

**DIGITAL CURRENCY MANAGEMENT, CIRCULATION AND TAXATION  
REGIME IN INDIA**

**DISSERTATION**

Partial submission to the Swiss School of Business and Management Geneva for the  
degree of Doctor of Business Administration

SUBMISSION BY AMEYA VILAS MUNAGEKAR

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## **DEDICATION**

This Dissertation is dedicated to my spiritual Mentor, eminent philosopher and noted Economist Adv. Dr. V. R. Parnerkar and his spiritual mentor Dr. R. Parnerkar (1916-1980) and my mentor L.V. Parnerkar (also known by his pen name: P. Kant), who delicately imbibed in me, under his vigilant and constant efforts, the love for the science called- Economics. It was Dr. V. R. Parnerkar, who had first floated the idea, blessed me and inspired me, to pursue my doctoral studies in Economics, especially in the field of Currency.

My mentor, Dr. V. R. Parnerkar son, L. V. Parnerkar, had particularly noted my distaste for economics back then as a college-going, final-year law student, and he took upon himself the arduous task to inculcate in me the disposition and liking towards this remarkable discipline of Economics. The first efforts were met with resistance and immense retaliation but his passion and sustained endeavours brought an enormous change in my inclination towards this subject that, and his constant thrust has been the chief driving force behind this dissertation.

I also dedicate this dissertation to my parents, my father who wished that his son pursues a MBA, (Thankful to SSBM for allowing me to pursue a DBA!) and my mother who left her PhD dreams incomplete and shifted her focus on my education.

## **ACKNOWLEDGMENTS**

Throughout the doctoral journey, I have many people to thank for supporting me. Firstly, I want to thank God for his benign and constant aid and assistance and blessings that have enabled me to complete the doctoral degree. Secondly, I would like to thank the supervisor and dissertation chair of my research, Prof Dr. Iva Buljubasic, for her constant support, advice, comments and critics, and encouragement throughout this dissertation's development. Thank you, Professor. It would have been impossible to complete the research work without your guidance.

I am also grateful and indebted to my Life coach and guide, L. V. Parnerkar, my wife and my family, and my office colleagues and staff for granting me the opportunity to study at a high-calibre business school, and all the doctoral student Moreover, I would like to thank the staff at Upgrad, India for offering valuable insights into my work and providing case studies from the business school to support me in writing this dissertation.

## **CERTIFICATE**

This is to certify that the work contained in the thesis entitled “**DIGITAL CURRENCY MANAGEMENT, CIRCULATION AND TAXATION REGIME IN INDIA**”, submitted by Ameya Vilas Munagekar.

Presented to the Swiss School of Business and Management Geneva with partial fulfilment of the requirement for the Degree of DOCTOR OF BUSINESS ADMINISTRATION.

This work is a record of bonafide research works carried out by her under my direct supervision and guidance. I considered that the thesis has reached the standards and fulfilling the requirements of the rules and regulations relating to the nature of the degree. The contents embodied in the thesis have not been submitted for the award of any other degree or diploma in this or any other university.

## **ABSTRACT**

### **DIGITAL CURRENCY MANAGEMENT, CIRCULATION AND TAXATION REGIME IN INDIA**

By Ameya Vilas Munagekar

**February 2022**

Dissertation Chair: Prof Dr. Iva Buljubasic

Money is always of the utmost significance to humanity and the economy. The global economy is persistently revolving around money. Man discovered fiat money through numerous stages, which resulted in many benefits and many drawbacks for humanity at the same time. There is no efficient traceability of dealings in fiat money, which was the prevalent drawback of this invention. It is hypothetically possible for any government to print cash to fill an economic deficit while overlooking the fact that paper money needs to be backed to qualify as a valued currency. Therefore, to avoid further catastrophe, countries should switch from fiat money to digital currency. Digital currency and cryptocurrencies, such as bitcoin, are more likely to prevent fraud, retain better records, and assist people in managing their money more efficiently. Because it is a virtual currency. Digital currency is an excellent solution to address concerns such as the non-traceability of financial transactions and counterfeit transactions, and it has the potential to both increase the tax base and lower the tax percentage at the same time. It is critical to adhere to the components of modern society and to change to improve society. Thus, the research focuses on the future of digital currency, its necessity, its good impacts, and its beneficial effects on the Indian economy and taxation. The study also looks into the circulation, management, and taxation regime of digital currency in India.

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## LIST OF ABBREVIATIONS

RBI	Reserve Bank of India
CBDC	Central Bank digital currency
USA	United States of America
BTC	Bitcoin
ETH	Ethereum
USDT	Tether
BNB	Binance Coin
ADA	Cardana
DOGE	Doge coin
USDC	USD Coin
DOT	Polkadot
UNI	Uniswap
AML	Anti-Money Laundering
CE	Common Era
BC	Before Christ
VC	Virtual currencies
DApp	Decentralised Application Platform
FDIC	Federal Deposit Insurance Corporation
FICN	Fake Indian Currency Notes
NFT	Non-fungible token
BFI	Block chain Foundation of India
TDS	Tax Deduction at source

SEC guidelines	Securities and Exchange Commission guidelines
FATF	Financial Action Task Force

## Chapter 1. Introduction

### 1.1 Introduction

In the 21st century, humans are prone to so many new technologies and modern systems of living. Humans' dependency on technology is rising day by day. Businesses, trades, and markets need to update themselves with the newest technology. Money is one of the crucial aspect for survival. Thus money stands with utmost importance in each and everyone's life. Humans have travelled a long way from the Barter system, meaning "to trade by exchanging one commodity for another: to trade goods or services in exchange for other goods or services" (Merriam-Webster's Collegiate Dictionary, 1828). But certainly, the Barter system had a few faults such as the mutual coincidence of wants, common measure of value, divisibility of goods, difficulty in strong value, difficulty in future payment, and difficulty in transportation (Business Jargon, 2021). Then came commodity money with its own baggage of limitations, these limitations thus led to metallic money which means money made out of metals like gold, silver, copper. Metals have been used as money throughout history. The first stamped metallic coins are also known as the Electrum coin from Ephesus, appeared around 650-600 BC in Lydia modern-day Turkey (Neiburger & Sphon, 2007). Each coin had a standard weight and consisted of a particular metal and had a special mark which were seals or symbols of the kings and rulers, which served as a guarantee of their weight and purity. The money thus began to serve another function here the identification of one political society from another. The limitations of metallic money were also in great numbers so man shifted to fiat money. Fiat money in a broad sense, is all kinds of money that are made legal tender by a government decree or fiat. The term is however, usually reserved for legal-tender paper money or coins that have face values far exceeding their commodity values and are not redeemable in gold or silver (Britannica, 2019). Fiat Money ('fiat' which has its origin in the Latin word fiat meaning

“let it be done”) appeared as a currency note made of paper, called Jiaozi, for the first time during the rule of the Song Dynasty in China during the 11th Century CE (China Knowledge, 2016). Fiat money which is intrinsically valueless became widely accepted as a means of payment based on an order, decree, or resolution by the rulers or the ruling government declaring it to be legal tender. Fiat money is still in use today, but with the advancement of technology and the internet, people have created digital currencies.

Digital currency (digital money, electronic money, or electronic currency) is any currency, money, or money like asset that is primarily managed, stored, or exchanged on digital computer systems, especially over the internet (Bank for International Settlements, 2015). Types of digital currencies include cryptocurrency, virtual currency, and central bank digital currency. Digital currency may be recorded on a distributed database on the internet, a centralized electronic computer database owned by a company or bank, within digital files, or even on a stored-value card (Mohamad, Haroon & Najwan, 2009). Digital currency and cryptocurrency are a medium of exchange, such as the rupee or the US dollar, but is digital in format and use encryption techniques to both controls the creation of monetary units and to verify the exchange of money (Mukul & Sasi, 2021).

There are advantages of digital currencies vis-a-vis shortcomings of physical currencies. Physical currency means the coin and printed money (Definition by Law Insider). Shortcomings of physical currencies can be altered by adopting digital currencies for everyday transactions. Digital currencies are backed by enormous benefits. Digital currencies are gaining more and more traction by the day, and some countries have launched and the others are swiftly progressing towards launching digital currencies, including Ecuador, Tunisia, Senegal, Estonia, Russia, Japan, Venezuela, and Israel (Singh, 2021). Bitcoin will do to banks what email did to the postal industry (Falkvinge, 2017).

## **1.2 Background of the study**

The research is focused on understanding digital currency and cryptocurrency at its most basic level. I aim to answer the questions like what is digital money, currency and their types, applications used during transactions, taxation policies in India regarding currency, cryptocurrency, and taxation interdependency in the present study. The research can help readers understand the relationship between taxation and currency. There is need for modifying taxation regulations in light of the expansion of cryptocurrencies and its acceptability on worldwide platforms, as well as digital money and cryptocurrency. The scope revolves around the fact how digital currency and cryptocurrency will prove beneficial for society and for welfare of state by facilitating a lower tax rate, but higher tax collections in India.

## **1.3 Research problem**

My research problems have been hypothetically framed during the study. It will examine digital currency's capabilities in the current market of India. It will also assess the impact of digital currency and cryptocurrency on our tax policy, as well as inquire regarding the legalisation of digital currencies and cryptocurrencies. Hypothetically, the research problems are: How does cryptocurrency function? How can it be effectively distributed, circulated, and managed? How will the legalization of digital currency and cryptocurrency affect taxation policies in India?

## **1.4 Purpose of research**

The necessity for money to be digitalized is a pressing issue in today's world. Digital currencies have the potential of solving the inadequacies caused by physical currencies. The benefits of digital currency are not confined to a particular person, entity or department. This has a huge impact on the country's economy since it eliminates the use of cash, which helps to diminish the grey economy and inhibits money laundering. This also improves tax compliance, which will benefit the country and its taxpayers as well. The inefficient traceability of cash transactions is the biggest loophole of physical cash. Digital currencies are easily traceable (Perlroth, Griffith & Benner, 2021). As a researcher, my purpose behind this research is to throw light on the importance of digital currency. The biggest question with physical currency is of the traceability factor. Efficient traceability is the answer which can be achieved by the adoption of digital currencies. The goal of this study is to highlight the advantages of digital money in the current Indian economy.

### **1.5 Significance of the study**

The importance of study revolves around one aspect of how the digital currency and tax system can be structured in a better manner. The digital currency market should be governed by law, with precise regulations or guidelines on how digital currency income should be taxed. The legalization and acceptance of digital money and cryptocurrency will improve financial conditions of the country and will have a major impact on taxation policies in the future. As a result, taxes can be used for a broad spectrum of purposes including infrastructure development such as roads, railways, bridges, dams, public healthcare, education, and defence.

### **1.6 Research Objectives and Questions**

The main objective of this study is to analyse the impact of digital currencies and state the gap analysis of current taxation procedures with new possible potential taxation procedures. To achieve this objective, I analysed the existing literature on the subject to identify the concepts and evolution of digital currencies. Factors like the procedure of storing the digital currencies, their circulation, and management with consequences of better compliance of taxes rather than tax evasion. Based on this analysis, I can conclude that, as initially assumed adaption of digital currencies will prove beneficial in many ways. My research started with understanding the basic concepts of money, currency, digital currency, cryptocurrency. The differences between them led to their better understanding conceptually. For understanding the technical background of the circulation of digital currencies, my research shifted to the block chain system. The goal of the study is to provide knowledge on digital currency and to underline its societal benefits. The research also strives to demonstrate the circulation, distribution, and management of digital currency. The primary aim of the research is to establish the grounds for legalizing digital currency and the benefits it brings with itself regarding taxation policies. Accepting the legality of digital currency and cryptocurrencies, in my opinion, will improve the country's financial situation. The financial situation of citizens is a direct indicator of a country's economic well-being. In an affluent society, taxes may be paid more readily since a bigger number of people pay taxes at a lower rate. By doing this study, I hope to demonstrate how digital currency and cryptocurrency can be a solid start toward better tax compliance and transparent transactions and dealings for all Indian citizens and residents.

### **1.7 Summary and Organization of the Dissertation**

As a researcher, I have tried to organize, the research in a manner where a reader can effortlessly pave his way into understanding the basic concepts revolving around digital currency and cryptocurrency. I have mentioned certain taxation policies that are in force. I



have produced a study of four countries where cryptocurrency is being legalized or at least in process of adoption. I have discussed the current situation which is present in these four countries regarding CBDC and cryptocurrency. These countries are my role models in understanding the positive outcomes of legalizing cryptocurrency and its effect on taxation. I have also focused on the current market situation, circulation, and management of digital money. Gap analysis is the main focus of my research which will accurately mention the positive uses of accepting digital currencies or cryptocurrency in a legalized manner throughout the country. My research is focused on understanding digital currency and cryptocurrency at its most basic level. I aim to answer what is digital money, currency and its types, applications used during transactions, taxation policies, cryptocurrency, and taxation interdependency in this dissertation paper. The research can help readers understand the relationship between taxation and currency, digital currency and cryptocurrency, and the need for changing taxation policies keeping in mind the growth and development of cryptocurrency and its acceptance on international platforms. The scope revolves around the fact how digital currency and cryptocurrency will prove beneficial for society and the state.

The total number of chapter in this thesis are sixth. The first chapter deals with the introduction of the dissertation. It mentions the details about the study and details regarding the background, research problem, is the purpose of the research, significance of the research, research objectives, and questions. Lastly, it mentions the summary and organization of the dissertation. Chapter two starts with a review of Literature, then what is money, the evolution of money, modern forms of money, characteristics of money. This chapter also deals with the value of money and why money is important. This chapter lastly deals with digital currency and cryptocurrency, the difference between CBDC and cryptocurrency, what are their types and applications used for buying cryptocurrencies. It

also deals with Central Bank Digital Currency, elements, dimensions, its types, adoption, and legal status of CBDC in India. The chapter further moves onto Blockchains, procedure, circulation, and management of digital currency. The last part deals with gap analysis, problem statement, and problems of physical currencies are dealt with in detail. Next chapter i.e. the third chapter deals with methodology, the role of the researcher, and taxation policies of digital currencies in four countries Sweden, El Salvador, Myanmar, and Korea. The next chapter is about observations and findings and here are the benefits of digital currency are mentioned in detail. The next chapter is about the current market situation and lastly, the research ends with the conclusion, summary and references.

## **Chapter 2. Review of literature**

### **2.1 Introduction**

This chapter deals with literature review submitted in the month of December 2021. This chapter is bifurcated into many sections. Starting with literature review, gap and summary of the same. In current times, currencies have taken numerous forms. The transaction has not only limited itself with cash transactions but also, leaped online. Money has always held paramount importance to mankind and the economy as well. There are 164 official national currencies circulating around the world. Although the number of the independent countries is 197 plus about five dozens of dependent territories (UN's Digital Economy Report, 2019). From handling money manually like currency notes & coins, we have evolved to the age of digital currency where all the money and money-related assets are primarily managed, stored, and exchanged on digital platforms. The future of money is digital currency (Gates, 2014). He also said that Bitcoin is exciting because it shows how

cheap transactions can be (CNBC News, 2014). Bitcoin is better than currency in that you don't have to be physically in the same place and of course for large transactions, currency can get pretty inconvenient with regards to taxes, it is observed that when an individual becomes financially sound, there will be substantial growth not only of that individual but also of the country he is residing in because the Gross Domestic Product of a country is measured on the average income earned per person in a country. So, one can say it is interlinked to one another. The financial situation of a country's citizens directly reflects the country's overall health. When a society is prosperous, the government benefits from the taxes. “कोश-मूलो हि दण्डः” (Kautilya, 3rd century BCE) which means ‘Treasury is the backbone of the system’. This state the importance of the taxes in economy. A tax is a compulsory financial charge or some other types of levies imposed upon a taxpayer (an individual or legal entity) by a governmental organization to fund a various public expenditure. In economic terms, taxation tends to transfer the wealth from the household or business to the government. A failure to pay, along with evasion of or resistance to taxation, is punishable by law. Taxes consists of direct taxes and indirect taxes. Taxes as a means of governmental revenue have been in existence for at least five millennia some other form or the other (Kant, 2020).

## **2.2 Literature Review**

The digital currency in its multiple forms whether as Central Bank Digital Currencies (CBDCs) or as the decentralized cryptocurrency is here to stay and is the future of the present-day fiat paper currency in vogue currently. Digital money has a number of advantages, including low production costs, low transaction costs, the elimination of financial middlemen, and the creation of a transaction trail that allows for disclosures that can be used by taxing authorities to enhance their tax base. An increased tax base would

categorically result in lower tax rates in the long run thereby benefitting even the common man (Sankar, 2021).

Politics and governments hitherto have been controlling the issue, circulation, and management of currencies that have been backed by a sovereign backing or the rule of law. As societies transition into a more matured and informed populace, it would be worthwhile for governments to focus on their taxation regime rather than controlling the issue, circulation, and management of the currencies. The internet and modern-day trade and commerce have already brought the world much closer to each other than ever before. It could be worthwhile to now conceptualize a single currency (or multiple easily convertible de-centralized global currencies) for the planet to ease trade and commerce and at the same time enable local governments, territories, and sovereign territories to control their taxation regimes and policies.

Today politics largely is seen to be intermingling with business and economics both exerting excess and undue amount of influence on each other. By divesting the governments of their currency issue monopoly, a great amount of separation can be brought between the two i.e. politics and businesses, and thereby allow the market forces to function freely to regulate a mutually beneficial global economy for one and all. “I understand the political ramifications of cryptocurrencies and I think that Government should stay out of them and they should be perfectly legal.” (Paul, 2017). Digital currency like the internet which created a virtual borderless marketplace can create a borderless currency that can transform completely the way businesses and economics function currently enabling transactions at much ease and velocity than ever before imagined.

### **2.3 Money**

Money is the most crucial resource for living a healthy and wealthy life, but it pales in comparison to the value it brings with itself. Money is the most basic need in life and it plays an important role in the economy of every country. Money has been gradually interwoven into every aspect of our life. The entire universe revolves around one simple concept i.e. money. Money has evolved around times and it is important to observe how the evolution of money has taken place. Money has taken the form of either commodity (which have intrinsic value) or in terms of debt instruments. When money does not have intrinsic value, it must represent title to commodities that have intrinsic value or title to other debt instruments. Paper currency is such a representative money and it is essentially a debt instrument. The owner of the currency knows who owes him or who has the underlying liability.

Money is usually issued by a sovereign. Private issuance of money whether under sovereign license has existed in the past but has over time given way to sovereign issuance, for two reasons. Firstly, being a debt issuance, private money is only as good as the credit of the issuer. By definition, there can be multiple issuers. This makes private currency unstable. On the other hand, public currency, as it is backed by a sovereign, is unique to an economy and has better credit standing; therefore, it is more stable. Secondly, paper currency involves seigniorage – the difference between the intrinsic value and the representative value which accrues to the issuer. This seigniorage should not accrue to any private individual. It should accrue to the Government and thus used for public spending (Sankar, 2021).

## **2.4 Evolution of money**

Human beings have favoured living in a society. We cannot exist in isolation and be secluded from our fellow human beings. Thus we are interdependent on each other. To put it in another way, we need what other humans provide us, and we provide what other humans need. It should be a give and take process. From being a caveman to being part of the latest technology-driven civilization, man has evolved from money to e-money. But money, whether it's represented by a metal coin, a shell, or a piece of paper, doesn't always have value till we put value over it in exchange for something. Nowadays everybody recognizes money but everybody does not know how to define money. Money has been defined differently by different economists. Money constitutes all those things which are at any time and place, generally accepted without doubt or special inquiry as a means of purchasing commodities and services, and of defraying the expense (Marshall, 1890). Money is a commodity accepted by general consent as a medium of economic exchange. It is the medium in which prices and values are expressed. It circulates from person to person and country to country, facilitating trade, and it is the principal measure of wealth (Britannica, 2021). The following figure showcases the evolution of money. How starting from barter system man has travelled towards cryptocurrency.

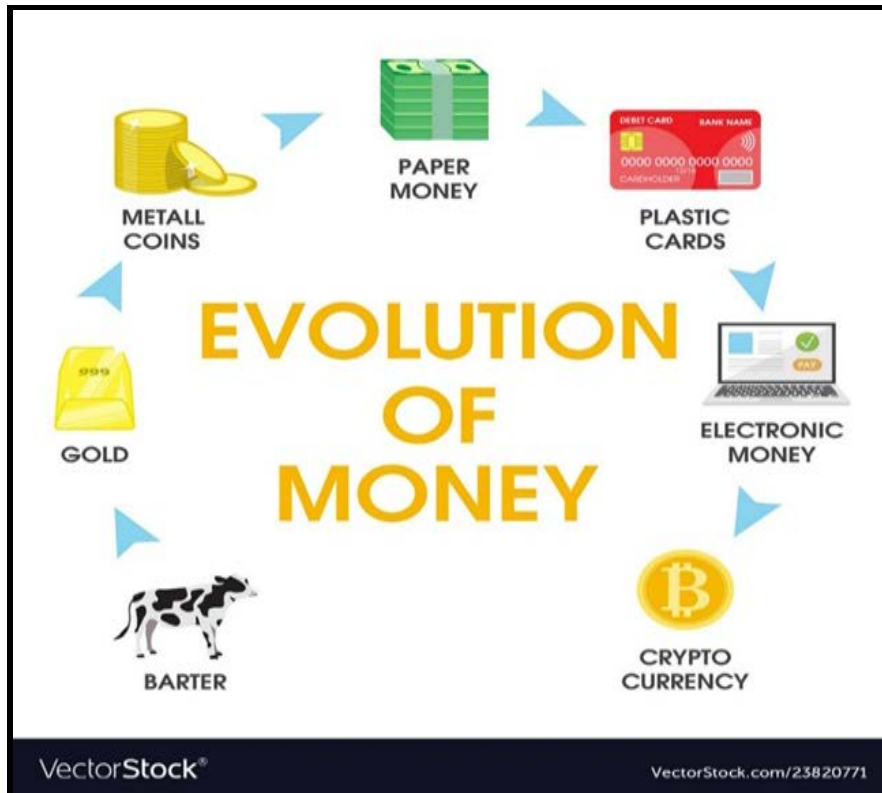


Fig. 1 Evolution of money (Vector Stock, 2001)

#### a. Barter system

After being a caveman for ages, the man took up agriculture as one of the main elements for survival. Humans took up agriculture rather than just hunting animals for food and wandering from one place to another. This is how agriculture came into the picture and became the major reason for civilization. Humans began to settle in one location, forming groups and, eventually, society. Thus in his process of civilization, his wants increased and labour became more and more specialized. Everyone started pursuing different skills and started picking up different occupations. And that's how we started exchanging our needs for our skills. Such a system of exchange where goods and services are directly exchanged for each other without the use of money is called a barter system. There were many

difficulties associated with the barter system. So gradually this system of exchange was replaced with a money system of exchange.

**b. Commodity money**

In the earliest period of human civilization, any commodity that was generally demanded and chosen by common consent was used as money. Goods like furs, skins, salt, rice, wheat, utensils, weapons, etc (Brain Kart, 2019) were commonly used as money for the trade. Such exchange of goods for goods was known as ‘Barter Exchange’ (The Niconomics, 2019). Romans used salt. Salt is easily divisible, non-perishable (can be stored for a long period), limited in quantity (it was expensive and labour intensive to produce), and widely consumed by everybody. Cattle in India, tobacco in Virginia, rice in Carolina, cowry shells in Africa, sugar in Brazil, tea in Mongolia are some examples of commodity money (Life Math Money, 2021). Due to storage issues, difficulty to transport, perishability, and because it was not universally acceptable, this system vanished with time.

**c. Metallic money**

With the progress of human civilization, commodity money changed into metallic money. Metals like gold, silver, copper, etc. were used as they could be easily handled and their quantity can be easily determined. It was the main form of money throughout the major portion of the recorded history of humankind. Metals were used for many things like making swords, shields, armour, and tools of all types. Money made of metal is called metallic money, which is valuable, durable, and holds the same value for everyone. It later became part of commodity money. The metallic coins have a specific weight and shape. Coins are only used for smaller retail payments because it is difficult to count, transport, and store them (Abdullah, 2015).



#### **d. Paper money**

It was found inconvenient as well as dangerous to carry gold and silver coins from place to place (The Niconomics, 2017). It came with its own baggage of weight. So, the invention of paper money marked a very important stage in the development of humankind. Paper money is regulated and controlled by the Central bank of the country (RBI in India). At present, a very large part of money consists mainly of currency notes or paper money issued by the central bank (Lingam, 2021).

#### **e. Credit money**

The emergence of credit money took place almost side by side with that of paper money. People keep a part of their cash as deposits with banks and institutions, which they can withdraw at their convenience through cheques. The cheque (known as credit money or bank money), itself, is not money, but it performs the same functions as money.

#### **f. Plastic money**

The latest type of money is plastic money in the form of credit cards and debit cards. They aim at removing the need for carrying cash to make transactions. Plastic money is a term that is used predominantly in reference to the hard plastic cards we use every day in place of actual currency notes. (Chand, 2019). They can come in many different forms such as cash cards, credit cards, debit cards, pre-paid cash cards, and in-store cards.

### **2.5 Modern forms of money**

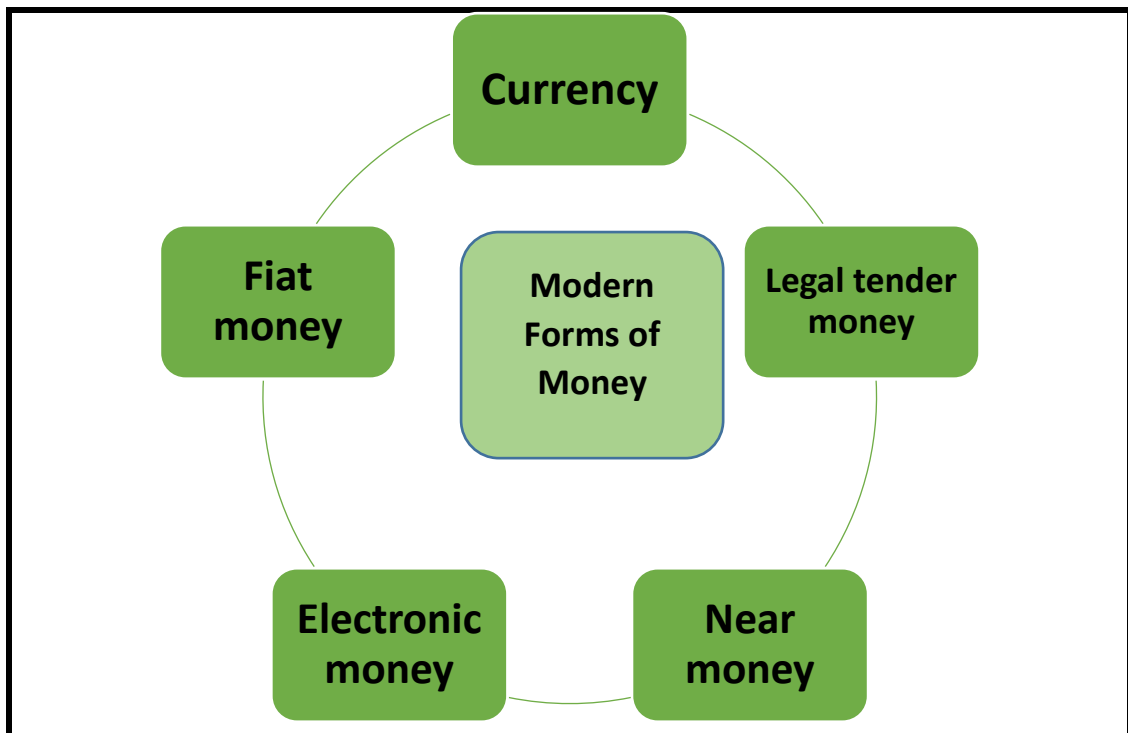


Fig 2. Modern forms of money (Self-made)

Modern forms of money include currency as paper notes and coins. Unlike the things that were used as money earlier, modern currency is not made of precious metals such as gold, silver, and copper. And unlike grains and cattle, they are neither of everyday use (Study & Learn, 2021).

**a. Currency**

Modern forms of money contain currency as paper notes and coins. Currency is accepted as a medium of exchange as it is authorized by the government of the country. In India, the Reserve Bank of India has the monopoly to issue currency notes. As per law, no other individual or organization is allowed to issue currency in the market (NCERT Economics). No individual in India can legally refuse a payment made in rupees. Therefore, the rupee is widely accepted as a medium of exchange.

**b. Legal tender money**

The problem with metallic money was that cheaters would cheat the public either in purity or weight. Cheaters would mix precious metals with less precious metals and pass them off as being pure. The governments of those times (kings, emperors, etc.) took it upon themselves to solve this problem by taking control of minting of metallic money (Life Math Money, 2021). It was a centralized system owned by the emperors & kings.

**c. Near money**

Near money, sometimes referred to as quasi-money or cash equivalents, is a financial economics term describing non-cash assets that are highly liquid and easily converted to cash. Near money is a term that analysts use to understand and quantify the liquidity and nearness of liquidity for financial assets. Near money considerations are viewed in a variety of market scenarios. Understanding near money and the nearness of near money is essential in corporate financial statement analysis and money supply management. Near money can also be important in all types of wealth management as its analysis provides a barometer for cash liquidity, cash equivalents conversion, and risk (Clear Tax, 2021).

**d. Electronic money**

Electronic money refers to money that exists in banking computer systems that may be used to facilitate electronic transactions. Although its value is backed by fiat currency and may, therefore, be exchanged into a physical, tangible form, electronic money is primarily used for electronic transactions due to the sheer convenience of this methodology. Electronic money is used for transactions on a global basis. While it may be

exchanged for fiat currency (which, incidentally, distinguishes it from cryptocurrencies), electronic money is most commonly utilized through electronic banking systems and monitored through electronic processing. Because a mere fraction of the currency is utilized in physical form, the vast percentage of it is housed in bank vaults and is backed by central banks (European Central Bank, 2021).

**e. Fiat money**

Fiat money is a government-issued currency that is not backed by a physical commodity, such as gold or silver, but rather by the government that issued it. The value of fiat money is derived from the relationship between supply and demand and the stability of the issuing government, rather than the worth of a commodity backing it. Most modern paper currencies are fiat currencies, including the U.S. dollar, the euro, and other major global currencies (Globalization and Monetary Policy Institute 2011 Annual Report, Federal Reserve Bank of Dallas).

**2.6 Characteristics of money**

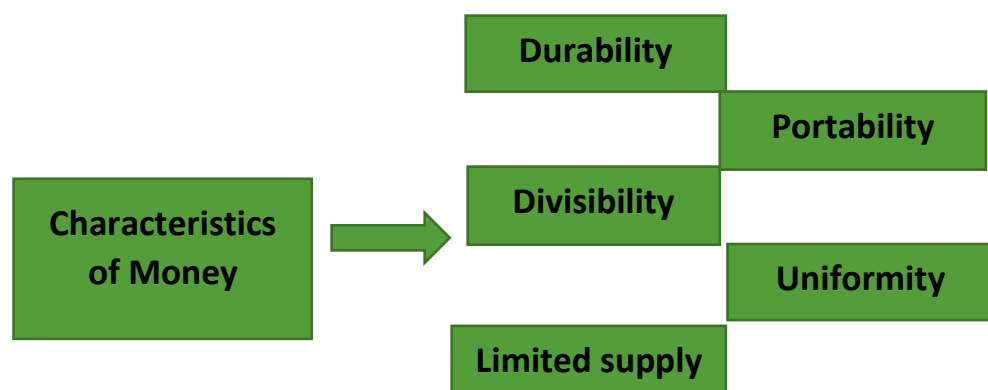


Fig 3. Diagram mentions the characteristics of money (Course Hero, 2019).

The above mentioned figure showcases the different characteristics of money. As per the Quizlet and Course Hero the following information is stated.

**a. Durability of money**

Objects used as money must withstand physical wear and tear. People need to be able to make money with them as they go about their business. To be useful, money must be easily divided into smaller denominations or units of value (Colour New York, 2020). The durability of money is such that it can be used over and over again; hence it must survive wear and tear for long periods. In business, one cannot always rely on paper money coming in so branch out and allow for online transactions. In other words, the fact that one cannot always deal with paper money is an opportunity to expand one's business beyond paper and achieve greater durability through online transactions.

**b. Portability of money**

People need to be able to make money with them as they go about their business. Money should be easily portable for the users to handle it well during transport. It should be lightweight and compressed. Money must be able to go wherever it is needed, making it easy to transport as individual's travel.

**c. Divisibility of money**

To be useful, money must be easily divided into smaller denominations or units of value. Money should be easily divisible in smaller amounts for petty transactions. This aspect deals with the fact that money must be easily divided to enable a person to buy different products. When one owns a shop, one can make sure that the shop offers different products which allow for different denominations. So if a person walks in wanting something for a dollar there should be something in it for them.

**d. Uniformity of money**

Any two units of money must be easily uniform or the same in what they will buy. There should be uniformity which will lead to easy transactions during buying and selling. Uniformity of money calls for standardization of money so that it looks the same.

**e. Limited supply**

Money must be available only in limited quantities. There should not be an unlimited supply of money in the market as it will lead to chaos. Poor will be poor always and the rich will become richer day by day. Limited supply states that money is only valuable if it is in limited supply. Once in a while in businesses provide products that allow for high demand. Produce some goods in limited quantities so that they become more valuable to people.

**f. Acceptability of money**

Everyone must be able to exchange money for goods and services. There must be acceptability of money by each one. This deals with the fact that the form of currency must be acceptable.

## 2.7 Why money is valuable?

The following figure mentions the value of money and its importance through different ways like it acts as medium of exchange, unit of account, store of value and standard of deferred payment.

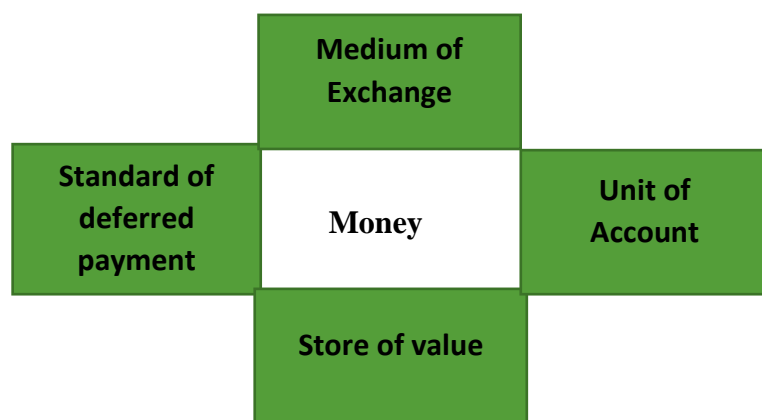


Fig 4. Value of money (Self-made)

### a. Medium of exchange

Money in the form of currency or cheques is a medium of exchange since in our economy people use it to buy goods and services. Without a medium of exchange, we would live in a barter economy where goods and services were exchanged directly for other goods and services (Konig, 2001). When relying on barter, people have to satisfy the “double coincidence of wants”. To trade, people have to find someone who has a good or service they want and who also wants the good or service they offer. In a society with millions of people and with millions of different goods and services, the system of the barter economy becomes too complicated to be realized. Due to money, the transaction in the economy becomes simple. the transaction cost has been reduced and the time spent on

the transactions is also reduced. The resulting ease and speed with which money is converted into other things – goods or services – is called “liquidity of money”. “Money is the most liquid asset.” (Keynes, as cited in Khasan, 2019).

**b. Unit of account**

A second function of money is its serving as a unit of account. Unit of account means that money provides standardised terms in which prices are quoted and debts are recorded. It is also called the standard of value with which economic transactions are measured. With money, all prices, i.e. the values of goods and services, can be expressed in the same way, in terms of units of money (König, 2001). In the USA, for example, the unit of account is the U.S. Dollar.

**c. Store of value**

Purchasing power of money is transferred from the present to the future. Person save money for the future expenses or emergencies than this saved money gets the status of store of value. One need not spend money immediately because it holds the same value. Therefore, one can spend it they very next day, next week or next year. But due to inflation the value of money might change in future which is depends upon the effects.

**d. Standard of deferred payment**

If money is usable today to make purchases, it must also be acceptable to make purchases tomorrow that will be paid in the future. Loans and future agreements are stated



in monetary terms and the standard of deferred payment is what allows everyone to buy goods and services today and pay in the future (Principle of Economics Volume 2, 2015).

#### **e. Importance of money**

Money is not everything but money is something very important for survival in the world. Money helps in achieving targets, goals, and results in better financial conditions. For survival in society, we need to avail goods and services and in return of this one needs to pay in return with the money. We need money for the family, education, health care, charity, adventure, and fun. The existence of money allows us to trade labour for the things that we value. There are various benefits of money. It renders double coincidence of wants unnecessary. It thus facilitates exchanges and the satisfaction of wants. It provides a common measure of value. It thus gives a precise idea about the relative value of commodities. It is capable of sub-division. As such it helps in the completion of even minute transactions which is a great gain to society. It serves as a convenient store of value. As a very desirable goal, money spurs all economic activity. It is sometimes said that money is only a medium of exchange and merely saves us from the difficulties of barter; that the object of production is not money but the satisfaction of wants; and that we labour to acquire money not for its own sake but as a means to satisfy wants. These statements are certainly true. But the ordinary businessman or manufacturer does not think of money in these terms. For instance, a cloth manufacturer does not make cloth with the aim of social service that people may cover themselves, but that he may earn profits. He pays wages to his labourers, not for the reason that they may satisfy their wants but only because these payments are necessary for his profits. Money is the real object of all his activities. He is constantly thinking of 'money costs and money incomes, money gains, and monetary losses.' Hence, 'making money is the goal, not making cloth, the same is the objective of

everybody, be he a trader, businessman, shopkeeper, government servant or a labourer. Money is thus the central point of all economic life today. Money and prices determine the total amount of material goods that a salaried man or a wage-earner can consume. The modern economic system with its division of labour and large-scale production would have been impossible without the use of money. Huge sums of money, borrowed and loaned, make international trade and transport possible, and provide us with most of the goods we consume. All this would be impossible in the absence of money. Money represents general purchasing power. It gives its possessor a claim on goods which he can purchase in a form and at a time most convenient to him. In this way, a consumer can maximize his satisfaction. A producer can maximize his profit since money enables him to organize a most economical combination of the factors of production and helps him to buy and sell profitably. Money is beneficial to society in general since on a small basis of cash, a vast superstructure of credit can be built up. Optimum distribution of the community's resources would have been impossible without the use of money. Thus all types of waste are eliminated and the welfare of the community maximized.

## **2.8 Role of money**

Economic development is generally believed to be dependent on the growth of real factors such as capital accumulation, technological progress, and increase in quality and skills of labour force. This view does not adequately stress the role of money in the process of economic development. It is said that money is a mere veil and intrinsically unimportant (Guru, 2021). What matters is the goods and productive factors which money buys. However, this extreme view about the unimportance of money as such is no longer believed. Not only is money an important factor without which modern complex economic

organisation is impossible, but it is also an important factor for promoting economic development. I have discussed below the importance of money in the process of economic development. In the economy today money performs several functions. Money serves as a standard of value in which other values are measured. Money is a store of value, that is, the means in which wealth can be held. It acts as a standard for deferred payments (Asyiqin, 2020). However, the most important function of money which distinguishes it from other goods is that it serves as a medium of exchange. That is, money is a means of payment for goods and services. It is this use of money that distinguishes a monetary economy from a barter economy (Guru, 2021). A monetary economy is one in which goods are sold for money and money is used to buy goods.

**a. Productivity and economic growth**

Barter system was full of difficulties of exchanging goods and services between individuals. In the absence of easy exchange of goods and services the barter system worked as an obstacle to the division of labour and specialisation among individuals which is an important factor for increasing productivity and economic growth. Further, the process of economic growth leads to the expansion of production of goods and services and consequential rise in incomes of the people. As a result, volume of transactions in the developing economy increases. This raises the demand for money to finance the increased transactions brought about by the expanded level of economic activity. Thus, the process of economic growth would be held in check if adequate supply of money is not forthcoming to meet the requirements of increase in the level of economic activity.

**b. Money promotes investment**

From the viewpoint of development another important role of money lies in making the magnitude of investment independent of the current level of savings. In a barter system, the goods not consumed constitute the savings as well as investment. That is, investment is not different from current savings. The greater the current savings, the greater the investment. However, in a modern economy, this is not so. Whereas it is households which save in the form of money, it is the firms which invest money in capital goods. Therefore, investment can differ from saving because investment activity is separated from the act of saving. More importantly, investment in a monetary economy can exceed the current level of savings. This excess of investment over savings is possible because new money can be created by the Government in the form of currency or by banks in the form of bank deposits. And this is what is important for the purpose of economic development. In the developed countries in times of depression when idle productive capacity exists, the increase in investment made possible by creation of new money by the Government or banks would lead to the increase in aggregate demand for goods and services. In such times the supply of goods and services is elastic due to the existence of excess capacity. Therefore, increase in aggregate demand generated by the investment financed by created money brings about expansion in output of goods and services and thereby causes an increase in the level of employment. In developing countries, the created money can play a useful role in promoting economic development. Rapid economic development can be achieved by stepping up the rate of investment or capital formation. But additional resources are required to increase the rate of investment. But in a country where a majority of the people are living at the bare subsistence level, voluntary savings, taxation. Government borrowing cannot by themselves provide sufficient investible resources for development. The government therefore attempts to increase the volume of investible resources beyond what is possible on the basis of current level of savings through creating new money. The newly

created money can be spent on investment projects both in the industrial and agricultural fields which would lead to the increase in output, income and employment.

**c. Quick yielding project**

It is widely believed that any increase in the supply of money in developing countries would lead to the rise in prices or to the emergence of inflationary pressures. However, this is not always true. A reasonable amount of newly created money helps the development of the economy by raising the level of investment. In the developing economies a lot of natural and human resources lie unutilised and underutilized which can be employed for productive purposes.

Further, if development strategy is such that a higher priority is assigned to agriculture and other wage goods industries and further that organisational and institutional reforms are undertaken to provide all farmers with irrigation facilities, fertilizers and high- yielding varieties, agricultural output can be raised in the short period. In this framework, new money can be created to increase the level of investment without much adverse effect on prices.

**d. Monetization and Economic Growth**

Further, as is well known, most underdeveloped countries have a large non-monetised (i.e. barter) sector where production is for the purpose of subsistence only. To break the subsistence nature of economic activity and thus generate new forces for economic growth, its monetisation is required. The introduction of money helps in bringing it in contact with the modern sector. This contact of the subsistence sector with the modern sector will lead to the expansion of its output.

In order to obtain the products of the modern industrial sector, the people engaged in the subsistence sector will make efforts to raise their output. Thus, a surplus of output

over their self-consumption will be generated in this way which will ultimately break their subsistence nature.

It is supported by the past history of the developing countries. During the colonial period, the monetisation of the peasant sector led to the expansion in exports in exchange for the imported industrial products. This stepped up their agricultural development to a good extent. Similar to the growth of production for exports the introduction of money in the subsistence agricultural sector and its contact with the modern sector, would lead to the increase in marketable surplus of food grains and other agricultural products which is an important factor in economic development. If some rise in agricultural prices occurs as a result of increase in investment financed by the created money, as is likely the case, it would serve as an incentive to produce more food grains and supply it the market. The rise in agricultural incomes will increase demand for industrial products and would therefore accelerate their growth. Further, the monetisation of the subsistence sector will also help in raising the volume of savings. Monetisation will bring this sector in contact with the financial institutions such as commercial and cooperative banks and insurance companies.

The opportunities of earning more income through interest on saving will raise the propensity to save of the people in the present-day subsistence sector. If proper monetary policies are pursued, then instead of consuming or hoarding all their therefore incomes, these people can deposit a part of them in the financial intermediaries (Chandavarkar, 1977).

## **2.9 Digital currency and cryptocurrency**

### **a. What is digital currency?**

Any currency, money, or money-like item that is largely handled, saved, or exchanged on digital computer systems, particularly over the internet, is referred to as digital currency. Cryptocurrency, virtual currency, and central bank digital currency are examples of digital currencies. Digital currencies do not have physical attributes and are available only in digital form. Transactions involving digital currencies are made using computers or electronic wallets connected to the internet or designated networks. In contrast, physical currencies, such as banknotes and minted coins, are tangible, meaning they have definite physical attributes and characteristics. Transactions involving such currencies are made possible only when their holders have physical possession of these currencies. Digital currencies have utility similar to that of physical currencies. They can be used to purchase goods and pay for services. They can also find restricted use among certain online communities, such as gaming sites, gambling portals, or social networks.

#### **b. Characteristics of digital currency**

- Centralised and decentralised

Digital currencies can be centralized or decentralized. Fiat currency, which exists in physical form, is a centralized system of production and distribution by a central bank and government agencies. Prominent cryptocurrencies, such as Bitcoin and Ethereum, are examples of decentralized digital currency systems.

- Low transaction cost

Digital currencies have several advantages, including the ability to transfer value seamlessly and the ability to reduce transaction costs. Use of digital currencies requires a shift in the existing framework for currencies, where they are associated with sale and

purchase transactions for goods and services. Digital currencies, however, extend the concept. For example, a gaming network token can extend the life of a player or provide them with extra superpowers. This is not a purchase or sale transaction but, instead, represents a transfer of value.

### **c. What is cryptocurrency?**

Cryptocurrencies are digital currencies that use cryptography to secure and verify transactions in a network. Cryptography is also used to manage and control the creation of such currencies. Bitcoin and Ethereum are examples of cryptocurrencies. Depending on the jurisdiction, cryptocurrencies may or may not be regulated. A cryptocurrency is a medium of exchange that is digital, encrypted and decentralized. Unlike the U.S. Dollar or the Euro, there is no central authority that manages and maintains the value of a cryptocurrency. Instead, these tasks are broadly distributed among a cryptocurrency's users via the internet. Bitcoin was the first cryptocurrency, first outlined in principle by Satoshi Nakamoto in a 2008 paper titled "Bitcoin: A Peer-to-Peer Electronic Cash System." Nakamoto described the project as "an electronic payment system based on cryptographic proof instead of trust. "That cryptographic proof comes in the form of transactions that are verified and recorded on a block chain.

### **d. Types of cryptocurrency (Coinmarket)**

- Bitcoin

**"Bitcoin is technological**

**Tour De force."- Bill Gates (Tweeted on twitter).**



Bitcoin was the first cryptocurrency to be created in 2009 by a person (or possibly a group) that goes by the pseudonym Satoshi Nakamoto. As noted above, there are more than 18.8 million Bitcoin tokens in circulation as of September 2021, against a capped limit of 21 million. Bitcoin was designed to be independent of any government or central bank. Instead, it relies on Block chain technology, a decentralized public ledger that contains a digital record of every Bitcoin transaction. Bitcoin established the basic system of cryptography and consensus (i.e., peer-to-peer) verification that is the foundation of most forms of crypto today. Bitcoin (sometimes known by its generally accepted ticker BTC) is an online payment system launched as an open source software in 2009. Nakamoto published a paper describing his or her creation entitled —Bitcoin: A Peer-to-Peer Electronic Cash System in 2008. The reason for the interest in Blockchain is its central attributes that provide security, anonymity and data integrity without any third party organization in control of the transactions, and therefore it creates interesting research areas, especially from the perspective of technical challenges and limitations. (Huumo, Choi , Park , Smolander, 2016).

**“I do think Bitcoin is the first encrypted money that has the potential to do something like change the world.”- Peter Thiel (Co-founder of PayPal).**

- Ethereum

Like Bitcoin, Ethereum is a Blockchain network, but Ethereum was designed as a programmable Block chain, meaning it wasn't created to support a currency but to enable the network's users to create, publish, monetize, and use applications Ether (ETH), the native Ethereum currency, was developed as a form of payment on the Ethereum platform. As of September 2021, Ether was the number two virtual currency, behind Bitcoin. ETH is

also generated using a proof-of-work system. But unlike Bitcoin, there is no limit to the number of ETHs that can be created (Blockchain 101, 2017).

- **Cardano**

Cardano bills itself as a third-generation Block chain platform, to cast itself as a next-level player. Cardano relies on proof-of-stake (PoS), meaning that the complicated PoW calculations and high electricity usage required for mining coins like Bitcoin aren't necessary, potentially making its network more efficient and sustainable. Cardano's main applications are in identity management and traceability. The first application can be used to streamline the collection of data from multiple sources. The latter can be used to audit a product's manufacturing path, and potentially prevent fraud and counterfeit goods. Cardano is being built in five phases toward achieving its goal of developing the network into a decentralized application (dApp) platform with a multi-asset ledger and verifiable smart contracts. Each phase, or era, in the Cardano roadmap is anchored by its research-based framework and peer-reviewed insights, which have helped establish its scholarly reputation.

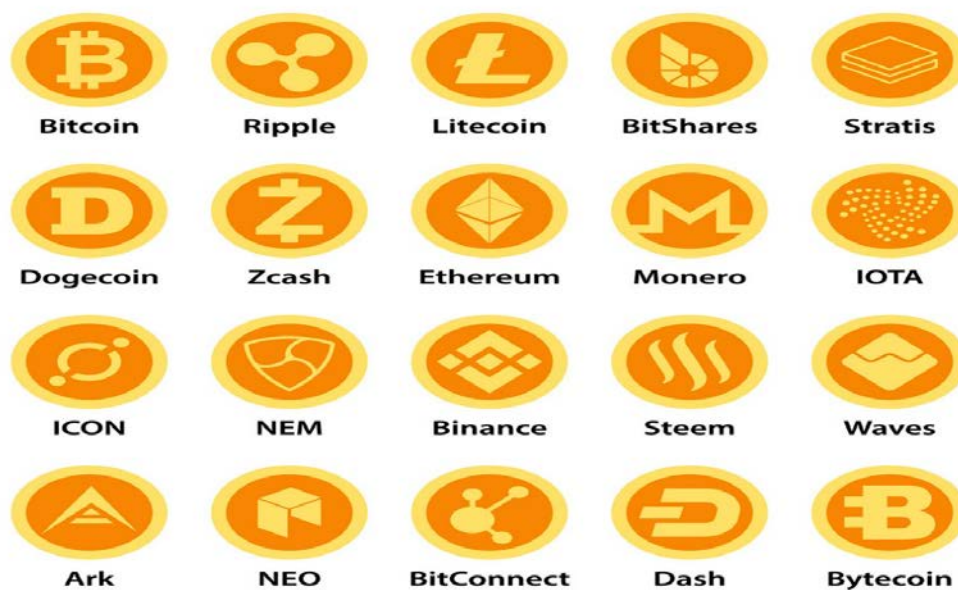


Fig 5. Types of cryptocurrency (Vector stock, 2019)

- Binance coin

Binance is one of the world's biggest cryptocurrency exchanges, and Binance Coin (BNB) is a cryptocurrency token that was created to be used as a medium of exchange on Binance. It was initially built on the Ethereum blockchain, but now lives on Binance's own block chain platform. BNB was created as a utility token in 2017 that allowed traders to get discounts on trading fees on Binance, but now it can also be used for payments, to book travel, for entertainment, online services, and even financial services. BNB was created with a maximum of 200 million tokens, about half of which were made available to investors during its ICO. Every quarter, Binance buys back and then "burns" or permanently destroys some of the coins it holds to drive demand. In July 2021, Binance completed its 16th burn, of about 1.29 million BNB, roughly equal to \$394 million at that time.

- Tether

Tether was the first cryptocurrency marketed as a "stable coin" — a breed of crypto known as fiat-collateralized stable coins. The value of the tether is pegged to a fiat currency — in this case, the U.S. dollar. Like other stable coins, the tether is designed to offer stability, transparency, and lower transaction charges to users. Tether is not a speculative investment like some cryptocurrencies; rather it can be used by investors who want to avoid the extreme volatility of the crypto market. As of February 2021, 57% of bitcoin trading was conducted using tethers.

- Solana

Solana is a Block chain platform that generates the cryptocurrency known as Sol. Solana has made strides in decentralized finance (a.k.a. DeFi) and specifically its smart

contract technology, which are programs that run on the platform according to present conditions (like paper contracts, but without the middlemen). Solana was also behind the “Degenerate Ape Academy,” a non-fungible token (NFT) that was launched in August 2021.

- XRP

XRP was developed by Ripple Labs, Inc. And while some people use the terms XRP and Ripple interchangeably, they are different. Ripple is a global money transfer network used by financial services companies. XRP is the crypto that was designed to work on the Ripple network. One can buy XRP as an investment, as a coin to exchange for other cryptocurrencies, or as a way to finance transactions on Ripple.

- Polkadot

Polkadot was co-founded by Gavin Wood, also a co-founder of Ethereum, to take the capabilities of a block chain network to another level. The block chain’s cryptocurrency is called dot. In fact, Polkadot operates using two block chains — the main “relay” network, where transactions are permanent, and a parallel network of user-created block chains, called “parachains.” Parachains can be customized for myriad uses like building apps (they can even support other coins), and they benefit from the security of the main block chain.

- Ripple

It has cooperated with huge banks the world over and significantly more money related establishments are hoping to receive the Ripple program. With regard to market capitalization, Ripple comes in the third spot, directly after Bitcoin and Ethereum. The explanation specialists figure Ripple may detonate this year and, in the years, to come is the way that because of its institutional help and being protected from SEC guideline, XRP

will doubtlessly stay a force to be reckoned with among the cryptocurrency network and surely a standout amongst other cryptographic forms of money.

**e. Applications used for buying cryptocurrencies**

As per the Cashify blog articles these are following applications mainly used for buying cryptocurrencies.

- **Wazir X**

It is the most famous crypto trading app in India and might be the best app to buy cryptocurrency. It rose to fame after Binance acquired Wazir X and made it faultless for simple spot trading. One can buy more than 100 cryptocurrencies with support for UPI deposits instantly. The app has an intuitive user interface that is easy to use.

- **Binance**

It is one of the most popular crypto exchanges in the world and is the best app to buy cryptocurrencies in India. It is effortless to use and has a simple design that is well suited for beginners. One can buy and sell their crypto as well as view your trading history and crypto holdings. Functions like stop-limit, market order, and limit orders are available for more experienced traders.

- **Zeb Pay**

One of the oldest apps to buy cryptocurrency trading in India. ZebPay started as an initiative to help India invest in Bitcoin and other crypto. ZebPay app comes with an intuitive design for Android, which is clutter-free, and the ease of usage is good, which makes it a good crypto trading for seasoned traders or beginners. To buy cryptocurrency, all one has to do is download the app, register with phone number, and finish the KYC

process to add funds into account, and start investing in preferred cryptocurrency. ZebPay has been in the market since 2015 and has seen the rise of Bitcoin significantly.

- **Coin DCX**

It is another apps to buy cryptocurrency in India where you can invest in all the top cryptocurrencies in a limited manner to not lose much money in the highly volatile crypto market. The app comes with an interactive user interface to help beginners invest their money in the crypto market safely. The cryptocurrency app allows one to invest & buy with as little as Rs. 100. However, if one wants to invest more than Rs. 10,000, one will need to complete their KYC process and get approved. Developed by CoinDCX Official, the app is available both for Android and iOS.

Apps such as Bisq, Cash App, Coinbase are used throughout the World.

## **2.10 Central Bank Digital Currency**

Cryptocurrencies, as we know them today, are extremely volatile and lack government backing — CBDCs overcome these concerns while using the same underlying distributed ledger technology of cryptocurrencies. Governments recognize CBDCs as legal tender in the issuing central bank's jurisdiction, meaning anyone can use them for payments and every merchant must accept them. In simpler terms, CBDC is short for Central Bank Digital Currency, an electronic form of central bank money that citizens can use to make digital payments and store value (Niepelt, 2020).

### **a. What is Central Bank Digital Currency?**

In addition to banknotes and other liabilities, central banks issue digital money reserves but only to a select group of financial institutions. The central bank digital

currency proposal, which dates back to the 1980, is to eliminate this restriction. Households and firms also should have the possibility to acquire reserves. The innovative part of CBDC is not its digital nature, but broad access. Central bank digital currencies (CBDCs) have recently emerged as a hot topic in the financial space. Banks, Institutions, and governments are performing research and analysis on the economic and technical feasibility of introducing a new form of digital money and its impact on monetary and fiscal policy. CBDC's eliminates the intermediaries' commissions therefore the transaction cost becomes virtually zero.

Bank of International Settlements report states that over 80% of central banks are already researching CBDC. (Chuen, Yan & Wang, 2021). A CBDC is the legal tender issued by a central bank in a digital form. It is the same as a fiat currency and is exchangeable one-to-one with the fiat currency. Only its form is different CBDC is a digital or virtual currency but it is not comparable to the private virtual currencies that have mushroomed over the last decade. Private virtual currencies sit at substantial odds to the historical concept of money. They are not commodities or claims on commodities as they have no intrinsic value; some claims that they are akin to gold clearly seem opportunistic. Usually, certainly for the most popular ones now, they do not represent any person's debt or liabilities. They are not money (certainly not CURRENCY) as the word has come to be understood historically. (Sankar, 2021).

#### **b. Central Bank Digital Currency and Cryptocurrency**

The table showcases the difference between Central Bank Digital currency and cryptocurrency.

<b>Central Bank Digital Currency</b>	<b>Cryptocurrency</b>
--------------------------------------	-----------------------

CBDC is fully centralized.	Cryptocurrency is fully decentralized.
It is governed by legal frameworks.	It is not surrounded by legal frameworks.
Transaction directories are kept secret.	Transaction directories are visible to all.
There are many countries and states in the world have laws regarding CBDC.	Very few countries have strict laws for Cryptocurrency.
Are backed by the authority.	Managed by computer algorithm

Table 1: Difference between Central Bank Digital currency and cryptocurrency (Self-made)

### c. Elements of CBDC

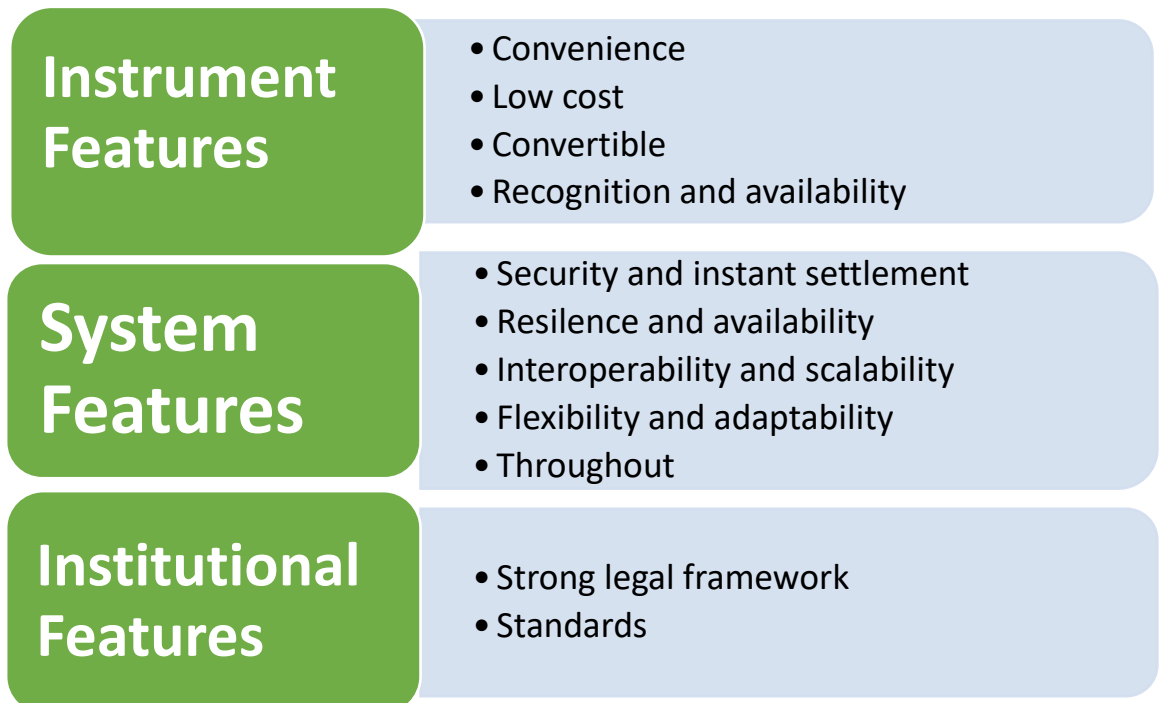


Fig 6. Features of CBDC (101 Block chains, 2021)



The above figure showcases the elements of Central Bank Digital Currency. The above figure states the different features of CBDC in consideration of the Instrument features like the convenience of using CBDC, it is low cost in consideration with the amount spent on printing and designing physical currency. It is convertible and has recognition and availability. The System features provide security, instant settlement of transactions, resilience, availability, interoperability, scalability, flexibility, and adaptability of CBDC. The Institutional features are the most important as CBDC is backed by the authority and are legalised in nature.

#### d. Dimensions of CBDC

The following figure mentions the dimensions of Central Bank Digital Currency. When electronic money and physical hands are tied together it brings out Central Bank Digital Currency. The four dimensions of CBDC are value, technical, implementation and application.

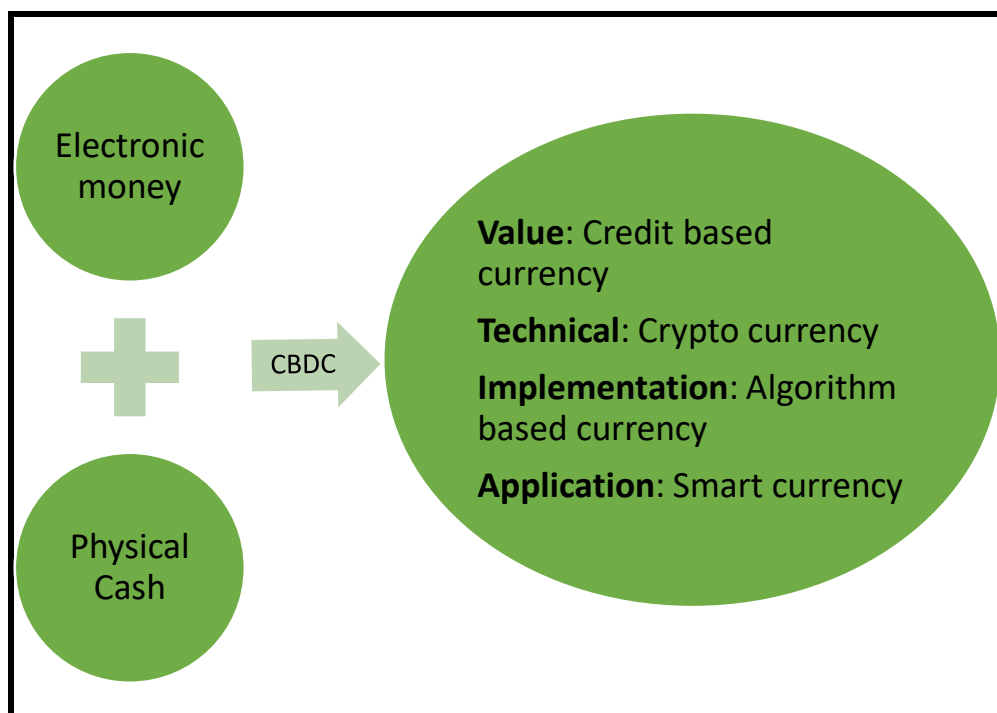


Fig 7. Dimensions of CBDC (YAO Qian, Technical aspects of CBDC in a Two tiered system, 2018).

### **e. Types of CBDC**

CBDCs are categorized into two different proposals based on the targeted users:

- **Retail CBDC**

Retail CBDC, based on distributed ledger technology, is traceable, anonymous, and available around the clock. It offers possibilities for interest rate applications, as well. Due to these advantages, a retail central bank digital currency focuses, in particular, on supporting the general public. Additionally, it helps lower the cost of cash printing and promotes financial inclusion.

- **Wholesale CBDC**

Wholesale CBDC increases payments and security settlement efficiency while resolving liquidity and counterparty risk issues. It's a great fit for financial institutions which have reserves deposited in a central bank. With their capability to improve wholesale financial systems' speed and security, even central banks consider wholesale central bank digital currency a favoured alternative to existing systems today (Auer, Frost, Gambacorta, Monnet, Rice & Shin, 2021).

### **f. Adoption of CBDC**

The adoption of CBDC has been justified for the following reasons:

- Central banks, faced with dwindling usage of paper currency, seek to popularize a more acceptable electronic form of currency (like Bahamas).
- Jurisdictions with significant physical cash usage seeking to make issuance more efficient (like Denmark, Germany, or Japan, or even the US).

- Central banks seek to meet the public’s need for digital currencies, manifested in the increasing use of private virtual currencies, and thereby avoid the more damaging consequences of such private currencies (Sankar, 2021).

#### **g. Legal framework of CBDC in India**

Although CBDCs are conceptually no different from banknotes, the introduction of CBDC would require an enabling legal framework since the current legal provisions are made keeping in mind currency in paper form. Under the Reserve Bank of India Act, 1934, the Bank is empowered to “...regulate the issue of banknotes and the keeping of reserves to secure monetary stability in India and generally to operate the currency and credit system of the country to its advantage” (Preamble). The Reserve Bank derives the necessary statutory powers from various sections of the RBI Act – concerning denomination (Section 24), the form of banknotes (Section 25), status as legal tender (Sec 26(1)), etc. There would be consequential amendments to other Acts like The Coinage Act, 2011, FEMA, 1999, Information Technology Act, 2000, etc. Even though CBDCs will be a primarily technology-driven product, it will be desirable to keep the legislation technology-neutral to enable coverage of a variety of technology choices.

#### **h. Countries with CBDC in process (Cryptopedia, 2021).**

- The Bahamas

Bahamas was one of the first nations to issue a CBDC, launching a cryptocurrency version of the Bahamian dollar last year in an effort to avoid moving physical cash across its 700 small islands (Forbes, 2020). As of 2020, The Central Bank of the Bahamas was preparing to launch the Sand Dollar, a digital version of its Bahamian dollar, which could

potentially become the first active CBDC in the world. The Sand Dollar — which was piloted on the islands of Exuma and Abacos in 2019 — intends to make digital payment technologies more accessible to underserved communities. Users will be required to go through Know Your Customer (KYC) and Anti-Money Laundering (AML) compliance processes before transacting with the Sand Dollar.

- European Union

The European Central Bank (ECB) has also explored releasing a CBDC, the digital euro, arguing that it could be a means to adapt to the continuing digitalization of the global economy. Likewise, the ECB has said that it may issue a CBDC if foreign CBDCs or “private digital payments” — likely referencing cryptocurrencies — are widely adopted in Europe. The ECB has said its CBDC infrastructure could be centralized or decentralized, potentially utilizing DLT. European Union electronic payment regulations, which require compliance with Anti-Money Laundering and counter-terrorism laws would make the possibility of anonymous transactions unlikely. Investigation phase of digital euro project to last 24 months. Design to be based on users’ preferences and technical advice by merchants and intermediaries. No technical obstacles identified during preliminary experimentation phase.

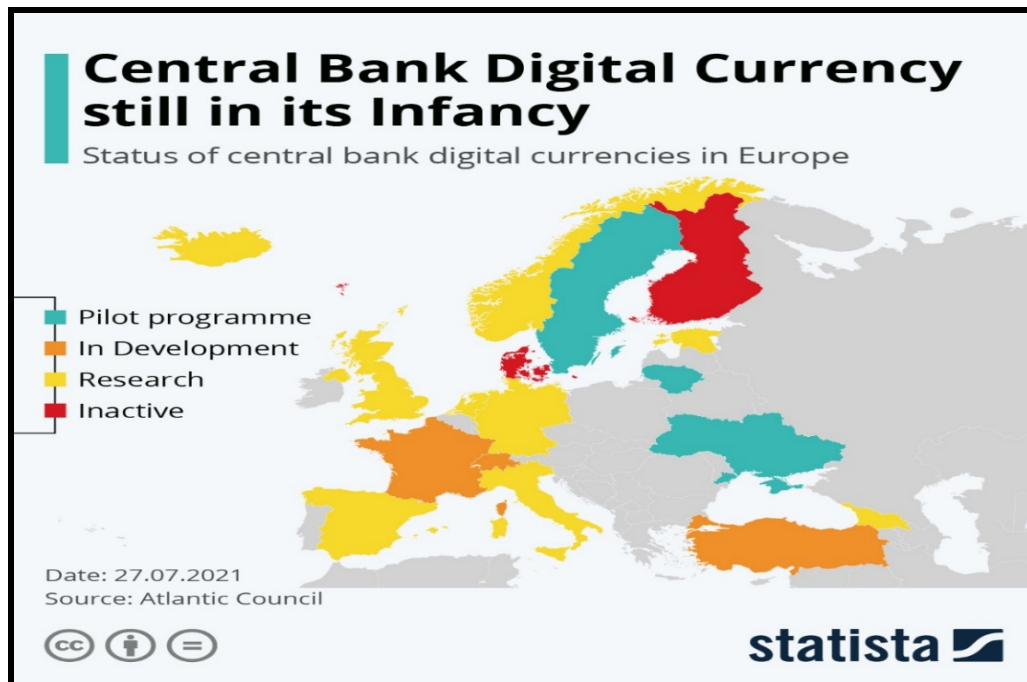


Fig 8. Status of CBDC in Europe (Statista, 2021).

- China

Perhaps the most prominent CBDC project being implemented at this time is China’s digital renminbi or Digital Currency Electronic Payments (DCEP) initiative, which was in trials as of 2020 and is working towards a phased release. China embarked on the project in 2014 and has positioned its development as a direct challenge to the global dominance of the U.S. dollar. While details of the project are still emerging, reports suggest that DCEP will use Distributed Ledger Technology (DLT), is intended to replace cash in circulation, and will be distributed through digital wallets.

- The Marshall Islands

The Marshall Islands plan to launch Marshallese Sovereign, a CBDC built on the Algorand blockchain whose purpose is to promote financial inclusion. Users will need to undergo verification processes before they can use the CBDC but the Marshallese government has emphasized that the CBDC will preserve users’ privacy.

The following figure showcases the status to CBDC developments across countries which proved helpfully in understanding the stages of different countries where they are with the CBD's implementation

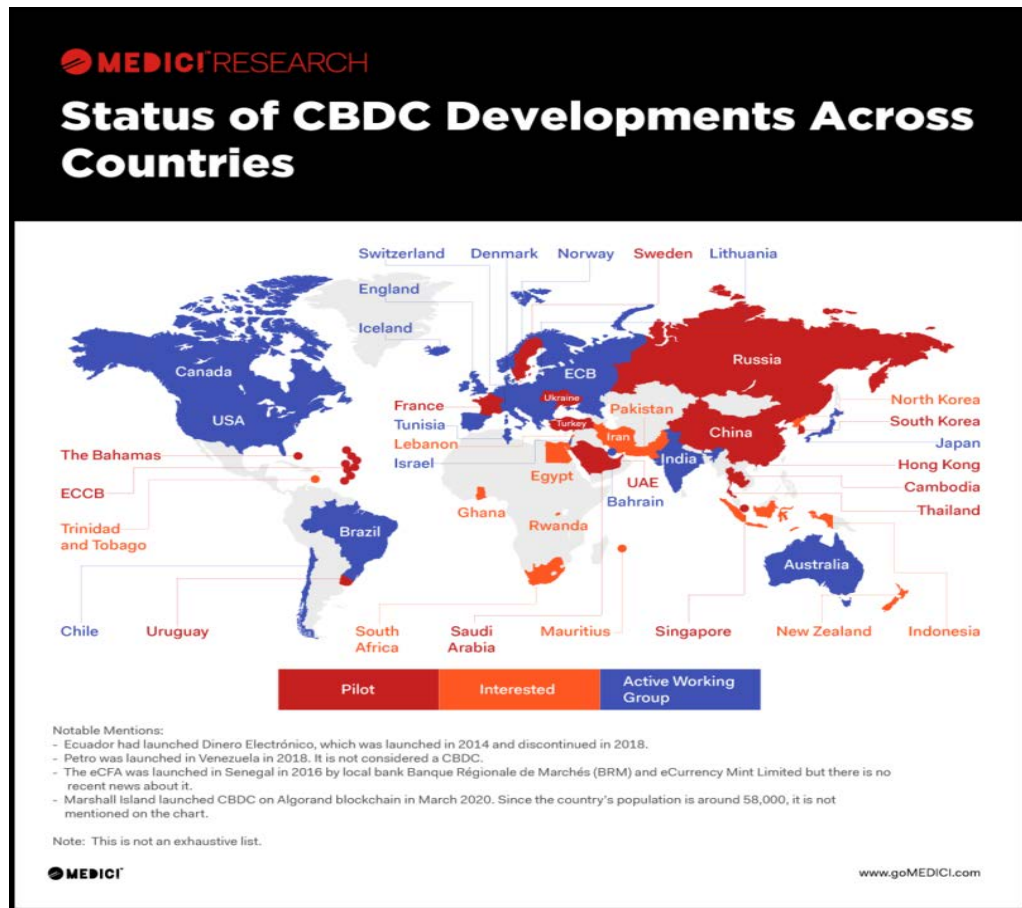


Fig 9. Status of CBDC Developments across countries (Medici Research, 2020)

## 2.11 Block chains

One key between a typical database and a block chain is how the data is structured. A block chain collects information together in groups, known as blocks, that hold sets of information. Blocks have certain storage capacities and, when filled, are closed and linked to the previously filled block, forming a chain of data known as the block chain. All new information that follows that freshly added block is compiled into a newly formed block that will then also be added to the chain once filled.

A database usually structures its data into tables, whereas a block chain, like its name implies, structures its data into chunks (blocks) that are strung together. This data structure inherently makes an irreversible time line of data when implemented in a decentralized nature. When a block is filled, it is set in stone and becomes a part of this time line. Each block in the chain is given an exact time stamp when it is added to the chain.

**a. What are block chains?**

A block chain is a distributed database that is shared among the nodes of a computer network. As a database, a block chain stores information electronically in digital format. Block chains are best known for their crucial role in cryptocurrency systems, such as Bitcoin, for maintaining a secure and decentralized record of transactions. The innovation with a block chain is that it guarantees the fidelity and security of a record of data and generates trust without the need for a trusted third party (Nakamoto, 2008).

**b. How does block chain work?**

In recent years, one may have noticed many businesses around the world integrating Block chain technology. But how exactly does Block chain technology work? Is this a significant change or a simple addition? The advancements of Block chain are still young and have the potential to be revolutionary in the future; so, let's begin demystifying this technology. Block chain is a combination of three leading technologies:

1. Cryptographic keys
2. A peer-to-peer network containing a shared ledger
3. A means of computing, to store the transactions and records of the network.

Cryptography keys consist of two keys:

1. Private key
2. Public key

These keys help in performing successful transactions between two parties. Each individual has these two keys, which they use to produce a secure digital identity reference. This secured identity is the most important aspect of Block chain technology. In the world of cryptocurrency, this identity is referred to as ‘digital signature’ and is used for authorizing and controlling transactions. The digital signature is merged with the peer-to-peer network; a large number of individuals who act as authorities use the digital signature in order to reach a consensus on transactions, among other issues. When they authorize a deal, it is certified by a mathematical verification, which results in a successful secured transaction between the two network-connected parties. So to sum it up, Block chain users employ cryptography keys to perform different types of digital interactions over the peer-to-peer network.

**c. Block chain decentralised**

What a block chain does is to allow the data held in that database to be spread out among several network nodes at various locations. This not only creates redundancy but also maintains the fidelity of the data stored therein—if somebody tries to alter a record at one instance of the database, the other nodes would not be altered and thus would prevent a bad actor from doing so. If one user tampers with Bitcoin’s record of transactions, all other nodes would cross-reference each other and easily pinpoint the node with the incorrect information. This system helps to establish an exact and transparent order of events. This way, no single node within the network can alter information held within it. Because of this, the information and history (such as of transactions of a cryptocurrency) are irreversible. Such a record could be a list of transactions (such as with a



cryptocurrency), but it also is possible for a block chain to hold a variety of other information like legal contracts, state identifications, or a company's product inventory.

#### **d. Transparency**

Because of the decentralized nature of Bitcoin's block chain, all transactions can be transparently viewed by either having a personal node or using block chain explorers that allow anyone to see transactions occurring live. Each node has its own copy of the chain that gets updated as fresh blocks are confirmed and added. This means that if you wanted to, you could track Bitcoin wherever it goes.

For example, exchanges have been hacked in the past, where those who kept Bitcoin on the exchange lost everything. While the hacker may be entirely anonymous, the Bitcoins that they extracted are easily traceable. If the Bitcoins stolen in some of these hacks were to be moved or spent somewhere, it would be known.

#### **e. Benefits**

**“Bitcoin is exciting me because it shows how cheap transactions can be.”- Bill Gates**

- Accuracy of chain

Transactions on the block chain network are approved by a network of thousands of computers. This removes almost all human involvement in the verification process, resulting in less human error and an accurate record of information. Even if a computer on the network were to make a computational mistake, the error would only be made to one copy of the block chain. For that error to spread to the rest of the block chain, it would need to be made by at least 51% of the network's computers—a near impossibility for a large and growing network the size of Bitcoin's.

- Cost reductions

Typically, consumers pay a bank to verify a transaction, a notary to sign a document, or a minister to perform a marriage. Block chain eliminates the need for third-party verification—and, with it, their associated costs. For example, business owners incur a small fee whenever they accept payments using credit cards, because banks and payment-processing companies have to process those transactions. Bitcoin, on the other hand, does not have a central authority and has limited transaction fees.

- Decentralization

Block chain does not store any of its information in a central location. Instead, the block chain is copied and spread across a network of computers. Whenever a new block is added to the block chain, every computer on the network updates its block chain to reflect the change. By spreading that information across a network, rather than storing it in one central database, block chain becomes more difficult to tamper with. If a copy of the block chain fell into the hands of a hacker, only a single copy of the information, rather than the entire network, would be compromised.

- Efficient transactions

Transactions placed through a central authority can take up to a few days to settle. If you attempt to deposit a check on Friday evening, for example, you may not actually see funds in your account until Monday morning. Whereas financial institutions operate during business hours, usually five days a week, block chain is working 24 hours a day, seven days a week, and 365 days a year. Transactions can be completed in as little as 10 minutes and can be considered secure after just a few hours. This is particularly useful for cross-border trades, which usually take much longer because of time zone issues and the fact that all parties must confirm payment processing.

- Private transactions

Many block chain networks operate as public databases, meaning that anyone with an Internet connection can view a list of the network's transaction history. Although users can access details about transactions, they cannot access identifying information about the users making those transactions. It is a common misperception that block chain networks like bitcoin are anonymous, when in fact they are only confidential. When a user makes a public transaction, their unique code—called a public key, as mentioned earlier—is recorded on the block chain. Their personal information is not. If a person has made a Bitcoin purchase on an exchange that requires identification, then the person's identity is still linked to their block chain address—but a transaction, even when tied to a person's name, does not reveal any personal information.

- Secure transactions

Once a transaction is recorded, its authenticity must be verified by the block chain network. Thousands of computers on the block chain rush to confirm that the details of the purchase are correct. After a computer has validated the transaction, it is added to the block chain block. Each block on the block chain contains its own unique hash, along with the unique hash of the block before it. When the information on a block is edited in any way, that block's hash code changes—however, the hash code on the block after it would not. This discrepancy makes it extremely difficult for information on the block chain to be changed without notice.

- Banking the unbanked

Perhaps the most profound facet of block chain and Bitcoin is the ability for anyone, regardless of ethnicity, gender, or cultural background, to use it. According to The World

Bank, nearly two billion adults do not have bank accounts or any means of storing their money or wealth. Nearly all of these individuals live in developing countries, where the economy is in its infancy and entirely dependent on cash. These people often earn a little money that is paid in physical cash. They then need to store this physical cash in hidden locations in their homes or other places of living, leaving them subject to robbery or unnecessary violence. Keys to a bitcoin wallet can be stored on a piece of paper, a cheap cell phone, or even memorized if necessary. For most people, it is likely that these options are more easily hidden than a small pile of cash under a mattress.

## **2.12 Procedure, circulation and management of digital currency**

### **a. Procedure for obtaining digital currency**

For understanding the circulation and management of digital currency, it is important to understand the procedure of obtaining the digital currency (Tretina & Schmidt, 2021). Following are the steps how one can obtain digital currency-

- Choose a broker or Crypto exchanger

To buy cryptocurrency, one needs to pick a broker or a crypto exchange. Let us understand- What Is a cryptocurrency exchange? A cryptocurrency exchange is a platform where buyers and sellers meet to trade cryptocurrencies. Exchanges often have relatively low fees, but they tend to have more complex interfaces with multiple trade types and advanced performance charts, all of which can make them intimidating for new crypto investors. Some of the most well-known cryptocurrency exchanges are Coin base, Gemini and Binance.US. While these companies' standard trading interfaces may overwhelm beginners, particularly those without a background trading stocks, they also offer user-friendly easy purchase options (Forbes, 2021).

- Create and verify account

After deciding on which cryptocurrency broker or exchange, one can sign up to open an account. Depending on the platform and the amount one plan to buy, one may have to verify the identity. This is an essential step to prevent fraud and meet federal regulatory requirements. One may not be able to buy or sell cryptocurrency until one complete the verification process. The platform may ask to submit a copy of driver's license or passport, and one may even be asked to upload a selfie to prove appearance matches the documents one submit.

- Deposit cash to invest

To buy crypto, one need to make sure to have funds in your account. One might deposit money into crypto account by linking bank account, authorizing a wire transfer or even making a payment with a debit or credit card. Depending on the exchange or broker and funding method, one may have to wait a few days before one can use the money deposited to buy cryptocurrency.

- Place your cryptocurrency order

Once there is money in account, one is ready to place first cryptocurrency order. There are hundreds of cryptocurrencies to choose from, ranging from well-known names like Bitcoin and Ethereum to more obscure cryptos like Theta Fuel or Holo. When one decides on which cryptocurrency to purchase, one can enter its ticker symbol—Bitcoin, for instance is BTC—and how many coins you'd like to purchase. With most exchanges and

brokers, one can purchase fractional shares of cryptocurrency, allowing to buy a sliver of high-priced tokens like Bitcoin or Ethereum that otherwise take thousands to own.

- Select storage method

Cryptocurrency exchanges are not backed by protections like the Federal Deposit Insurance Corp. (FDIC), and they're at risk of theft or hacking. One could even lose its investment if one forgets or lose the codes to access his/her account, as millions of dollars of Bitcoin already has been. That's why it's so important to have a secure storage place for cryptocurrencies.

The symbols for the 10 most popular cryptocurrencies based on market capitalization are as follows:

Bitcoin (BTC)

Ethereum (ETH)

Tether (USDT)

Binance Coin (BNB)

Cardana (ADA)

Dogecoin (DOGE)

XRP

USD Coin (USDC)

Polkadot (DOT)

Uniswap (UNI)

**b. Circulation of digital currency**

The important aspect of digital currency is not only in understanding the procedure but also in understanding the circulation of digital currency. Digital currencies certainly do not possess physical attributes and are available only in digital form to everyone. Transactions involving digital currencies are carried out using computers or electronic wallets connected to the internet or designated networks. The divergence of physical currencies, such as banknotes and minted coins, is that they are tangible, meaning they have definite physical attributes and characteristics. One can possess that currency in his pocket.

The circulation of digital currency also enables instant transactions that can be seamlessly executed across borders. Circulation of digital currency is very easy and accessible as it all together clears the negative aspects of physical currencies. The cost of printing, designing, storing the currency notes will not be an issue anymore. Circulation of physical currency needs many aspects such as storage, transport, security, maintenance, and many others but the circulation of digital currency needs minimal cost.

**c. Management of digital currency**

Digital money has widespread implications throughout the private and public sector, and for organizations such as charities. It affects the flows of transactions in commercial banking and other financial services. Business-to-business, business-to-government, and bank-to-bank transactions are increasingly conducted digitally. It also profoundly affects the retail and consumer market. Through the development of online shopping with companies such as Amazon and Alibaba and payment plat-forms such as PayPal, consumers have become comfortable transacting digitally. Many of us have rapidly

become accustomed to shop and pay, and do our banking, online (Dodgson, Gann, Berger, Sultan & George, 2015). The locus of many of these economic transactions is moving to our smartphone, with the mobile Internet being the most rapidly expanding area of consumer electronics. According to the GSMA (2014), an association of nearly 800 mobile operators world-wide, the 2.2 billion mobile Internet subscriptions in 2014 will increase to 3.8 billion by 2020. In more and more places around the world, we can use mobile phones to pay for subway fares, road tolls, and parking, settle restaurant bills, and purchase from shops and vending machines (Dodgson, Gann, Berger, Sultan & George, 2015). In cases such as public services transport, the movement to full digital payment methods reduces the inconvenience of queuing for tickets and significantly reduces costs for operators. Digital money also makes it easier to donate to charities, removing the need for donors to fill out forms and write checks while also reducing administrative costs for the charity (Dodgson, Gann, Berger, Sultan & George, 2015). Digital money could be a relevant context to study transaction cost economics, organizational design, and coordination costs. The range of digital money uses on mobile devices is likely to increase, but not without conflict, contention, and competition (Dodgson, Gann, Berger, Sultan & George, 2015). As digital money involves a wide range of institutions including banks and financial institutions, mobile phone manufacturers and operators, Internet service providers, open source communities, and applications developers—yet involves a few core technical standards, it remains a complex, fragmented, and rapidly evolving ecosystem. As well as the technical issues to be resolved, experiments are occurring with new business models, consideration is being given to a variety of over-sights by central banking authorities, and there are major social issues to be resolved around digital security and privacy. In such a fluid and unpredictable context, it is difficult to provide authoritative data on the aggregate extent and impact of digital money (Dodgson, Gann, Berger, Sultan & George, 2015). It is



possible, however, to discuss a number of its platforms and to assess the extent to which nations are prepared for digital money.

### **2.13 Gap analysis**

New digital means of payment could be rapid. It could bring significant benefits to customers and society, including the efficiency of gains in payments, greater competition, financial inclusion, and innovation in related sectors. But risks are also paramount to financial stability and integrity, monetary policy transmission, and anti-trust. These must be tackled with innovative approaches and heightened collaboration across borders and sectors (World Commerce Review, 2019).

Policymakers will not be able to remain bystanders (Adrian & Griffoli, 2019). Their actions will influence the adoption of new means of payment, and their design. One approach is for central banks to engage in a public-private partnership with fintech firms to provide a safe, liquid, and digital alternative to cash – synthetic central bank digital currency which comes with its benefits and risks (Adrian & Griffoli, 2019).

Traceability of transactions is one of the most prominent issues in the economy of India. There are many loopholes for cheaters, fraudsters to avoid showing their true accounts to the government. Traceability is said to be one issue with physical currency because it is difficult to tape down the transactions when done in cash. The transactions operated through electronic money and digital money are quite easy to tap. The problems with the traceability of transactions are that they are coupled with risk assessment, identity preservation, and counterfeit currency notes in circulation. As there are many loopholes it becomes difficult to trace the cash transactions. As Government fails to tap the cash transactions, enormous black money is present and circulated in the market without the taxes being paid.

Digitalization of money and payments services that are built on top of or aim to improve existing financial innovations such as digital ID, e-money, mobile banking, open banking, and Faster Payment system is already in domestic transactions. To improve financial inclusion and cross-border remittances digital currency is going to be a great option in the future for financial inclusion and more efficient cross-border payments and remittances.

It affects the flows of transactions in commercial banking and other financial services. Business-to-business, business-to-government, and bank-to-bank transactions are increasingly conducted digitally. It also profoundly affects the retail and consumer market. Digital money makes transactions faster, cheaper, and more widespread. It disintermediates, connecting people and money more closely (Adrian & Griffoli, 2019). When we use the internet to shop and pay by credit or debit card, we incur an intermediary cost. When we purchase overseas currency at an airport, we suffer the broad spreads in exchange rates used to profit the intermediary. Non-cash transactions almost always require the services of a bank or financial services company.

Digital money can remove the need for many of these intermediaries. For individuals, digital money offers the potential for easier and cheaper access to finance but raises the spectre of reduced privacy and potential insecurity in financial dealings. For organizations, it offers opportunities for revenue growth in existing and new markets and reduces the costs of handling cash, and offers efficiencies in managing invoices and receipts and reducing auditing costs. Mark Twain said lack of money is the root of all evil in Twain's posthumous work "The Refuge of the Derelicts (1905)". The transformational effects of digital money will be relatively most influential in poorer nations. The great possibilities of digital money for developing economies described by the Gates Foundation

and the World Bank are distinct realities. While digital money will not remove poverty and inequality, it will provide a vital new tool in helping them to be addressed.

#### **2.14 Problem statement**

The necessity for money to be digitalized is a pressing issue. Digital currencies have the potential of solving the inadequacies caused by physical currencies. The benefits of digital currency are not confined to a particular person. This has a huge impact on the country's economy since it eliminates the use of cash, which helps to diminish the grey economy and inhibits money laundering. This also improves tax compliance, which will benefit the country and its taxpayers as well. The inefficient traceability of cash transactions is the biggest loophole of physical cash. Digital currencies are easily traceable (Perloth, Griffith, & Benner, 2021).

The current state of affairs in India regarding the economy, including both cash and digital transactions, is unstable. Physical currencies have many disadvantages. The storage of physical cash is a primary disadvantage. The Reserve Bank of India (RBI) inquired banks with large currency chests to have separate storage space for coins and notes to beef the security. The amount of storage that gets involved in securing the currency notes is immense. The problem of insufficient space for the segregation of currencies is prevalent now and then. In an interview (2016) with Business Today's Dipak Mondal, NITI Aayog CEO Amitabh Kant said that the RBI and other commercial banks spend Rs 21,000 crore every year on currency management operations. With physical currency, it is not only about the storage crisis but other problems like dealing with high denomination currencies. Higher denomination currency notes are not beneficial in petty transactions. That higher

denomination currency notes like 2000, 5000, 10,000 can lead to the black market and also abetting illegal purposes like money laundering, terror funding, etc. (Gandhi, 2016).

Another major problem with physical currency is that of corruption and cronyism. Corruption and cronyism is the deep-rooted problem of the Indian economy. Corruption is like a parasitic plant that gains its food from the host plant being the physical transactions, having no ounce of efficient traceability. Corruption and cronyism have their source from physical cash which is hardly traceable in the market due to its inefficient traceability quality. Another longstanding problem is the circulation of counterfeit currencies and damaged notes. As many as 8,34,947 Fake Indian Currency Notes (FICN) worth more than Rs 92 crore were seized in 2020 (Crime in India 2020 report by the National Crime Records Bureau). The problem of counterfeit notes and damaged notes is increasing day by day. Counterfeiting is a major economic problem, called “the world’s fastest-growing crime wave.” (Phillips, 2005). Tax evasion is also a major problem in India where citizens/residents are finding ways to find loopholes in the current taxation regime. Tax evasion leads to economic problems for the country.

The common trait between all the disadvantages of physical currency is that of inefficiency in tracking the transactions. The traceability of physical currencies is highly impossible. Tracings of transactions can prove beneficial in the taxation regime. The number of taxpayers will increase as transactions will be traced at the source itself and it will be easy to cut the tax rates depending upon the transaction value. Traceability of transactions will lead to potential positive outcomes. Income Tax is largely levied on middle-class salaried people. The rich have dividends and capital gains as a major source of their income rather than salaries. Only 8600 individuals have revealed that their annual income is above 5 crores. About 42,800 people have declared taxable income of over Rs 1 crore annually. Further, four lakh people with income more than Rs 20 Lakh, and

constituting 1% of the tax base, account for 63% of the income taxes collected from individuals in an economy with a tax-paying base of about 1.5 crore people (Data of Income Tax Department, 2020). Thus, 99% of India's tax-paying people are being coerced into filing their ITR while they pay a minuscule amount as the tax on some pretext or the other. The people who pay up are mostly the salaried class because they can't evade taxes as these are deducted as TDS (Tax Deducted at Source). A good tax system should meet five basic conditions: fairness, adequacy, simplicity, transparency, and administrative ease (Data of Income Tax Department 2020). All these will be easily achieved by digital currencies.

**a. Problem with physical currency**

The Reserve Bank of India (RBI) has the sole authority to issue banknotes in India. Reserve Bank changes the design of banknotes from time to time. The Government of India has the sole right to mint coins. The problems with a physical currency are many and the research focuses on stating the details of the problems which can prove beneficial in understanding the various benefits of digital currency. Physical cash's shortcomings can be compensated for by using digital currency.

- Excess storage space

The role of the Reserve Bank of India in issuing, managing, and distributing currency notes and coins is a meticulous task. A great deal of synchronization and a high level of security mechanism is required in keeping physical currency. Money is constantly being circulated in the market, but the largest disadvantage of physical cash is investing in a location to store the currency. The amount of storage capacity required to keep the currency has been a difficult issue. The amount of money invested for keep the physical money secured is tremendous.

- High denomination currency notes

The fundamental issue with high denomination currency notes is that carrying out petty transactions is difficult if one owns high denomination currency note. On November 8, 2016, the demonetization of Rs 500 and Rs 1000 notes were announced, and Rs 2,000 notes were issued shortly after. The seizure of counterfeit 2000 notes is on the rise. In 2017, the value of phoney cash seized by law enforcement organisations was 53.5 percent which was made up of 2000 notes being in larger number (Data by National Crime Records Bureau, 2020). The denomination of 2000 currency notes declined over time and now rarely used in transactions.

- Cost of printing and designing currency notes

Another issue with physical cash is the cost of developing the currency notes and printing them. The cost of printing currency notes increased to Rs 7,965 crore in 2016-17, the year the government outlawed high-value 500 and 1,000 rupee bills, the government reported to Parliament. Furthermore, the printing cost was reduced to a significant Rs 4,912 crore in the following year 2017-18 after the RBI had sufficed the shortage of banknotes caused by the government's demonetization exercise. RBI needs to spend a large sum of money to create and design the currency notes. After a period of use, the notes get tattered and torn, and notes recycling is expensive because citizens are expected to return such currency notes to banks. (Economic Times, 2018).

The table showcases the information regarding seigniorage of different denomination of currency notes from the year 2018-2019.

<b>Denomination of currency notes</b>	<b>Year 2018-2019</b>
10	0.86
20	0.87
50	1.24
100	1.89
200	2.48
500	2.71

Table no. 2 Seigniorage for denomination of currency Year 2018-2019 (Source The Hindu, 2021)

The following table showcases the coins which are minted with the average cost of production and it can be observed that the expense of minting a coin is very expensive.

<b>Coins</b>	<b>Average cost of production</b>
Rs. 1 FSS Currency Coins	1.11 Rs.
Rs.2 FSS Currency Coins	1.28 Rs.
Rs. 5 Ni. Br Currency Coins	3.69 Rs.
Rs. 10 BI Metallic Currency Coins	5.54 Rs.

Table 3. Coins and Average cost of production (Source India Today, 2018)

According to the information given by the Currency Note Press in 2020 (a unit of Security Printing and Minting Corporation of India Limited) to an RTI (Right to Information) filed by this correspondent, the standard cost of printing one currency notes in the denomination of ₹50 was ₹1.24 in 2018-19, which came down to ₹1.22 in 2019-20. Similarly, the cost of printing one ₹500 note dropped to ₹2.65 from ₹2.71. The cost of

printing of each unit of ₹200 in 2018-19 was ₹2.48. However, no cost price was given for FY20.

- Counterfeit currency notes

Counterfeiting is the oldest technique used by fraudsters to cheat unsuspecting individuals of their money. Here, the fraudster may hand over an imitation currency in exchange for real banknotes under various pretexts like making the change or offering help (Axis Bank, 2008). Counterfeiting is a crime of making an unauthorized imitation of a genuine article, typically, money, with the intent to deceive or defraud. Counterfeit money is the currency that is produced without the legal sanction of the state or government. Counterfeiting of Currency notes or money is a serious criminal offense because of the value conferred on money and the high level of technical skill required to imitate it. If a counterfeit or faked note is circulated and remains undetected, it becomes a part of the monetary system. Moreover, it acts as a tax on the general public in favour of the counterfeiter. It raises prices by the proportion of the counterfeit notes value to the total amount of money in circulation. A considerable number of counterfeit notes are currently in use. It's tough to track down counterfeit currency, so when people come across it, they tend to keep it circulating rather than reporting it to the police. One of the most dangerous issues with actual cash is the continuous circulation of counterfeit currency notes in market.

- Corruption and cronyism

The prevalence of corruption and cronyism is one of the most important concerns that Indian businesses and the economy face today. Corruption and cronyism are wreaking havoc on Indian society, resulting in a state of lawlessness. While cronyism and corruption have engulfed India's entire society. In cases of corruption and cronyism, physical currency



is the root cause. Because wherever tangible currency is involved in such transactions it is difficult to trace. Corruption plays a prominent role in regular transactions and dealings.

- Money laundering

The goal of a large number of criminal acts is to generate a profit for the individual or group that carries out the act. Money laundering is the processing of these criminal proceeds to disguise their illegal origin. This process is of critical importance, as it enables the criminal to enjoy these profits without jeopardizing their source. Illegal arms sales, smuggling, and the activities of organized crime, including example drug trafficking and prostitution rings, can generate huge amounts of proceeds. Embezzlement, insider trading, bribery, and computer fraud schemes can also produce large profits and create the incentive to “legitimize” the ill-gotten gains through money laundering. When a criminal activity generates substantial profits, the individual or group involved must find a way to control the funds without attracting attention to the underlying activity or the persons involved. Criminals do this by disguising the sources, changing the form, or moving the funds to a place where they are less likely to attract attention.

- Tax evasion

Tax Evasion is an illegal way to minimize tax liability through fraudulent techniques like a deliberate understatement of taxable income or inflating expenses. It is an unlawful attempt to reduce one’s tax burden. Tax Evasion is done with the motive of showing fewer profits to avoid tax burden. It involves illegal practices such as making false statements, hiding relevant documents, not maintaining complete records of the

transactions, concealment of income, overstatement of a tax credit, or presenting personal expenses as business expenses. Tax evasion is a crime for which the assessee could be punished under the law. This occurs due to physical cash and its shortcomings with traceability.

- Terror funding

Terrorism financing refers to the contribution of funds or financial support to individual terrorists. Terrorist financing is frequently backed only by tangible currency. One of the most serious crimes is financing terrorism. Funding terrorists and terror organisations, which can result in the deaths of hundreds of innocent people, is an indirect crime. Due to the availability of tangible cash and the stockpiling of the currency for unlawful purposes, terrorism funding is rampant.

## Chapter 3. Methodology

### 3.1 Introduction

New, digital means of payment could be rapid. It could bring significant benefits to customers and society, including the efficiency of gains in payments, greater competition, financial inclusion, and innovation in related sectors. But risks are also paramount to financial stability and integrity, monetary policy transmission, and anti-trust. These must be tackled with innovative approaches and heightened collaboration across borders and sectors. Policymakers will not be able to remain bystanders (World Commerce Review, 2019). Their actions will influence the adoption of new means of payment and their design. One approach is for central banks to engage in a public-private partnership with fintech firms to provide a safe, liquid, and digital alternative to cash – synthetic central bank digital currency that comes with its benefits and risks. Digitalization of money and payments services that are built on top of or aim to improve existing financial Innovations such as digital ID, e-money, mobile banking, open banking, and Faster Payment system is already in domestic transactions. To improve financial inclusion and cross-border remittances, digital currency is going to be a great option in the future for financial inclusion and more efficient cross-border payments and remittances. Digital money has widespread implications throughout the private and public sector, and for organizations such as charities. It affects the flows of transactions in commercial banking and other financial services. Business-to-business, business-to-government, and bank-to-bank transactions are increasingly conducted digitally. It also profoundly affects the retail and consumer market. Digital money makes transactions faster, cheaper, and more widespread. It disintermediates, connecting people and money more closely (Adrian & Mancini, 2019). When we use the internet to shop and pay by credit or debit card, we incur an intermediary cost. When we purchase overseas currency at an airport, we suffer the broad spreads in

exchange rates used to profit the intermediary. Non-cash transactions almost always require the services of a bank or financial services company. Digital money can remove the need for many of these intermediaries (Adrian & Mancini, 2019). For individuals, digital money offers the potential for easier and cheaper access to finance but raises the spectre of reduced privacy and potential insecurity in financial dealings. For organizations, it offers opportunities for revenue growth in existing and new markets and reduces the costs of handling cash, and offers efficiencies in managing invoices and receipts and reducing auditing costs (Dodgson, Gann, Berger, Sultan & George 2015).

### **3.2 Methodology**

The research aims to determine and understand the non-traceability of physical money and thus resulting in it in several fewer taxpayers. This thesis uses a qualitative method referred to as 'phenomenology.' The main purpose of this research method is to gain an understanding of the basic concepts relating to digital currency and how humans have travelled towards digital currency. The purpose of the research is also about enumerating the differences between digital currency and cryptocurrency.

The data was generated and gathered from various platforms. The information collected helped the research in understanding the shortcomings of physical currency. The non-traceability aspect, cost of circulation and management of physical currency, the issues like fake currency, storage problems, and many others. My research is bifurcated into chapters. Bifurcating the chapters helps the reader to determine the knowledge provided in the chapters.

The methodology which I prominently referred to or have taken into consideration is a comparative study. Comparing the countries where digital currency has already been

in the picture or its blooming there. The countries that have been mentioned in my research are Sweden, El Salvador, Myanmar, and South Korea. Digital currency is blooming in these countries. Cashless transactions are taking place and cryptocurrencies are being recognized as legal tenders in these countries. A critical study has been recorded in this research keeping in mind these countries, their financial structure, and the impact of digital currency on taxation. Most of the data presented in this research is qualitative research and it is secondary.

The source of my data is from various news articles, publications, research articles. Some of my data is also from blogs and magazine articles. My research questions have been hypothetically framed during the study. During this project, I have examined digital currency's capabilities in the current environment. In addition, it will evaluate the effects of digital currency and cryptocurrency on our tax policies and ask about the legalization of digital currencies and cryptocurrencies. Hypothetically, the research questions are: How does cryptocurrency function? How can it be effectively distributed, circulated, and managed? What are positive outcomes can result from legalizing the use of digital currency and cryptocurrency in the global society? How can the production and circulation of digital money be managed?

### **3.3 Role of the Researcher**

The researcher played a key role in the data collection procedure. I've specifically mentioned why I began my investigation with basic principles in order to comprehend the procedure, circulation, and management of digital money. The research process was very productive, and participation proved to be quite crucial. The work in the dissertation is unique, and it was completed by myself under the supervision of my supervisor. A skilled

qualitative researcher starts by asking probing questions, then listens, thinks, and then asks more probing questions to get to the heart of the matter. A good qualitative researcher tries to piece together a picture from a variety of thoughts and hypotheses. There has been no submission of the work to any other institute for a degree or diploma. I followed the Institute's Ethical Code of Conduct's norms and requirements. I have provided due acknowledgment to other sources wherever I have used items (data, theoretical analysis, and text) from them by citing them in the thesis text and revealing their specifics in the references. Whenever I have quoted written items from other sources, I have provided due acknowledgment to the sources by correctly citing them.

### **3.4 Countries with digital currency development**

- Sweden

Sweden is one of the most digitally advanced countries in the world. Where Sweden move to become the first cashless society as barely 1% of the value of all payments were made using coins or notes in 2018 (Rowne, 2018). In this context, the government has taken an open approach to blockchain technology and has been testing its use in many different aspects of society. Interestingly, while not regarding cryptocurrencies as a viable means of exchange, Riksbank is considering launching an e-currency (e-Krona). The aim is for this central bank digital currency to offset the decline in cash usage in Sweden. An e-currency would ensure that the general public can still access state-guaranteed means of payment. While Riksbank has already developed the underlying infrastructure for the e-krona, based on blockchain technology, it is not a cryptocurrency. Sweden officially launched eKrona, the world's second digital currency backed by a central bank. Since the beginning of September, the currency has been available on a trial basis with external

clients on the official website created by the Swedish government so that citizens can buy and sell within the country or in stores abroad. The Bahamas was the first country to launch a global central bank digital currency (CBDC) called the “Sand dollar” in May last year. But the eKrona is the first digital currency to hit the market with the backing of a major economy. About 80% of central banks around the world are also conducting pilot tests (Bank of International Settlements, 2021). Before the official launch of the digital currency, the Swedish central bank conducted a series of investigations that started in 2017. “Sweden is currently one of the countries where digital payments are increasing faster,” justified the Swedish bank (Investing, 2021).

According to Global Data 2021, the country that currently ranks fifth in the world among the least cash-using countries, is “poised to be the first truly cashless society by 2023.” The use of cash has fallen to less than 10% in the economy, according to estimates by the Swedish central bank. The cash shortage, the convenience of electronic payments, and the pandemic accelerated this process. After the announcement by the Swedish central bank, the ‘eKrona’ can be safely purchased on the official website provided by the authorities. The price of the digital currency on Thursday was one eKrona for \$0.000094.

- El Salvador

Bitcoin will alleviate El Salvador’s prickliest economic problems. The citizens sending money home from abroad account for up to a fifth of the country’s GDP, but they have to pay high transaction costs, and 70 per cent of people have no bank account. Bitcoin enables quick, cheap payments across borders, and doesn’t require banks. Every Salvadoran has been gifted \$30 in bitcoin (the US dollar is the nation’s other official currency) and can now shop or pay their taxes with it. Companies must accept it by law,

but are permitted to instantly swap all bitcoin to dollars once received. A Panamanian congressman has now proposed legislation that would see the country follow in El Salvador's footsteps (President Nayib Bukele reaction on El Salvador acceptance of bitcoins). Bitcoins are loaded onto digital wallets and accessed via a mobile app. In El Salvador, the wallet is called "Chivo," which translates as "cool" in the local dialect.

- To download the Chivo wallet, one needs a Salvadoran ID document.
- Users can configure Chivo to make payments either in bitcoin or their dollar equivalent.
- To draw or deposit cash (in dollars), the government has erected 200 Chivo automatic teller machines countrywide.
- To pay for goods and services, both the buyer and seller must have the electronic app.

The holder of a Chivo wallet can use it to pay for services, to buy and sell products, and to make transfers to bank accounts without paying commission fees, among other benefits. According to the law, any good or service previously payable in dollars can now also be paid in bitcoin. The government has budgeted \$203 million in public money to bolster its bitcoin plan, which it says will give more people access to banking services and shave millions off commission fees for crucial remittances sent home from abroad. Of this amount, \$150 million is to guarantee the "convertibility" of bitcoin into dollars, and \$23.3 million for financing the rollout. Another \$30 million was set aside for the \$30 bonus for new users. The government got the ball rolling by buying its first 400 bitcoins Monday, followed by another 150 on Tuesday, for a total value of \$26 million (The Mint, 2021).

- Myanmar



The idea of creating and developing a Central bank digital currency has been ongoing for as far long as time. Although China officially brought the idea to the fray, there have been many countries riding on the ongoing trend. While some are done, others are just brainstorming on how to create their CBDC. One such country is Myanmar, which plans to develop its digital currency very soon.

The military of Myanmar believes that CBDC will help to strengthen the country's economy and also it will give a better position in the global financial market. And also they are aimed to adopt better payment options for domestic and retail payments. "A digital currency will help improve financial activities in Myanmar." (Major General of Myanmar). In December 2021 the National Unity Government (NUG) recognized Tether (a stable coin pegged by a dollar) as a legal and better payment tool. Before this decision, NUG stated that Tether (USDT) will help the country to facilitate general trading, services, and payments (Bitcoinik, 2022).

- South Korea

Over the last decade South Korea has moved further along a path towards digital transactions. Cash usage has fallen from 66 per cent of transactions in 2010 to an estimated 34 per cent in 2020 as electronic payments increased 33 per cent during the COVID-19 pandemic. These trends are likely to continue, as polling indicates that 77 per cent of South Koreans prefer to make transactions without cash.

Virtual assets such as Bitcoin have received much of the public attention related to digital financial innovation in recent years and are popular in South Korea, especially among the younger generation. South Korea is estimated to account for 10 per cent of global cryptocurrency transactions and has a vibrant market for altcoins. It is also known

for its gap, the so-called ‘kimchi premium’, on the value of Bitcoin with other global exchanges. The BOK’s 10-month pilot is an initial step in testing the viability of a CBDC on a distributed ledger, or blockchain and will utilize a Klaytn ledger built by Kakao’s Ground X blockchain division. It will be conducted in two phases, the first of which will run for the rest of 2021 and utilise a virtual environment to test issues related to the technical feasibility of the issuance, distribution and redemption of CBDCs. The second phase will run through June 2022 and focus on offline payments, digital-asset purchases and international remittances.

The model being piloted addresses some challenges presented by CBDCs, such as the role of private banks and privacy concerns. Instead of a model where each citizen has their own bank account with the central bank, the BOK has decided to continue to ‘print’ the digital currency but have private banks and financial institutions distribute it to consumers. Phase two of the pilot will also test enhanced privacy technology, but the placement of electronic wallets at private institutions rather than with the central bank itself should address some of the privacy concerns that arise from central banks having access to transactions records with CBDCs. Transactions with CBDCs should function similar to current transactions facilitated through established mobile or card purchase methods, but with increased transaction speed and reduced transaction costs. And while CBDCs and cryptocurrencies are often promoted as a means to facilitate digital transactions for those lacking bank accounts, only 5 per cent of South Koreans are estimated to be unbanked.

For businesses and consumers an important feature will be interoperability with blockchains for other CBDCs. For businesses this should reduce time and transaction costs in trade with foreign partners, but it also holds the potential for consumers to facilitate direct overseas purchases, which have become increasingly popular in South Korea. Direct overseas purchases have risen from US\$1.5 billion in 2015 to US\$3.1 billion in 2019.

August 2021	A pilot program was set to examine the feasibility of a retail central-bank digital currency (CBDC)
First phase	Rest of 2021, an initial step in testing the viability of a CBDC.
Second phase will run through June 2022	Focus on offline payments, digital-asset purchases and international remittances

Table 4. Journey of South Korea with digital currency

## **Chapter 4. Observations and Findings on basis of methodology**

### **4.1 Benefits of digital currency**

Digital currencies built on distributed ledgers must give end users with advantages over traditional services in order to gain adoption and use. Some of the elements that could influence the evolution of demand for digital currencies and the payment systems that go with them

#### **a. Open code for mining crypto currency**

BTC applies the same algorithms that are used in online banking (Selmanovic,2019). The only distinction between Internet banking and traditional banking is the sharing of user information. The BTC network shares all transaction information (how, when), but there is no information about the recipient or sender of the coins (no access to the wallet owner's personal information).

#### **b. No inflation**

The maximum number of coins is strictly limited by 21 million Bitcoins. As there are neither political forces nor corporations able to change this order, there is no possibility for the development of the inflation in the system (Bunjaku, Gjorgieva & Kacarski, 2021).

#### **c. Peer-to-peer cryptocurrency network**

In such networks, there is no master server, which is responsible for all operations. Exchange of information (in this case — money) is between 2-3 or more software clients.

All installed by users' program-wallets are part of a bitcoin network. Each client stores a record of all committed transactions and the number of bitcoins in each wallet. Transactions are made by hundreds of distributed servers. Neither bank's nor taxes, nor governments can control the exchange of money.

**d. Unlimited possibilities of transaction**

Each of the wallet holders can pay to anyone, anywhere and any amount. The transaction cannot be controlled or prevented, so one can make transfers anywhere, in the world wherever another user with a Bitcoin wallet is located.

**e. No boundaries**

Payments made in this system are impossible to cancel. The coins cannot be faked, copied or spent twice. These capabilities guarantee the integrity of the entire system. Every month the number of online shops, resources, and companies to accept BTC is expanding.

**f. Low BTC operation cost**

The BTC cryptocurrency works as physical cash, combining the functions of e-commerce. No need to pay commission and fees to banks and other organizations. The main part of such a process is mathematics, which does not need money. The commission fee in this system is lower than in any other (Bunjaku, Gjorgieva & Kacarski, 2021). It amounts to 0.1% of the transaction amount. The operation interest charges go to BTC miners' wallets.

**g. Decentralization**

There is no central control authority in the network, the network is distributed to all participants, each computer mining bitcoins is a member of this system. This means that the central authority has no power to dictate rules for owners of bitcoins. And even if some part of the network goes offline, the payment system will continue to operate stably.

**h. Easy to use**

Taking into account that the procedure of opening an account for the company in Ukrainian banks is overcomplicated and can be refused without explanation, using BTC is convenient for companies. The company needs approximately 5 minutes to create a BTC wallet and immediately starts to use it without any questions and commissions.

**i. Anonymity**

It is completely anonymous and at the same time fully transparent. Any company can create an infinite number of bitcoin addresses without reference to the name, address, or any other information.

**j. Transparency**

The BTC stores the history of transactions that have ever taken place. It is called a sequential chain of blocks or blockchain. The blockchain keeps the information about everything. So if the company has publicly used the BTC address, then anyone can see how much BTC is owned. If the company address is not publicly confirmed, then no one will

ever know that it belongs to this company. For complete anonymity companies usually use the unique BTC address for every single transaction.

**k. Speed of transaction**

The ability to send money anywhere and to anyone in a matter of minutes after the BTC network will process the payment.

**l. It belongs only to the wallet owner.**

There is a unique electronic payment system where the account belongs to the owner only. For example, on PayPal, if for any reason the company decides that the owner somehow uses the account in a wrong way, the system has the right to freeze all funds on the account without even warning the owner about it. Verification of the proper usage of the account is the total responsibility of the owner. With BTC, the owner has a private key and a corresponding public key, which is the address to the BTC wallet. No one but the owner can withdraw bitcoins (Nakamoto, 2008).

**m. Security**

An important demand side factor in relation to the use of digital currencies based on distributed ledgers is the risk of loss for users. Security breaches may undermine users' confidence in the digital currency scheme – these may not only involve the scheme itself but also may affect the intermediaries that an end user deals with in order to transact with digital currency units. Somewhat analogous to cash, if a user loses specific information that provides him/her with “ownership” of digital currency units stored in a distributed ledger, then those units are likely to be unrecoverable. Some users of digital currencies have relied upon intermediaries for holding and storing information relevant to their ownership of

digital currency units, and so must trust these intermediaries to mitigate end user risk of loss from hacking, operational failures or misappropriation (Committee on Payments and Market Infrastructures, 2015).

**n. Cost**

It has been argued that digital currencies based on distributed ledgers may offer lower transaction fees than other payment methods. In some schemes, the processing of the payments is rewarded by newly issued units, which may also have the potential for earning “capital gains” measured in sovereign currency units, rather than by transaction fees. For this reason, digital currency schemes may be an attractive alternative for some individuals or entities, especially in cross-border payments that generally involve paying high fees to payment service providers. Additionally, transactions in these schemes do not require intermediaries to facilitate payments, which might have a bearing on processing costs. However, the transaction costs in these schemes are not always transparent, and other costs may exist, such as conversion fees between the digital currency and a sovereign currency if the user does not wish to maintain balances denominated in digital currency units (Committee on Payments and Market Infrastructures, 2015).

**o. Usability**

Ease of use is generally critical for the adoption of payment methods and mechanisms, and can reflect factors such as the number of steps in the payment process, whether this process is intuitive and/or convenient and the ease of integration with other processes. Use of digital currencies and distributed ledgers may depend on some usability advantages compared with existing methods. Currently, many providers are trying to improve and facilitate the user’s experience in digital currency schemes (Committee on Payments and Market Infrastructures, 2015).



**p. Volatility and risk of loss**

If users choose to hold the digital currency asset received as payment, then they may face costs and losses associated with price and liquidity risks. These risks are not insubstantial given the volatility and market dislocations that have been witnessed for some of the better known digital currency schemes. While some users have sought to make speculative gains from this volatility, for most the variability of exchange rates can represent an obstacle to wider adoption. The extent to which price volatility would diminish if digital currency schemes were widely used is an open question, as is the long-run risk of loss from holding digital currencies with zero intrinsic value (Committee on Payments and Market Infrastructures, 2015).

**q. Irrevocability**

Digital currency schemes based on a distributed ledger often lack dispute resolution facilities and offer irrevocability of the payment, which reduces the payee's risk of having the payment reversed due to fraud or chargebacks. While this feature may be attractive for payees (such as merchants), it could also deter adoption and use by payers (such as consumers) (Committee on Payments and Market Infrastructures, 2015).

**r. Processing speed**

It has been argued that digital currencies based on distributed ledgers have the potential to clear and settle transactions faster than traditional systems, although the processing speed of the various schemes varies according to their technical details. However, it should be noted that a range of innovations unrelated to digital currencies – such as faster retail payment systems – are also aiming to address this increasing demand for improved payment speed. Additionally, real-time gross settlement systems already underpin the wholesale financial markets and provide capabilities for very fast payment

and settlement of large-value payments (Committee on Payments and Market Infrastructures, 2015).

**s. Cross-border reach**

Digital currencies based on distributed ledgers are basically open networks with a global scope. These schemes do not distinguish between users based on location, and therefore allow value to be transferred between users across borders. Moreover, the speed of a transaction is not conditional on the location of the payer and payee. Further, in the context of restrictions that may be placed on cross-border transactions by national authorities, the decentralised nature of these digital currency schemes means that it is difficult to impose such restrictions on transactions (Committee on Payments and Market Infrastructures, 2015).

**t. Data privacy/pseudonymity**

Some digital currency schemes based on distributed ledgers have the scope to allow transactions to be made without disclosing personal details or sensitive payment credentials (although this is not an essential feature of distributed ledgers). The attractiveness of pseudonymity and the avoidance of banks and authorities may be partly driven by the desire to circumvent laws and regulation. In this respect, combined with their global reach, digital currency schemes are potentially vulnerable to illicit use. However, there are also legitimate reasons why users may prefer to use anonymous payment methods (e.g. when the payee is not trusted to protect the information disclosed: this may arise in person-to-person online sales where the parties commonly have no previous experience of interaction) (Committee on Payments and Market Infrastructures, 2015).

**u. Marketing and reputational effects**

Digital currency schemes based on distributed ledgers are widely viewed as an innovative and interesting payment method. At the margin, merchants may see benefits in accepting payments through a digital currency scheme to the extent that it boosts demand for their goods and services. Similarly, users may be attracted to these schemes due simply to the newness of the technology. These factors are relevant not only for direct use of digital currencies and distributed ledgers by end users, but potentially also for indirect use (e.g. when a payment service provider uses a digital currency scheme as its back-end payment infrastructure) (Committee on Payments and Market Infrastructures, 2015).

#### **4.2 Discussion on impacts of digital currencies**

CBDCs provide users easy digital payment solutions without exposing them to the risk of physical currency's volatility. They have the potential to make payments faster, cheaper, safer, and more frictionless, while also resolving some of the present payment network and systems' dependencies.

Retail clients, on the other hand, who have already experienced real-time payments and are concerned about data protection, will be the most difficult to persuade of CBDCs' benefits. In addition, the demands of non-tech-savvy customers should be carefully considered, as adoption may be particularly difficult for them, resulting in increasing technological disparity in society.

CBDCs have the potential to lower the costs, time, and risk of international payments. CBDCs could be used to automatically pay taxes or make other payments to the government as part of ordinary transactions if smart contracts are enabled. In addition, digital audit trails can make financial compliance easier and more efficient. However, the transformation will have far-reaching implications for how firms function and interact. As

they adjust to interacting with CBDCs, corporate customers will face a period of transition, evolution, and misunderstanding at some levels of the business.

Credit unions and co-operative banks, in particular, are likely to struggle with this transition because their customers are particularly cash-oriented and will take a long time to adjust to CBDCs as their primary currency. CBDCs have the potential to totally change the function of international banks, particularly in cross-border and cross-currency transactions. In a CBDC-driven economy, international banks must step up and reinvent their roles. This transition will necessitate such banks joining new networks, collaborating with fintech, and working with new digital ledger types. In the short term, building the infrastructure required to facilitate large-scale international CBDC transfers is a huge resource and innovation burden.

Domestic and international CBDC transactions necessitate the establishment of new norms. Banks will almost certainly want to collaborate with seasoned innovators to set the optimal standards for their currencies and build a solid distributed ledger infrastructure. Today's major financial network organisations, such as Swift, Visa, and MasterCard, will need to consider their position in this emerging space and ensure they have the skills, capabilities, and technologies to provide that foundation if they want to remain key players in the CBDC-driven global economy.

Adoption of CBDC as well as cryptocurrencies will prove beneficial in solving many incapability and hindrances that are affecting our economy. One of the most crucial problem of Indian economy is corruption. Corruption can be altered as there won't be free cash flowing around the economy. Corruption's root cause is in easy availability of cash and how cash transactions cannot be monitored by the authorities. The petty transactions that takes place in economy might have the biggest effect on economy itself as these petty

transactions goes untraced and no one pays the taxes for such transactions. The purpose behind adaption of CBDC have multi facets like curbing frauds, financial crimes relating to money, hoarding of money. Physical currency also makes it easy for people to withdraw large sums of money from their banks and circulate in market through small vendors, domestic helpers, tips in hotels and so many other petty transactions which goes untraced. Physical cash also allows people to withdraw significant sums of money from their banks and circulate it in the market through tiny merchants, domestic assistance, hotel tips, and a variety of other untraced transactions.

The following figure showcases the impact of digital currencies on various sectors of the economy. How adoption of digital currencies will impact numerous sectors of the economy. Many problems of physical currency will be eradicated and then digital currencies will have a positive impact. The impact of digital currencies might not be observed in recent times but it will certainly have far stretching positive effects.

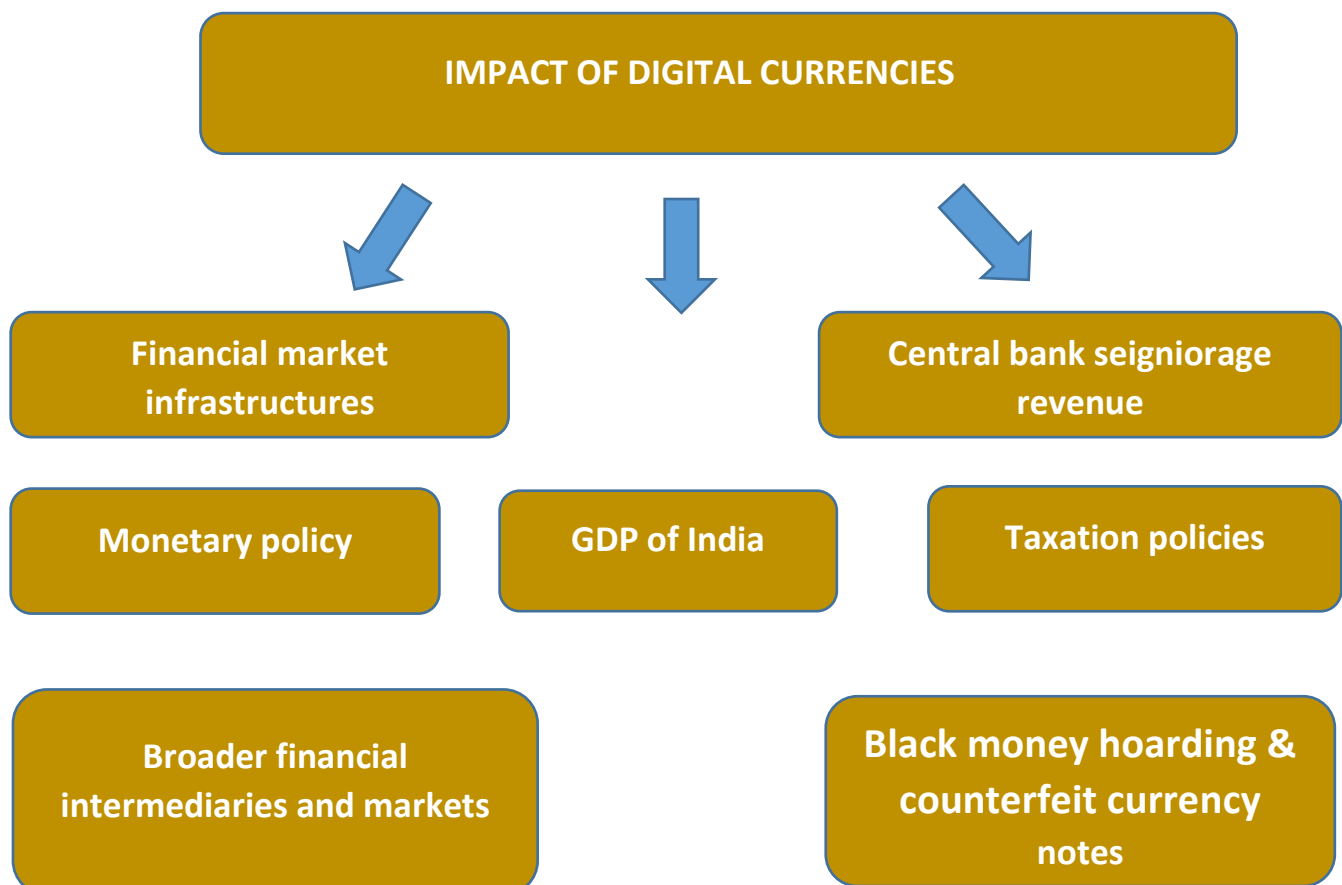


Fig 10. Impact of Digital currencies (Self-made)

**a. Impact on financial market infrastructures**

Many digital currency schemes use distributed ledger technology, which could have a far broader applicability than just payments. The underlying configuration of aggregation and netting on which many FMIs (Future Market Insights) rely is altered by decentralised processes that trade value based on distributed ledger technology. Distributed ledgers, in particular, could have an impact on collateral pledging as well as the registration of shares, bonds, derivatives trading, and other assets. Disintermediation of traditional service providers in many markets and infrastructures could be facilitated by the usage of distributed ledgers, which could result in changes in trading, clearing, and settlement. FMIs other than retail payment systems, such as large-value payment systems, central securities depositories, securities settlement systems, or trade repositories, may be impacted by these changes. The development of "smart" contracts based on distributed ledger technology that can execute payments under particular conditions may pave the way for individual contract variation margin payments. This could have a big impact on how net positions and collateral pools are handled in bilateral margining and clearing today (Committee on Payments and Market Infrastructures, 2015).

**b. Impact on broader financial intermediaries and markets**

If broadly adopted, digital currencies and distributed ledger technology could pose a threat to the current financial system's intermediation role, particularly for banks. Banks are financial intermediaries that act as delegated borrowers' monitors on depositors' behalf. In the process of channelling money from depositors to borrowers, banks often undertake liquidity and maturity transformation. If digital currencies and distributed ledgers become

widely used, the resulting disintermediation could have an influence on saving and credit-access mechanisms (Committee on Payments and Market Infrastructures, 2015).

### **c. Implications for central bank seigniorage revenue**

Seigniorage means a government revenue from the manufacture of coins calculated as the difference between the face value and the metal value of the coins (Definition by Merriam Webster, 1828). The widespread use of digital currencies to replace currency notes could result in a reduction in central bank noninterest-paying liabilities. As a result, central banks may be forced to substitute interest-bearing liabilities, shrink their balance sheets, or do both. As a result, central bank earnings, which are used to generate seigniorage revenue, may be reduced. This is another topic that has been thoroughly examined in the context of the evolution of e-money. The preceding analysis, in particular, proposes a number of possibilities for the central bank to pursue in order to offset the loss of seigniorage revenue and strengthen its balance sheet. This prior body of work could be expanded upon by a more detailed examination of the influence of digital currencies on seigniorage. Seigniorage is determined by the difference between the face value of the currency and the cost of producing it. Thus the expense of seigniorage is quite a big expense in India, this can be curtailed with adoption of digital currency. (Committee on Payments and Market Infrastructures, 2015).

### **d. Implications for monetary policy**

The demand for existing monetary aggregates and the conduct of monetary policy may be altered if the adoption and use of digital currencies increased dramatically, while the use of private digital currencies appears to be too low at the moment for these concerns to materialise. The potential impact of digital currencies in these domains would be quite

similar to that of e-money. The impact of digital currencies on monetary policy implementation will be determined by changes in demand for bank reserves (e.g., a shift away from the existing banking system for deposits and payments to digital currencies) and the degree of economic and financial interconnection between users of sovereign currency and users of digital currency, as discussed in depth in the 1990s<sup>13</sup>. If substitution is high and connectivity is weak, monetary policy may be rendered ineffective. Furthermore, a major proliferation of digital currencies could generate a variety of technical concerns, particularly if the digital currencies are not denominated in the sovereign currency (Committee on Payments and Market Infrastructures, 2015).

**e. Impact on black money hoarding and counterfeit currency notes**

As previously said, counterfeit currency notes are available in the market and are easily disseminated by anyone, deliberately or unknowingly. Because counterfeit currency is never documented in accounts, it goes undiscovered and unregistered by banks and authorities. In vast volumes, counterfeit money is traded in cash throughout the country. Citizens, both consciously and unknowingly, circulate counterfeit currency through tiny transactions. The counterfeit currency sector will be stifled as a result of digital currencies. Because digital currency will not be held in physical form. Not only will digital currencies help to eliminate counterfeit money, but they will also help to reduce black money hoarding. Physical cash hoarding is a frequent behaviour among Indian residents. Adoption of digital currencies can help combat black money hoarding and with digital currency, every transaction will be traceable from the beginning itself till it reaches its end.

**f. Impact on GDP**



The digital revolution is taking the world by storm and no other area has witnessed such metamorphosis as payment and settlement systems, resulting in a myriad of digital options for the common man. Consumers now have a range of options to choose from when selecting a payment method to complete a transaction. But the scenario was different till few decades ago. Many transactions that used to take place were carried in cash and cash only. The biggest shortcoming of physical cash transactions is the untraceable nature. Most of the transactions used to go untraced and unregistered from the GDP. But now the scenario is different. Many transactions get registered and have clear traceability path as digital payments have increased in recent times. It is thus reassuring that non-cash payments, especially those using electronic or digital modes are rapidly increasing and assisting the government in increasing the GDP. It is assumed that having high CIC relative to GDP indicates that cash is highly preferred as a payment instrument. Based on this assumption, India continues to have a strong bias for cash payments. Demonetisation and an active growth in GDP brought down the cash in circulation as a percentage of GDP to 8.70% in 2016-17. This increased to 10.70% in 2017-18 and to 11.2% in 2018-19 which, however, is less than the pre-demonetisation level of 12.1% in 2015-16. The rate of increase is lower indicating a perceptible shift away from cash. The notes in circulation (CIC minus coins in circulation) increased at an average rate of 14% between October 2014 and October 2016. Assuming the same growth rate, notes in circulation (NIC) would have been ₹26,04,953 crores in October 2019. NIC, however, was ₹22,31,090 crores, indicating that digitisation and reduction in cash usage helped reduce NIC by over ₹3.5 lakh crore (RBI Data, 2020). The Global Payments Trends Report 2019 states that India Country Insights observed that Indian payments market, historically dominated by cash, is evolving to meet the demands of smartphone led online shopping culture, with cards and digital wallets rising in market which was dominated by cash. (JP Morgan, 2019).

#### **g. Impact on taxation policies**

All financial transactions are subject to transaction taxes, which are imposed by the government. Sales, use, gross receipts, and excise are all included. Every financial transaction tax serves a distinct purpose. On the sale of goods and services, as well as currency exchange transactions, transactional taxes can be imposed (Definition by US Legal, 2003). The Income-tax Law has defined the notion of a statement of financial transaction or reportable account to keep track of high-value transactions carried out by the taxpayer. The tax authorities will use the statement to collect information on certain prescribed high-value transactions that a person made during the year. Due to a lack of traceability of currency in the Indian economy, many transactions go unreported and unregistered. However, once digital currencies are implemented in India, the non-traceability condition would be tackled to a great extent, and transactions will have a traceable route. The use of real cash will gradually shrink as the use of CBDC and cryptocurrencies grows. The concept of transaction taxes may emerge, in which taxes are deducted from each financial transaction carried out by each person. While the percentage of the deduction would mostly be minuscule, this new pattern of tax deduction will pave the way for collecting taxes on transactions of any size. New tax policies will be implemented, and transaction taxes will be advantageous since they will be straightforward to administer.

#### **4.3 India and Digital currency**

The idea of “Central Bank Digital Currencies” (CBDC) is not a recent development. Some attribute the origins of CBDCs to Nobel laureate James Tobin, an American economist, who in 1980s suggested that that Federal Reserve Banks in the United States could make available to the public a widely accessible ‘medium with the convenience of

deposits and the safety of currency.’ It is only in the last decade, however, that the concept of digital currency has been widely discussed by central banks, economists & governments.

Except as currency notes, all other use of paper in the modern financial system, be it as bonds, securities, transactions, communications, correspondences or messaging – has now been replaced by their corresponding digital and electronic versions. On anecdotal evidence, use of physical cash in transactions too has been on the decline in recent years, a trend further reinforced by the ongoing Covid19 pandemic. These developments have resulted in many central banks and governments stepping up efforts towards exploring a digital version of fiat currency. Some of this interest among central banks has been indigenous in nature for pursuing specific policy objectives – for example, facilitate negative interest rate monetary policy. Another driver is to provide the public with virtual currencies, that carry the legitimate benefits of private virtual currencies while avoiding the damaging social and economic consequences of private currencies.

The advantages of issuing a CBDC in India is discussed briefly to justify India issuing a CBDC, although to realize benefits of global settlements, it is important that both the countries in a currency transaction have CBDCs in place. India is leading the world in terms of digital payments innovations. Its payment systems are available 24X7, available to both retail and wholesale customers, they are largely real-time, the cost of transaction is perhaps the lowest in the world, users have an impressive menu of options for doing transactions and digital payments have grown at an impressive CAGR of 55% (over the last five years). It would be difficult to find another payment system like UPI that allows a transaction of one Rupee. With such an impressive progress of digitisation, is there a case for CBDCs?

A pilot survey conducted by the Reserve Bank on retail payment habits of individuals in six cities between December 2018 and January 2019, results of which were published in April, 2021 RBI Bulletin (please see charts below) indicates that cash remains the preferred mode of payment and for receiving money for regular expenses. For small value transactions (with amount up to ₹500) cash is used predominantly. There is thus a unique scenario of increasing proliferation of digital payments in the country coupled with sustained interest in cash usage, especially for small value transactions. To the extent the preference for cash represents a discomfort for digital modes of payment, CBDC is unlikely to replace such cash usage. But preference for cash for its anonymity, for instance, can be redirected to acceptance of CBDC, as long as anonymity is assured.

India's high currency to GDP ratio holds out another benefit of CBDCs. To the extent large cash usage can be replaced by CBDCs, the cost of printing, transporting, storing and distributing currency can be reduced. The advent of private virtual currencies (VCs) may well be another reason why CBDCs might become necessary. Ben Bernake said, "Virtual currencies may hold long- term promise particularly if innovations promote a faster, more secure and more efficient payment system.". It is not clear what specific need is met by these private VCs that official money cannot meet as efficiently, but that may in itself not come in the way of their adoption. If these VCs gain recognition, national currencies with limited convertibility are likely to come under threat. To be sure, freely convertible currencies like the US Dollar may not be affected as most of these VCs are denominated in US Dollar. In fact, these VCs might encourage the use of US Dollar, as has been argued by Randal Quarles<sup>3</sup>. Developing our own CBDC could provide the public with uses that any private VC can provide and to that extent might retain public preference for the Rupee. It could also protect the public from the abnormal level of volatility some of these VCs experience. Indeed, this could be the key factor nudging central banks from

considering CBDCs as a secure and stable form of digital money. As Christine Lagarde, President of the ECB has mentioned in the BIS Annual Report “... central banks have a duty to safeguard people's trust in our money. Central banks must complement their domestic efforts with close cooperation to guide the exploration of central bank digital currencies to identify reliable principles and encourage innovation.”

The case for CBDC for emerging economies is thus clear – CBDCs are desirable not just for the benefits they create in payments systems, but also might be necessary to protect the general public in an environment of volatile private VCs. Thus one can conclude that Introduction of CBDC has the potential to provide significant benefits, such as reduced dependency on cash, higher seigniorage due to lower transaction costs, reduced settlement risk. Introduction of CBDC would possibly lead to a more robust, efficient, trusted, regulated and legal tender-based payments option. There are associated risks, no doubt, but they need to be carefully evaluated against the potential benefits. It would be RBI's endeavour, as we move forward in the direction of India's CBDC, to take the necessary steps which would reiterate the leadership position of India in payment systems. CBDCs is likely to be in the arsenal of every central bank going forward. Setting this up will require careful calibration and a nuanced approach in implementation. Drawing board considerations and stakeholder consultations are important. Technological challenges have their importance as well. As is said, every idea will have to wait for its time. Perhaps the time for CBDCs is nigh.

This is an important point. Today the majority of purchases are made with credit cards. They are unreliable. Filling forms on websites, customers are required to enter the following data: card number, expiration date, and code. It's hard to come up with a less secure way to make payment. Therefore, credit cards are very often stolen. BTC transactions do not require the disclosure of any personal data. Instead, it uses two keys:

public and private. The public one is available to all (i.e. the address of BTC wallet), but the private key is known only to the owner. The transaction needs to be signed by interacting with private keys and applying a mathematical function. This creates evidence that the transaction is performed by the owner.

The following figure showcases the rise of cryptocurrency. The data reported by Quartz, states the top countries which have a cashless approach to vendor transactions include few countries which are exploring CBDCs. Notable in this list is Sweden, which has been piloting a national digital currency. The United Kingdom has been reported to be investigating CBDC too, but only to a limited extent.

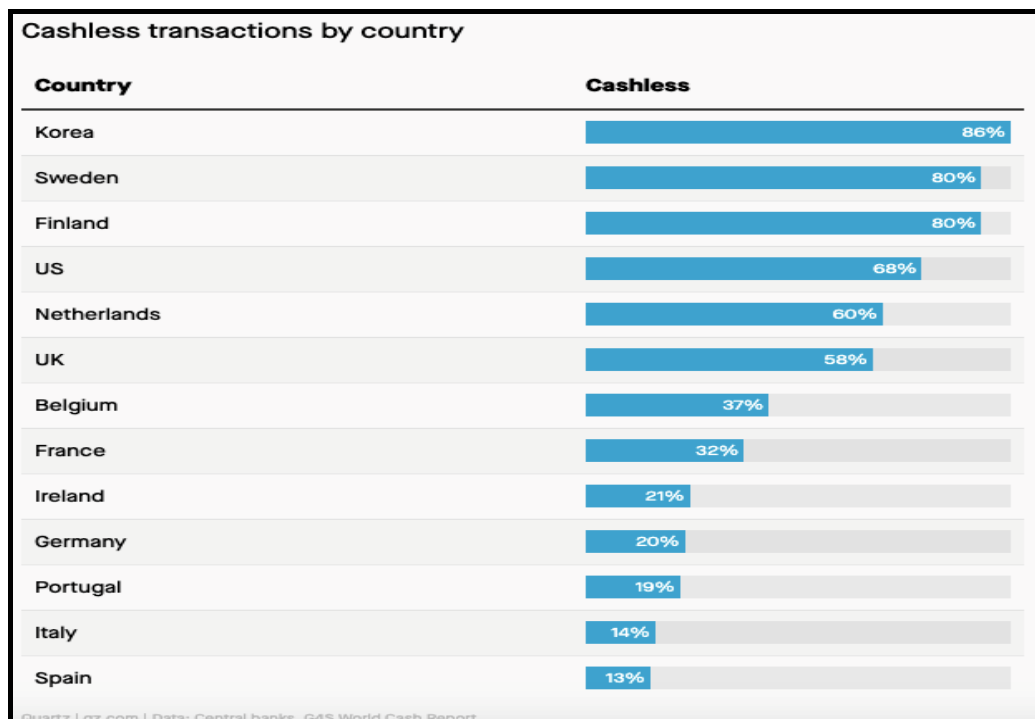


Fig 11. Cashless transactions in year 2019-2020 (Quartz Report, 2021)

The whole world is transitioning from cash transactions towards digital transactions. The above figure showcases the ratio of cashless transaction by different countries around the world in the year of 2019-2020.

## Chapter 5. Current Market Situation

**“You can’t stop thing like Bitcoin. It will be everywhere and the world governments will have to readjust.”- John Mcfree**

Bitcoin is the first official application of block chain technology. And is very much popular in the USA. Given this, it is an inherently disruptive technology. Just as block chain technology has disrupted traditional ledger technologies, Bitcoin has made waves in the fintech and currency spaces by successfully sustaining a decentralized, yet secure digital currency solution. Bitcoin does not need centralized institutions like banks to be its backbone. Instead, a cryptographic encryption system acts as the mathematical authority required to organize and verify transactions. Bitcoin miners task their PCs with solving pieces of an open-source algorithm, which helps to organize and verify transactions. In return for their hard work, this mathematical authority compensates miners in Bitcoin in proportion to their efforts. Miners can then exchange Bitcoin for fiat money like USD, or use them to buy goods and services directly (Venugopal, 2021). Currently, the US government making rules to have monetary control on bitcoin and fiscal policies to understand the algorithm and to verify the transactions. However, over time, Bitcoin resilience as a network and a currency, as well as the expediency and cost-effectiveness of blockchain payments have made a case for the cryptocurrency that has proved quite effective. Accordingly, officials have tolerated a gradual yet substantial induction of Bitcoin into conventional financial services. The Internal Revenue Service (IRS) recently said it is in the process of mailing 10,000 educational letters to taxpayers it suspects owe the government taxes on virtual currency transactions (Lawrence & Trautman, 2019). The federal agency may have based its list of recipients on customer data it acquired from

cryptocurrency exchange Coinbase. Those who do not report income correctly can face penalties, interest, or even criminal prosecution warned the IRS (Rossi, 2020).

Bitcoin and Taxes system in US Governments have observed surges of illegal market trading using Bitcoin in the past therefore Most of the Bitcoin transactions today has become transparent. Exchanges now impose anti-money laundering requirements on Bitcoin traders to avoid drawing the ire of regulators. The biggest change for Bitcoin traders, though, has been taxes (Houben & Snyers, 2018). While regulators, central bankers, and federal judges all have different opinions on how to categorize Bitcoin, whether a currency or commodity, they all seem to agree it should be taxed. Most major countries tax cryptocurrencies similarly, too. The IRS first addressed cryptocurrencies in 2014 In the United States, IRS Notice 2014-21 defines virtual currencies as property This means anything purchased using a digital currency is liable to be taxed as a capital gain whether short or long-term depending on how long the asset was held. For instance, if you buy a cup of coffee using Bitcoin that you purchased when it was worth \$1,000, you must also account for the price of Bitcoin at the time of the coffee purchase. If Bitcoin is trading at \$1,200 when you buy the coffee, you've purchased a dollar-denominated good with another asset that is now worth more in dollars than it used to be. That means the amount of Bitcoin you spent on the coffee will be taxed according to capital gains rules (Gailey & Little, 2022). While cryptocurrency brokers aren't required to issue 1099 forms to clients, traders are supposed to disclose everything to the IRS or face tax evasion charges. Taxable transactions include:

- Exchanging cryptocurrency for fiat money, or “cashing out”
- Paying for goods or services, such as using Bitcoin to buy a cup of coffee
- Exchanging one cryptocurrency for another cryptocurrency
- Receiving mined or forked cryptocurrencies



The following are not taxable events according to the IRS:

- Buying cryptocurrency with fiat money
- Donating cryptocurrency to a tax-exempt non-profit or charity
- Making a gift of cryptocurrency to a third party
- Transferring cryptocurrency between wallets

The global cryptocurrency market size was valued at \$1.49 billion in 2020 and is projected to reach \$4.94 billion by 2030, growing at a CAGR of 12.8% from 2021 to 2030. Cryptocurrency is known as virtual currency. It is a form of currency that exists digitally only and has no central issuing or regulating authority above. It uses blockchain technology to authenticate transactions (Goswami, Borasi & Kumar, 2021). Blockchain is a decentralized technology spread across many computers that manage and records transactions. Furthermore, it does not rely on banks to verify the transactions but is used as a peer-to-peer system that enables users to send and receive payments from anywhere in the world. An increase in the need for operational efficiency and transparency in financial payment systems, a rise in demand for remittances in developing countries, an increase in data security, and an improved market cap are the major factors that drive the growth of the global cryptocurrency market (Resilience of Cryptocurrencies Expected in 2022 as Asia Pacific Market Is Believed to Remain Dominant, 2022). Moreover, high implementation costs and lack of awareness of cryptocurrency among the people in developing nations hamper the cryptocurrency market growth. Furthermore, an increase in demand for cryptocurrency among banks, and financial institutions and untapped potential on emerging economies are expected to provide lucrative opportunities for market expansion during the forecast period (Resilience of Cryptocurrencies Expected in 2022 as Asia-Pacific Market Is Believed to Remain Dominant, 2022). The hardware segment acquired a major cryptocurrency market share owing to the rise in the need for upgrading the performance

of the software and enhancing the efficiency of financial payment tools. However, the software segment is expected to grow at the highest rate during the cryptocurrency market forecast period, as it facilitates managing the massive volume of data being generated for meaningful insights and better-informed decisions. By region, the cryptocurrency market was dominated by Asia-Pacific in 2020 and is expected to retain its position during the forecast period. Owing to the increase in the number of Bitcoin exchanges across Asia, which bring a certain healthy competition and maturity to the cryptocurrency industry. Chinese banks are hiring block chain experts as the government pushes the use of the technology behind bitcoin to increase transparency and combat fraud in its financial sector. These factors drive the growth of the cryptocurrency market in the region. The report focuses on the growth prospects, restraints, and trends of the global cryptocurrency market analysis. The study provides Porter's five forces analysis to understand the impact of various factors such as bargaining power of suppliers, competitive intensity of competitors, the threat of new entrants, threat of substitutes, and bargaining power of buyers on the global cryptocurrency market (Goswami, Borasi & Kumar, 2021). The Reserve Bank of India (RBI) in April declared that all RBI regulated bodies —are required to stop having business relationships with entities dealing with virtual currencies forthwith and unwind the existing relationships in a period of three months' time. Thus, it can be implied that India 's banks and lenders will no longer be able to transact or facilitate transactions with companies or individuals that trade in cryptocurrencies since July. According to RBI, virtual currencies —can seriously undermine the AML (anti-money laundering) and FATF (Financial Action Task Force) framework, adversely impact market integrity and capital control, and if they grow beyond a critical size, can endanger financial stability as well (Forbes, 2018). Interestingly, though there is lack of clarity about legal status of cryptocurrency in India, the country may levy Goods and Services Tax on cryptocurrency

trading. Central Board of Indirect Taxes and Customs has proposed to levy 18% GST on dealing of cryptocurrency. (Bloomberg Quint, 2018)

According to the proposal:

- Purchase or sale of cryptocurrencies should be considered as supply of goods, and those facilitating transactions like supply, transfer, storage, accounting, among others, will be treated as services.
- Value of a cryptocurrency may be determined based on the transaction value in rupees or the equivalent of any freely convertible foreign currency.
- If buyers and sellers are in India, the transaction would be treated as a supply of software and the buyer 's location will be the place of supply.
- For transfer and sale, the location of the registered person will be the place of supply. However, for sale to non-registered persons, location of the supplier would be considered as the place of supply.
- Transactions beyond the Indian territory will be liable for integrated GST, and would be considered as import or export of goods. IGST will be levied on cross-border supplies.

Cryptocurrency dealers have hired legal advisers and chartered accountants to help look for alternative ways of buying and selling cryptocurrencies. The attempt to starve the market of liquidity has apparently failed to discourage cryptocurrency exchanges — the Block Chain Foundation of India (BFI), a lobby of 45 crypto dealers, claims that more than 30 new exchanges have applied for membership in the past two months. (The Print, 2018). Experts also claim that the ban may encourage illegal activities such as Hawala — an illegal system of remittance of funds used widely in South Asia and elsewhere — thereby fuelling the generation of black money. Dealers are also looking for banks which are not regulated by RBI. Similarly, co-operative societies could be used to route transactions since they are

out of RBI 's purview. Crypto players are eyeing to cash in on these loopholes. The cryptocurrency industry is also considering the option of creating over-the-counter markets to deal in cash instead of routing transactions through banks. (The Print, 2018). Meanwhile, cryptocurrency businesses deny they are facing closure. Some say their businesses are actually expanding. Cryptocurrency businesses are using discounts, free gifts and referral discounts to promote businesses. Meanwhile, country has declared cryptocurrency illegal but not technology of Block chain. Possible applications of Block chain in India. Thus, Block chain as a technology has immense potential to change the way how data is stored and managed. Its application is wider than just in cryptocurrencies. The government of Andhra Pradesh is working with Swedish start-up Chroma Way to set up a blockchain-based land registry system that allows people to collateralise property, get loans, and invest against that asset. Tracking property ownership using blockchain allows people to circumvent disputes, frauds, and errors, while also lessening the administrative hassle of registrations and title transfers. (Quartz, 2018). Recently, the Maharashtra government called upon industry leaders, researchers, and others to devise ways of incorporating block chain in e-governance operations. —The government is one of the biggest data creators and data consumers. Block chain will bring in more efficiency, transparency, accountability, and accessibility in data flows, the state 's chief minister, Devendra Fadnavis, said at the Maharashtra Technology Summit (M Tech) on Jan. 17. The Reserve Bank of India will issue a digital currency using block chain and other technology starting from FY 2022-23. (Sitharaman, 2022). The RBI has been working on a plan to introduce the Central Bank Digital Currency (CBDC) since the past few months. In October 2021, an amendment to the Reserve Bank of India Act, 1934 was proposed to widen the scope of the definition of 'bank note' to include digital currency. Earlier, the government had

informed Lok Sabha that the RBI is working out an implementation plan for the introduction of Central Bank Digital Currency.

## Chapter 6. Conclusion

Sound money is the basis of every economy in the world. Today the world economy is in the middle of a technological revolution. Every country is struggling to become a strong economy by taking big decisions regarding technological developments. Huge amounts of information can be gathered, processed, and transmitted thanks to a combination of new digital technologies and increased online activities. The new players like digital currency, cryptocurrency, CBDC have entered the economy to provide their services. Many countries have already started working on it. Many businesses and consumers work and live in a dual world of physical and virtual interaction and transaction (Dodgson, 2015). There will be competition but co-existence between existing and new institutions, business strategies, models, platforms, and technologies, and the study of the dynamics in those relationships offers rich potential research. There will be a diversity of approaches with no single formula for success. As transactions dematerialize and disintermediate, the questions arise of who leads and takes responsibility in this new world. There will be an enormous challenge for regulators. For society, digital currency can reduce tax avoidance, aid social payments, reduce the health risks of handling germ-carrying cash, and conceivably brings billions of previously marginalized people into the global financial system. It would enable transparency and traceability in the financial systems thereby making tax compliance solid and ensuring a larger tax base with reduced tax rates. Money lubricates economic activities. It is also a deeply sensitive social and cultural issue for society, organizations, and individuals (Dodgson, Gann, Berger, Sultan & George, 2015). Changes in the way money is created and used cannot be separated from its economic, technological, social, political, cultural, historical, religious, and ethical contexts (Inglehart & Baker, 2000). Digital money is in its early stages of development, and these complex and interrelated contextual factors will influence its future direction and adoption, adding

to the unpredictability of its trajectory of adoption and influence (Rovira, 2021). Nonetheless, a combination of globalization, urbanization, and digitalization has seen an irreversible shift in the way money flows in economic systems. These changes appear to be reshaping traditional financial markets, such as consumer or retail banking and commercial banking, and financial services such as foreign exchange. They invite a significant management research agenda, and, while there is still much to be discovered, it is possible to speculate on some of the factors that will affect its progress. Just as digital technology has not produced the paperless office, digital money is unlikely to completely replace existing forms of money. As transactions dematerialize and disintermediate, the question arises of whom leads and takes responsibility in this new world. It is possible to speculate that competitive advantage in digital money ecosystems will depend on the judicious balancing of proprietary positions and openness. **“Every once in a while a new technology, an old problem and a big idea turn into an innovation.”**- (Kamen, 2020). As rightly said by Dean Kamen, in the same way digital currency, CBDC as well as cryptocurrency will result in great development. The digital money ecosystem will require new talent in management, science, and technology, and, as with most emerging innovations, it is likely that the organizations that employ multidisciplinary staff, are market facing in orientation, and operate with a collaborative and open approach are likely to be favoured. If privacy can be protected, the data that surrounds digital money provides in-sights that allow governments to be much more effective in delivering services to citizens (Dodgson, Gann, Berger, Sultan & George 2015). New entrants will attempt to disrupt those strategies. Some will see digital money as a means of pursuing libertarian agendas, others as an alternative to the capitalism of large corporations. Governments will continue to try to develop effective regulations that pre-empt rather than respond to financial challenges. Consumers will seek improved convenience and experiences in

transactions and reduced costs. Mark Twain observed that the lack of money is the root of all evil; the transformational effects of digital money will be relatively most influential in poorer nations. The great possibilities of digital money for developing economies, as described above by the Bill & Melinda Gates Foundation and the World Bank, are distinct realities. While digital money will not remove poverty and inequality, it will provide a vital new tool in helping them to be addressed. Further to the Academy of Management Journal's calls to rethink management scholarship by picking grand challenges or globally significant phenomena (George, 2014). The recent development in India is its big step towards acceptance of Central Bank of Digital Currency. Introduction of Central Bank Digital Currency (CBDC) will give a big boost to digital economy. Digital currency will also lead to a more efficient and cheaper currency management system. It is, therefore, proposed to introduce Digital Rupee, using blockchain and other technologies, to be issued by the Reserve Bank of India starting 2022-23 (Sitharaman, 2022). Due in large part to the convenience and efficiency gains offered by electronic payment methods in combination with mobile devices, cash has been losing relative importance in most economies. Globally, each and every country trying to set up the digital transaction mode through internet & mobile phones. The blockchain technology, cryptography & digital currency is new and upcoming money in the market. In this transition to cashless society, major challenge will be to include everyone. Digital currency has a potential to be the reason for the welfare of the society. Due to the technological upliftment and digital payment easily accessible system and financial literacy in the society which factors helps digital currency to grow in future. Using the potential of links and exchange in the ecosystems of networks and allowing people to transfer money directly to one another can make digital currency welfare enhancing. The legal and the regulatory challenges is still there to tackle. Few countries have already come up with the basic framework and tax system for dealing with



the digital currency. But still, there is so much to achieve. As the global scale and scope is huge. I see Bitcoin as ultimately becoming a reserve currency for banks, playing much the same role as gold did in the early days of banking. Banks could issue digital cash with greater anonymity and lighter weight, more efficient transactions (Finney, 2013). Digital currencies have all the intrinsic advantages of fiat currency like it is durable, portable, fungible, and divisible. Being digital will make it easily verifiable, more secure, and traceable. Hence, improving upon the existing advantages of paper currency (Singh, 2021). The future research opportunities on the very subject are immense. Digital currencies will open the gate to many new research threads like digital currency and its impact on the economy, digital currencies impact on GDP, What next for the Banking system? Digital currency and foreign exchange, taxation policies, and many others. Digital currencies will be a new era for the mankind to deal with. It will bring with it many good possibilities and eradicate numerous hindrances created by physical currencies. It will not only curb the problems and restrictions of physical currencies but also pave the way in implementing new reforms and policies for the betterment of society. With digital currencies in the market, Indian citizens will be able to deal with technology on a larger scale. Rural areas will grow and make themselves developed for the digital currency era. Like the euro (€) which is the official currency of 19 out of 27 EU member countries which together constitute the Eurozone, officially called the euro area. (European Union, 2020). How a single currency is recognised and considered legal throughout the 19 states in the same way the whole world can travel towards a single world currency if the economic interest of the world is kept above the limited political interest of those in control. With the help of digital currency, the transaction fees paid by the users will be reduced to a negligible amount. It will also eliminate the interference of third parties, like VISA or PayPal, to verify a transaction. It removes the requirement to pay any extra transaction fees too. The

blockchain ledger relies on different mathematical puzzles, which are hard to decode. It makes digital currency safer than ordinary electronic transactions. Thus, one can conclude that digital currencies are for better security and privacy. Digital currency has great potential, it will take a few years to understand the depth of digital currencies but once it is accepted, circulated, and is free-flowing in the market many positive outcomes can be rendered from the digital currencies.

Digital money provides one such important trend that shapes the context of management. John Maynard Keynes in his book “The General Theory of Employment, Interest, and Money in (1935) said, “The difficulty lies not in new ideas, but in escaping from old ones.”

## SUMMARY

The journey began with the concept paper and writing the concept paper made my views on this research clear about how I wanted to pursue the journey from concept paper to the thesis. My writing is on digital currency management, circulation, and taxation regime in India. My research from the start was primarily focused on clearing the concepts. Then I focused on understanding not only digital currency and cryptocurrency but also considering the aspects of money and money-related terms in context with economy and taxes. The journey further travelled towards literature review and research proposal where I mentioned regarding taxation policies of India and a few other countries. Few other countries were Sweden, El Salvador, Myanmar, South Korea. I specifically mentioned the procedure, circulation, management of digital currency and cryptocurrency. My entire research revolves around one thing: how digital currency and cryptocurrency may help India's economy become more stable by increasing the ratio of taxpayers. This thesis aimed to check whether digital currency management, circulation, and taxation can be implemented in India. The adaption of digital currency will have numerous positive implications on the economy and society. How taxation and economy of India can develop based on the adoption of digital currency. Not only the number of taxpayers will eventually increase but also the traceability of transactions can lead to a number of positive outcomes. The method that is very prominently used during research is the comparative and qualitative method. There cannot be a direct comparison, but comparing my study with Sweden, El Salvador, South Korea, and Myanmar helped me in building a hypothetical structure for India. Research has answered my questions regarding the procedure, circulation, management and taxation of digital currency. The recommendations that came out of my research are the practical implication of digital currency and its application for daily transactions and dealings. Merely legalizing digital currency will not serve the

purpose. Legalizing and maintaining records is the necessary step required. Also changes in tax policies and numerous acts and legislations where money and currency are involved need to be amended. The thesis thus provides with problems with physical currencies and the benefits of digital currencies.

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