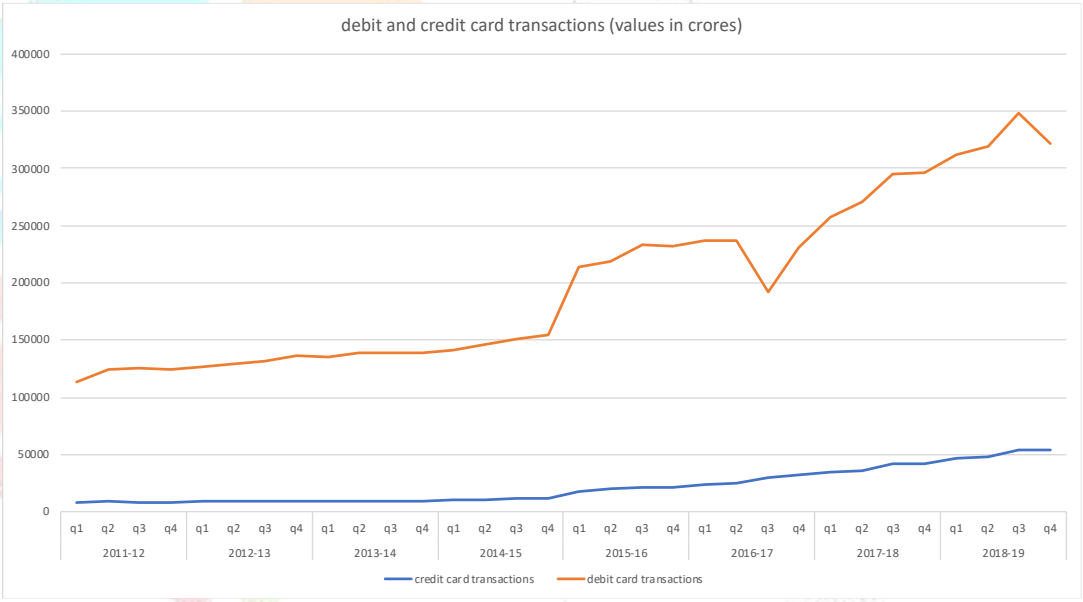


Fig 2: Currency in circulation as a percentage of GDP (source: RBI)

An analysis of the value of debit and credit card transactions, both at the Automatic Teller Machine (ATM) and Point of Sale (POS), would reveal a positive trend. This indicates that individuals in India are resorting to using more of digital techniques for making payments, rather than holding on to the old methods of using physical currency. Data acquired from Reserve Bank of India data releases indicates an overall positive movement towards the adoption of cashless modes of payments, especially since the introduction of 'Digital India' campaign in 2016.



Graph 4: Value of Debit and credit card transactions through the years 2011 to 2019

Impact on economic growth in India

Table 1: Multiple Regression Analysis of card transactions through 2011-2019

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.96
R Square	0.93
Adjusted R Square	0.93
Standard Error	112892.86
Observations	32.00

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	1650363.00	116689.95	14.14	0.00
credit card transactions	9.07	5.51	1.65	0.11
debit card transactions	3.62	1.14	3.17	0.00

Table 1 provides information on a regression analysis using the value of debit and credit card transactions through the years 2011 to 2019 to identify a relation between an increase in cashless transactions using debit and credit cards and the gross domestic product (GDP) of the country. the GDP at constant prices has been considered as the dependent variable in this test, and debit and credit card transactions are the independent variables. The results indicate that among the two independent variables, debit card transactions, with a p-value of 0.00 is the variable that has a significant impact on the GDP of the country. Credit card transactions with a p-value of 0.11 do not significantly impact the GDP of the country at a 5% level of significance. The R-squared value stands at 93% indicating that the independent variables in this study explain the variance in the dependent variable up to the extent of 93%.

Table 2: Multiple Regression Analysis of card transactions and UPI payments through 2016-2019

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.98
R Square	0.97
Adjusted R Square	0.95
Standard Error	37727.19
Observations	11.00

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	2315345.04	100335.93	23.08	0.00
credit card transact	16.05	4.79	3.35	0.01
debit card transacti	0.32	0.71	0.45	0.67
UPI	-0.07	0.68	-0.11	0.92

In this regression analysis, transactions through unified interface payments have also been considered. The period of analysis has been reduced to three years in order to match with the data available for digital transactions through the newly introduced digital payments system of UPI. Here, the dependent variable remains the same; GDP of India at constant prices. However, independent variables now not only include debit and credit card transactions, but also UPI transactions. The results indicate a 97% variability, which is higher than that obtained in the previous test that involved only debit and credit card transactions. Also, this test indicates that the p-value of credit card transactions is closest to zero, indicating that in the recent years, it is these transactions that impact the gross domestic product of the economy.

CONCLUSION

In a consistently evolving world, where technology alters performance at a rapid pace, it is crucial for mankind to identify the benefits of such technology and exploit the same before it ceases to exist. The finance and payments industry is one such sector that faces technological upgradation very frequently. A secure, convenient and speedy payments system allows for better transfer of funds and at the same time, allows for a cashless economy to emerge in its true forms. Most developed countries work only on electronic payments. Even the smallest of transactions are carried out online. This reduces the need to carry physical currency and also allows for convenient transfer, while maintaining a record of such expenses. Previous research has suggested that digital payments not only enhance the functioning of an economy, but also boosts the confidence of individuals.

This study aiming at measuring the impact of digital payments on the Gross Domestic Product of the country strives to identify a relation between these two factors by using the most common and the most recent method of electronic payment, i.e. card transactions and UPI. The study employed the multiple regression analysis in order to identify a relationship between digital payments and economic growth. the study reveals that among the three independent variables, debit card transactions have indicated a p-value of 0.00 indicating a significant impact on the GDP of the country. Upon an analysis of all variables for a period of three years through 2016-2019, from the introduction of UPI payments in India, it has been observed that credit card transactions show greater impact than the other two methods of payment. Therefore, it is concluded that digital payments do have an impact on the economic growth of a country.

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