

# Digital Payment Dynamics: Unveiling the Impacts on Sustainable Development, Environmental Protection, and Social Inclusion

Dr. Suresh Chandra Agarwal<sup>1</sup>, Vaishali Shukla<sup>2</sup>, Abhishek Awasthi<sup>3</sup>

<sup>1</sup>Associate Professor, Department of Commerce, Lucknow Christian Degree College Lucknow, Uttar Pradesh, India

<sup>2,3</sup>Junior Research Fellow, Department of Commerce, University of Lucknow, Lucknow, Uttar Pradesh, India

## ABSTRACT

Digital payment, a pivotal component of banking's digital transformation, plays a crucial role in fostering a nation's economic growth. This is achieved by facilitating seamless and convenient online transactions, thereby enhancing customer experience and streamlining banking operations. Given the widespread use of smartphones and internet access among today's population, digital modes such as UPI, USSD, and internet banking have become integral to various activities like financial transactions and online shopping.

In the contemporary era, sustainability, encompassing social inclusion, environmental protection, and economic growth, is paramount. By exploring the nexus between digital payment and sustainability, the paper aims to provide insights into the transformative potential of digitalization in fostering economic growth while aligning with the principles of social inclusion and environmental preservation. Descriptive in nature, the research relies on secondary data gathered from various sources, including books, journals, and articles, available on electronic platforms.

Digitalization emerges as a valuable tool contributing to sustainable development, with a focus on achieving a cashless economy, reducing the carbon footprint associated with financial transactions, and providing cost-effective services to citizens, thereby promoting enhanced financial inclusion. This paper delves into the role of digital payments in the banking sector in realizing sustainable development goals. Examining government policies on digital payment and sustainability, the paper addresses the challenges and opportunities associated with sustainable development.

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**KEYWORDS:** Digital Payment, Sustainability, Social Inclusion, and Environment Protection

## INTRODUCTION

Digital transformation in banking sector means bringing new or innovative technologies like fintech for improving operational efficiency and increases customer satisfaction. Digital payment sometimes called as electronic payment, is the exchange or transfer of amount from one account to another using a digital payment. All transaction like online payment, online investment, online shopping are done with the help of digital payment. Digital payment requires no physical exchange of money. Various digital payment mode is like UPI, USSD, Internet banking, debit card, credit card. QR codes, mobile wallets, bank cards. The Entire fintech business opportunity in India is expected to be \$1.3 trillion by

2025, with a CAGR of 31% from 2021 to 2025. Loaning innovation is supposed to contribute 47% (\$616 billion), trailed by protection innovation at 26% (\$339 billion) and advanced instalment at 16% (\$208 billion). one of these, the insurance sector is fastest-growing at a CAGR of 57%, followed by investment tech (44%), Software-as-a-Service (40%).

Example-digital payment can take place both in internet as well as on physical premises. Like if we buy something from flip cart and pay through internet banking it qualifies digital banking. similarly, if we purchase from general store, we purchase through UPI by scanning QR codes instead of holding cash this is also digital payment.

### Why Digital Payment used?

Digital payment plays an important role in driving the growth of digital economy. and make India a cashless economy, as per the scheme of digital India launched in 2016. The demonetization policy in India has accelerated the growth of digital payment in India. On Nov 8, 2016 the P.M Shri Narendra Modi announced all 500-1000 rupee note, which accounted for 86% of cash in circular would be demonetized. This has accelerated the growth of digital payment in India; after that, COVID-19 also accelerated digital use because of the lockdown. Everyone is now sitting at home and making payments for everything via online mode through various digital financial services. It enhances financial inclusion also because it offers anytime, anywhere access to accounts thus making it easy for citizen to make or receive payment through their account from anywhere.

Sustainable development allows us to meet our present needs without compromising the prospects of future generations. Its three pillars are economic inclusion, social inclusion, and environmental protection. These pillars are very important for us as a nation. Various issues like waste pollution, and energy consumption are all harmful to society. Hence sustainability helps to preserve the economy for a better life.

Digital banking is itself is a part of green banking. Green banking refers to eco –friendly practices refer to online banking instead of traditional banking, online payment of bills and taxes, e-transactions of funds, online account opening and many others. So environmental sustainability refers of digital payment. This paper discusses how digital payment impact on 3 pillars of sustainable development that is Sustainable Development, Environmental Protection, and Social Inclusion. The government of India also undertaking various measures to promote the use of digital payment in country. As digital India scheme launched in 2016 by government to create digital empowered economy that is — paperless, cashless, faceless economy. As today every has Smartphone and have access to internet so everyone is in digital space. So digital payment become major part of everyone lives.

### Literature review:

1. **(Damodaran et al., 2019):** Traditional banking has relatively high overall expenses as compared to modern digital lending because in the traditional method labour cost is high. Advantages of Digital Lending is Minimum documentation, Quick loan processing, less time, Personalization of services, online safety, and Online comparison of option.

2. **(Kaushal & Karki, 2019):** In the recent few years, there has been the development of modern infrastructure in India such as Bharat Net, E-sing (Electronic signature), E court (Electronic court), E-nam(electronic National Agriculture Market), Digital locker, and UMANG. there are some barriers to the adoption of digital like the low level of digital literacy, to be low connectivity in backward regions, cybercrime, and huge capital requirement. Digitization has increased the efficiency of the people.

3. **(Arner et al., 2020):** Financial technology (FinTech) serves as a key driver for financial inclusion, foundational for sustainable balanced development aligned with the UN Sustainable Development Goals (SDGs). Our research advocates a progressive approach focusing on four pillars: digital identity, interoperable electronic payments, electronic government services, and digital financial market design. Implementing these pillars has transformative potential, advancing economies and societies through FinTech, financial inclusion, and sustainable development.

4. **(Bhavsar & Samanta, 2022):** This study defines into the synergy between green banking and cashless transactions, emphasizing their role in promoting environmental well-being in India. Findings suggest a positive impact on pollution reduction, contingent upon heightened customer awareness. To attain full success, comprehensive education campaigns across demographics are deemed essential, covering diverse banking products and services.

5. **(Feng et al., 2022):** This paper explores innovative solutions using digital finance to address environmental challenges. Analysing Chinese listed companies and cities, it finds that digital finance significantly promotes green technology innovation by reducing corporate financing constraints and upgrading industrial structure. The positive impact is more pronounced in small-scale enterprises, regions with higher pollutant emissions, and areas with robust local governance. Improved environmental decentralization enhances digital finance's influence on green technology innovation. To enhance innovation and tackle environmental issues, traditional financial institutions are encouraged to embrace digital trends, while governments should implement differentiated policies and strengthen environmental supervision.

6. **(Yao et al., 2022):** China's expansive economy and high energy consumption contribute significantly to its substantial carbon emissions. Enhancing Urban Low-Carbon Economy Efficiency (ULEE) is crucial for sustainable urban development. Digital finance emerges as a pivotal tool, offering a convenient funding channel for low-carbon economic transformation. Analyzing 100 cities in China's Yangtze River Economic Belt from 2011-2019, this research utilizes various models to examine the dynamic relationship between ULEE and digital finance. Findings reveal an annual 3.42% growth in coordination, displaying a gradient increase in distribution from upstream to downstream regions. Influencing factors, including informatization and industrial structure, suggest policy recommendations for improved coordination.
7. **(Mohan & Kumari, 2023):** Digital finance, exemplified by the increasing popularity of digital payments, is reshaping the financial landscape. Channels like UPI, E-Wallets, and mobile banking are enhancing accessibility for unbanked rural populations in India. The JAM Trinity - Jan Dhan, Aadhaar, and Mobile - has spearheaded the nation's digital payment revolution, fostering a Digital India with streamlined government services. Beyond financial inclusion, digital finance holds the potential to boost sustainability by minimizing the environmental impact of transactions through paperless banking. This research underscores how digital finance, particularly in India, contributes to sustainable development by reducing costs, promoting responsible investment, and fostering green innovation.
8. **(Udeagha & Ngepah, 2023):** BRICS nations prioritize environmental sustainability amid fossil fuel concerns. Despite increased emissions, potential for eco-friendly renewable energy exists. This study examines how Green Finance (GFN) and Financial Technology (fintech) contribute to their carbon neutrality goal (2000-2018), aligning with the Environmental Kuznets Curve. GFN, fintech, and energy innovation positively impact sustainability, while natural resources rent and economic growth have negative effects. Bidirectional causality exists between CO2 emissions and GFN, fintech, and natural resources rent, while GDP and energy innovation exhibit unidirectional causality. Recommendations include prioritizing green financial products, enhancing financial institutions for green credit,

and allocating more resources for risk-managed implementation of green finance solutions.

#### **Research objective:**

- To examine government policies regarding digital payments and analyse the challenges associated with achieving sustainable digital finance.
- To investigate the role of digital finance on sustainable development, social inclusion and environment protection.

#### **Types of digital payments:**

Digital payment helps in bringing new innovation in economy and lead to economic growth of nation. It says financial transactions take place through online mode like payments of bills, online shopping, transfer of funds, online investments. It does not need to go bank branch every time instead by sitting from anywhere anyone can make payment through their phones. customer do any transactions and manage their accounts with the help of mobile and internet banking, and also monitor his bank account. Customer also take E-statement of transactions. This saves customer time and also easy for them of digital payment services on.

- **Banking cards:** This include both debit and credit cards which is used for variety of transactions. it is most widely used in digital payment. It is easy and convenient in use. Customer can use store card information in mobile application and pay for any service.
- **UPI (Unified payment interface):** for using this service one must have bank account and their number registered with that bank. It is modern type of digital payment in this customer easily transfer money from one bank account to another. In this payment, which is done through a virtual payment address, various service providers are registered on their phones, such as Paytm, BHIM, etc.
- **Mobile banking:** In this service, mobile apps are launched by banks on smartphones, allowing smartphone users to perform transactions digitally. Its scope expanded extensively after the introduction of UPI and mobile wallets.
- **Internet banking:** This service allows financial transactions to be done at home using a mobile phone, laptop, or desktop with an active internet connection. This is very much using recently and so many transactions take place with the help of this service.
- **Unstrutred supplementary service data (USSD):** USSD include those sectors which is not have any access to banking facilities. Customers

can incorporate USSD and perform mobile banking without an internet-enabled smartphone. Simply input \*99# using any of the interfaces to access banking services like fund transfer and balance inquiry.

### **Importance of digital payment in India:**

Government takes several measures for increasing digital payment in economy which lead to digitalization in country and promote digital India policy. This will also reinforce the importance of digital payments to the financial sector in the economy.

- **Easy and convenient:** Digital payments are easy and convenient to operate. Customers do not need cash to pay. Moreover, digital payments do not require physical presence, customers can pay from anywhere, anytime.
- **Growth of nation:** Customer easily make transactions through digitally which lead them making online bill payment, online shopping, online investment, online tax filling, transferring fund by online mode this all lead to economic growth of nation.
- **Enhanced financial inclusion:** Through digital payment customer make or receive payment from anywhere, anytime into their accounts through their phone. they need not to travel somewhere for making payment. This led to increased financial inclusion of rural population as they easily make payment by sitting at their homes.
- **Speedy and timely payment:** Digital payment make speedy payment and timely also because with the help of internet and electronic devices.

### **IMPACT OF DIGITAL PAYMENT ON ENVIRONMENT PROTECTION**

1. **Reduction of Carbon emissions CO<sub>2</sub>:** Digital payments reduce carbon emissions Co<sub>2</sub> causing greenhouse gas emissions by up to 80%. For example – The printing of rupee notes and minting of coins requires abundant natural resources, as well as electricity and fuel, and trees are also cut for the production of paper notes which is harmful. The environment is eco-friendly because trees release oxygen and absorb carbon dioxide. Besides, bio-fuel is also required to send cash from one place to another on the road. These resources wasted in cash transactions so digital payment promote cashless economy and there is no need to carry physical cash for making transactions so digital payment reduces carbon emissions and protect environment.
2. **Virtual card, mobile wallets:** virtual and mobile card are used in smart phone and mobile network

so they save environment costs because it not needed any plastic card it eliminates paper receipts and cards which consume 3 million trees, water, release co<sub>2</sub> emissions.

3. **Efficiency in Financial Transaction:** Digital payments bring efficiency to financial transactions by reducing the overall energy demand. All data is stored in electronic form storage devices.

### **IMPACT OF DIGITAL PAYMENT ON ECONOMIC GROWTH:**

1. **Reduced Costs:** Digital payment helpful in reducing costs as no paper in needed all transactions are cashless, no need of using any natural resources for printing notes and no need for sending notes from one place to another so it helpful in reducing cost.
2. **Save time:** Digital payment also save time of customers as by sitting at home customer make financial transactions through their smart phone. No need of going bank branch or anywhere for making financial transaction.
3. **Better money management:** The digital payment enables better money management of customers and customers check their payment and receipts and also save money. customers also make investment and make insurance. It helps in better money management.
4. **Rise in government revenue:** Digital payment helpful in increasing government revenue as all payment recorded so there less is less change of black money. digital payment helpful in collecting tax form customer and various other payments so it is helpful increasing government revenue.
5. **Increased transparency:** The digital payment has facilities of traceability on the basis of which digital payment is improved. digital payment needs more identification and documentation so it is more important. Receipts has original records of amount of the payment they are to receive. So, this increase transparency.

### **IMPACT ON DIGITAL PAYEMENT ON SOCIAL INCLUSION:**

1. **Reducing inequalities and empowering individuals:** The Digital payment is equal used by birth women and men, younger. older, rural and urban people so it does not discriminate inequalities and it also empower individuals for making payment.
2. **Enhanced financial inclusion:** Digital payment enhanced financial inclusion of rural or urban

both population as this service is used by anyone, from anywhere through their smart phone having access to internet. customers need not to visit bank always for transactions. so, it enhanced financial inclusion specially of rural and backward population.

3. **Increased access to financial services:** Internet facility and smart phone are available to larger part of population in today era. so, this service has increased access of financial services to large part of population.
4. **Save from theft and fraud:** Digital payment saves customers from theft of money as in traditional banking their money kept in bank and they carry cash transactions which is at risk of loss and theft but thanks to digital payment as it saves customer from theft and fraud as money sent from one place to another electronically without needing any cash.
5. **Enhancing financial literacy:** The Reserve Bank of India launched a project — promote financial literacy. The main purpose of this project is to provide information about central bank and other banking concepts to various target groups including schools and colleges, women, rural and urban poor, and senior citizens.

#### **Policies and schemes of government towards sustainable digital payment**

- **Jan Dhan Aadhar Yojana:** mobile trinity—the combination of this policy and use of mobile communication has changed how citizens use government service. Pradhan Mantri Jan Dhan Yojna announced by Prime Minister on August 15, 2014 as the national mission on financial inclusion of all the households in the country by providing universal access to banking facilities. A person not having a saving account can open an account without the requirement of any minimum balance and in case they self-certify that they don't have a valid document for opening an account they can manage a small account. It offers unbanked persons easy access to banking services and awareness and provides education about financial products through financial literacy programs. Aadhar-enabled payment systems are services in which banks use Aadhar as an identity and open a cash withdrawal, remittances through a business correspondent. Mobile banking in this service through mobile apps launched by banks in a smart phone for performing transactions digitally. Its scope expanded extensively after the introduction of UPI and mobile wallets.

- **Digital finance for rural India—creating awareness and access through common service centres (CSCs):** The Ministry of Electronics and IT MeitY has launched this new scheme under Digital Saksharta Abhiyan (DISHA) with the main purpose of creating awareness among rural populations on government policies and digital financial options available for them as well as how to use these digital payment services such as IMPS, UPI, Bank POS machines etc.
- **Digi Dhan Abhiyan:** It is launched by the Ministry of Electronics and IT (MeitY) to promote cashless transactions. This scheme enables every citizen, small trader and merchant to promote digital payment.
- **Vidya Saksharta Abhiyan (VidyaSAKSA):** It is launched by the Ministry of Human Resource Development and aims to actively engage the youth/students of higher education institutes as they motivate all payers and payees starting from the transfer of payments with digital financial services.

#### **Challenges of digital payment**

- **Digital divide:** Non-availability of suitable financial products and citizens' lack of skill in using these digital services create a digital divide with citizens who know how to use these financial services. Customers with modest incomes who cannot afford the technology needed to access digital services.
- **Speed of internet and network connections:** The speed of internet, WiFi are slow as compared to other developed nations so this also creates a problem in digital payments.
- **Lack of digital education:** Citizens lack the skill to use this digital financial product.
- **Cybercrime:** Citizens sometimes fall on the trap of hackers and they lose all their money in bank accounts while making digital payments so there is always a risk of theft in digital payments.

#### **Steps to overcome these challenges:**

- **Promote digital and financial literacy:** It is the government's responsibility to promote digital and financial education among all citizens, rural, urban, women and marginalized groups. So, everyone knows how to use these services and improve sustainable development of the economy.
- **Protection from theft and data:** In digital payment there is a greater need to strengthen cyber security and data protection so it provides protection to citizens from loss and theft.

- **Educate citizen about sustainable development:** through various schemes it is necessary to educate citizen about sustainable digital finance as how digital payment help in protecting environment.

### Conclusion:

The banking industry's digital revolution, especially the emergence of digital payments, has become a game-changing factor in India's economy. The nation's transition to a cashless economy has benefited greatly from the adoption of cutting-edge technology like fintech, which has also increased operational efficiency. With so many digital payment options available, such as UPI, USSD, internet banking, debit cards, and mobile wallets, India's fintech market is expected to grow to \$1.3 trillion by 2025. Government initiatives, such as the 2016 introduction of the Digital India plan, have greatly aided digital payments. The demonetization of 2016 and the COVID-19 pandemic that followed hastened the spread of digital payment systems and made them a necessary component of daily transactions. Digital payments have improved financial inclusion by giving people anytime, anywhere access to their accounts and making it easy for them to send and receive money, particularly in rural areas.

Digital payments are in line with sustainable development ideals, which prioritize environmental preservation, social inclusion, and economic inclusion above and beyond financial considerations. Green banking techniques, such as digital payments and online banking, lessen carbon emissions, do away with the need to print physical money, and encourage environmentally friendly financial activities. Digital payments have an impact on economic growth because they reduce costs, save time, improve money management, increase government revenue, and increase transparency. Digital payments have a positive social impact by empowering people, lowering inequality, improving financial literacy, and expanding access to financial services, particularly in rural areas.

Initiatives like Vittiya Saksharta Abhiyan, Digi Dhan Abhiyan, Jan Dhan Aadhar Yojana, and Digital Finance for Rural India demonstrate the government's commitment to sustainable digital finance. Aligned with the larger vision of a paperless, cashless, and faceless economy, these efforts seek to raise awareness, enable access, and encourage cashless transactions. Essentially, the revolutionary effect of digital payments on social inclusion, economic growth, and sustainable development highlights the significance of ongoing initiatives to promote and

incorporate digital finance into the structure of India's changing economic environment.

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