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FINANCIAL SYSTEM SINERGY : FINANCIAL INCLUSION, FINTECH, AND CBDC

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Abstract: The interconnection between fintech, financial inclusion, and central bank digital currency (CBDC) presents a transformative opportunity to overcome the challenges of financial access and foster a more inclusive financial ecosystem. Fintech innovations plays an important role in facilitating the development, adoption, and usability of CDBC, effectively enhancing its accessibility and user-friendliness, particularly fo rundeserved populations. By leveraging fintech solutions, CBDC can significantly advance financial inclusion by providing individuals and businesses with convenient, affordable, and secure digital financial services. This integration necessistates collaborative efforts among fintech companies, central banks, and regulatory bodies to ensure a successful implementation. Through this collaboration, a more inclusive and efficient financial system can be established, benefitting individuals, businesses, and society as a whole.

Keywords: *Financial Inclusion, Fintech, Central Bank Digital Currency.*

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1. Introduction

CBDC is a crypto-based asset using the blockchain technology which also contain the same risks as other crypto assets such as security of the transactions, validations,and asset valuations as well as price volatlity. This may affect the commercial banks who acts as the distributor of the CBDC, both retail and wholesale. As the financial technology catching up to the world's economy, the Bank Central in the countries around the world must step up to the game. The use of various financial technology such as quick response code (QR) and online transactions has been implemented for the past years. Nowadays, Central Banks are looking for ways to go fully digital including the usage of digital money. Banks have been finding ways to imporve the payment system which make financial management easier for their customers. The change of behavior from traditional transaction payment systems to a more modern one is due to the change of the society's behavior in managinf their finances and baning businesses. the emerge of the new technology especially Web 3.0 dan the Distributed ledger technology has tremendously increase the massive development of crypto assets and stabelcoins along with the opportunity and risks.

The blockchain technology or 'blockchain' appear in 2008 and has made a bigger change in the way people do their investment in the early days of 2020s. the technology serves as rules of standards for how th eldger is created and managed for a blockchain transactions, thus bitcoin. The booming of bitcoin, due to its unpredictable volatility, attract both new and old investors. Those who used to put their money in the conventional investment market instruments are now attracted to the new product of the blockchain ledger through hedging and arbitrage. Blockchain technology are digital finance technology that enable people to store respective transactions or records that can only be encrypted using a specific key. According to Lewis (2018) blockchain usually contain the concepts of data storage, data replication, 'peer-to-peer' commnication, and can be use to prove the autenticity and owrnership of a digital signatures. Furthermore, Lewis (2018) maintained that blockchain can also be used for speculation purposes and cross border payments. It is the latter that made blockchain technology more prefereable to the Central Bank.

Since the 1950s Bank has numerously finding ways to improve their services to the customers who travelled everywhere at anytime, and wishes to do their finances wherever whenever they are. The rise of credit card and online payments provided by the Banks has assist in doing so however, the issue of security also arise. Occasionally, the case of identity theft and bank account theft hinder the Banks customers in using the credit card and online payments. Then Banks keep finding ways to provide not just best service but also secure ways to do transactions. Hence, the arise of payment methods using the technology that can shortened distance and time of transactions.

Central banks sees the usage of blockchain technology can help them to make sure that the banking process still happen whenever and wherever the people are. However, the main product of the blockchain technology, namely Bitcoin, has issues with regulations and securities. Bitcoin is being traded under no countries radar, no regulations, and totally borderless, unique to its owner. Thus the central bank set to create a digital currency that may serve the same value as Bitcoin, but being the one that can be regulated and maintained by the Country through the Central Bank.

Central banks since long ago have been mandated with the task to issue cash for the general public needs. However, with the current development of digitalisation, the need to held cash in hand is becoming lesser than before. Most transactions can now be done through the use of online payments and QR code which make the value of holding cash is not the same as before. This will cause the bank notes to become outdated as digital transactions requires digital payments. Central Bank needs to find a way to enable digital transactions using digital money.

Central bank digital currency (CBDC) appears to be a sustainable solution to support the digital transformation, that also includes the digital transactions. CBDC may have th eability to provide the public needs for digital transactions while also preserving the monetary system in the country. CBDC will enhance the value of the current products by the central banks ass well as becoming the core instrument for further role in the era of digitalisation. However, the establlishment of CBDC is not an easy matter. The central bank needs to carefully assess the right desain that can be measured and in good proportions to the needs of the public as well as the policymakers. The CBDC needs to do no harm to the current monetary and macroprudential policy as well as able to live side by side with the current payment systems while also pushing the boundaries for innovation and efficiencies.

According to Atlantic Council, an organization that actively provide updated tracker reagrading the CBDC, currently there are 120 countries around the world seeking to develop and implement the CBDC in their regarding country. Out of the 120, only one country managed to issue CBDC, that is Nigeria. 11 countries have launched CBDC. 18 countries have set a pilot to implement the CBDC. 32 countries are still in development stage. 40 countries are still in research. 15 countries inactive and 2 countries have cancelled its exploration to implement CBDC.

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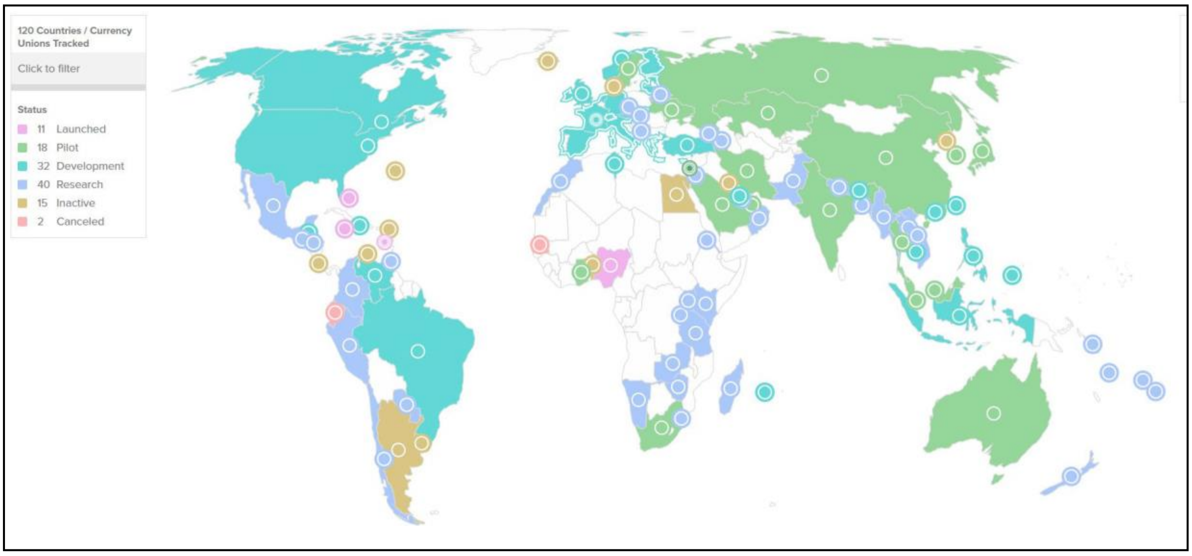
There are many reasons why a country seeks to develop and implement a central bank digital currency. According to the with paper CBDC of the Indonesian Government, the CBDC is need in order to provide the central bank response to the fast development of digital economy finance as the main authority of monetary and finance policy makers in the country. Moreover, the government seeks to strengthen its international stand and accelerate digital economic finance. The CBDC is expected be acknowledge as payment tools, core instrument for the centra bank, as well as to become a binding element that will wraps perfectly the financial inclusion, innovations and efficiencies for the whole nation.

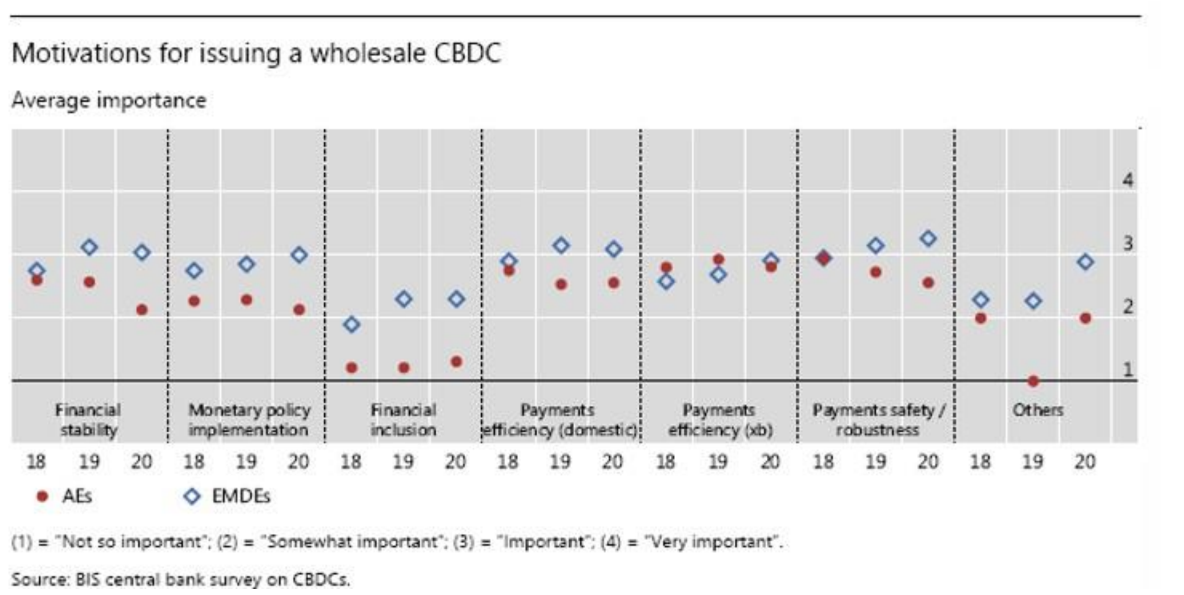


https://www.atlanticcouncil.org/cbdctracker/ 28 May 2023, 19.47

Nigeria, being the first country in the world to issue a CDBC, not so different from Indonesia, the Nigerian e-Naira also served as a mean to provide efficient payments and sees financial inclusions as benefit of implementing the CBDC (Ozili, 2023). According to Ozili the eNaira was issued and meant by the central bank to exist side by side with the national currency Naira. It is found that the CBDC has provide opportunities to the Nigeria economy such as imrpoved monetary policy transmission, convenience, efficient payments and increased financial inclusion (Ozili, 2022). This is because by using the digital currency the public is being encouraged to adapt faster to financial digitalisation as well as understanding and implementing the government's policy in regards to that matter.

A little bit different from Indonesia and Nigeria, China (being one of the country that have recently launched CBDC) reaches 260 million people of its country and is set to expand to most of the country in 2023, with the purpose beyond financial inclusion. According to Xu (2022), China explore to implement the CBDC since 2014 and accelerating the process in 2019, arguably because of the Covid-19, China is now expanding to real field experiments. While Indonesia and Nigeria see CBDC as a way to improve financial inclusion, China seeks to improve domestic financial monitoring and policy implementation by issuing the cbdc eCNY. In the long run, the country seek to use cbdc as a bridge for further cross-border transactions.

According to a research paper by Bank for International Settlement, there are some motivations for a central bank to release retail CBDC such as financial stability, monetary/policy implementation, financial inclusion, payments efficiency, payment safety, and other reasons as stated by the following graph.



Grym et al (2017) stated that central bank digital currency is related to zero lower bound on interest rates, safety of online transactions (compare to using credit cards and bank accounts that are open to identity thefts and other risks), optimised service by the bank to the household sector and corporations, easier loan repayments, improve financial stability, and other benefits that current electronic or physical forms of money do not. Ozili (2021) gathers that CBDC can be used as medium of exchange, a secure store of value, an alternative unit of account, decrease demand for paper currency, enhance monetary policy, compete with paper money, and reduce the cost of producing and managing cash in the economy. Engert and Fung (2017) maintained that the motivations for country in using CBDC are to ensure adequate central bank money for th epublic and preserve central bank seigniorage revenue, reduce the lower bound on interest rates and support unconventoinal monetary policy, increase contstability in payments, and promote financial inclusion.

More than considering the benefits and motivation of a country in using central bank digital currency as means for digital transactions and investments, one must also consider the risk that may come with the implementation of the said digital currency. Different to bitcoin that does not regulate by certain countries nor traceable, central bank digital currency is regulates by the governement issuing the digital currency through the policy established by the central bank.

However the issue of security and the safety of its transactions still linger. Engert and Fung (2017) also stated that in confidentiality of the use of cbdc, it is still a subject to the risk of theft and loss due to technological weakening such as broken hard drive or loss of password or private key in using the cbdc.

Sinelnikova-Muryleva (2020) found several issue that arise as consequence of using the cental bank digital currency. First issue, there will be risk in decreasing the role of traditional banking system due to the high usage of digital transaction. People will be more relied in using the digital service more than using the usual banking system. This will require the bank to adapt more into digital banking and reduce the operation of traditional banking services. Second, the issuance of central bank digital currency will change the functioning in monetary transmission channels. Third, due to the lower risk of transactions using central bank digital currency, in time of crisis, more economic agents will choose to close their transactions by transferring funds for the commercial banks to the cbdc. This may as well expose the commercial bank to a threat of liquidity as it may endanger the balance stability of the bank deposit accounts.

Auer et al (2020) suggests that there may be issue arise due to the nature of the central bank digital currency on how consumers can access the currency, there may be some issue related to identity scheme. There might be some difficulties in accessing the the central bank digital currency for some people that does not have bank account and stilll depend on the use of cash for transactions. Pichler et al (2019) maintained that there might be obstacle in using central bank digital currency for safety transactions when people already see the resilience of cash as an inclusive, crisis-proof and anonymous means of payment. Thus it is important to consider the amount of bank account holder and financial inclusion rate in a country before implementing the central bank digital currency.

2. Results and Discussion

Financial Inclusion

Financial inclusion is desperately needed by the world to improve the economy. It began as a movement after the 2008 crisis, financial inclusion has now become a prominent strategy for government around the world to put the economic gear in order. Financial inclusion developed for the needs of those at the bottom of the pyramid, namely the low and irregular income, isolated, living with disabilities, undocumented workers, disadvantaged communities, who are mostly indicated by not having a bank account and are located in the developing economies. According to CGAP-GPFI as quoted from Bank Indonesia study website, financial inclusion can be understood as a state where all working adults have effective assets to credit, savings, payments, and insurance from formal service providers. Effective access includes convenient and responsible service delivery, at a cost affordable to the customer and sustainable for the provider, with the result that financially excluded customers use formal financial services rather than existing informal options.

FATF maintained that financial inclusion invloves providing access to an adequate range of safe, convenient, and affordable financial services to disadvantaged and other vulnerable groups, including the income, rural and undocumented persons, who have been underserved or excluded from the formal financial sector. The Reserve Bank of India define financial inclusions as the process of ensuring access to appropriate financial products and services needed by all sections of the society in general and vulnerable groups such as weaker sections and loe-income groups in particular, at an affordable cost in a fair and transparent manner by regulated, mainstream institutional players.

Why sould most people choose not to be bankable? Some of the reasons are due to price barriers, information barriers, product design barriers and channel barriers (Bank Indonesia, 2023). However, Bank Indonesia contend that financial inclusion can help a country in overcoming those barriers by providing a wealth benefits to be enjoyed by the consumers, regulators, the government and private sectors. A country that managed to implement and maintain a sustainable financial inclusion may benefit from increase in economic efficiency, beetter financial system stability, decrease in frauds and misconduct in banking and financial activities, and support financial market deepening. Moreover, financial inclusion can also help increase the Human Development Index (HDI). In the bigger picture, a financial inclusion may contribute to the sustainability of the local and national economic growth as well as improving the public prosperity and ultimately reduce poverty.

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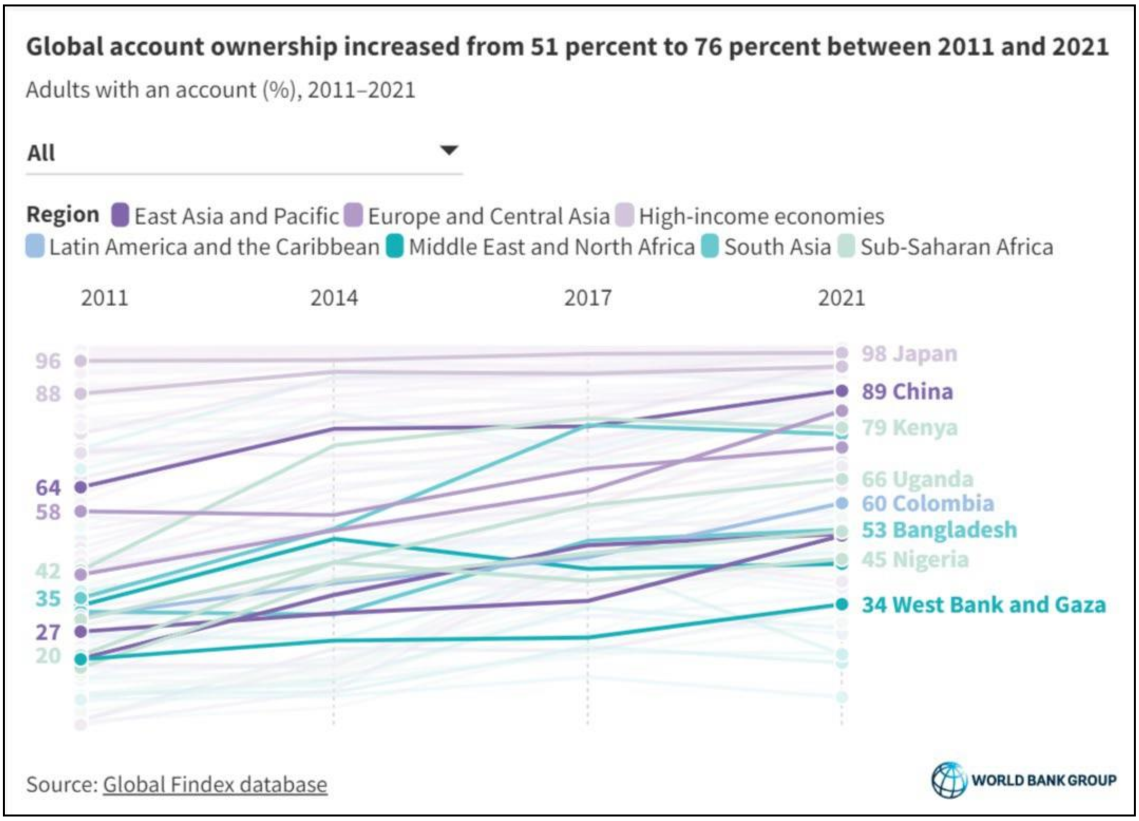
From the data shown by the World Bank on the development of financial conclusion, it has been found that there are more people owning bank account or choose not to be unbanked. Data shown 76% of the global population and 71% of people in the developing countries are now more aware on the importance of having a bank account for their financial transactions. Better infrastructure and more trust to the financial market and economy policy makers may also contributes to the increase. More people are alert on receiving digital payments for salaries, government transfer or a domestic payment which has become the reason people are now using more financial services than just storing ,saving, and borrowing money. In developing countries, adults who paid their household needs directly from their bank account is at 40% of the data. In China, about 80% of the adults do online transactions and paid using digital payment, in other developing economies data shown that there are only 20% of adults did so. Mobile money has become enabler in improving the awareness of financial inclusion which enables the account holder to do mobile payments, saving and borrowing.



Financial Technology (Fintech)

The development of increasingly advanced technology has led to digitalization of all aspects of people's lives, especially in the financial aspect. The development of financial technology (financial technology) or better known as fintech, is an unavoidable progress. Puschmann (2017) argues that digitalization has had a very strong impact on the financial services industry where one of the reasons is that the various financial products that are present in society are exclusively the result of information developments. Goldstein, Jiang, and Karolyi (2019) argue that fintech is related to the introduction of various new technologies that can be implemented in the financial sector and is increasingly revolutionizing the financial industry. According to Phillipon (2016) the existence of fintech can bring very significant changes to an economy but has a tendency to create more significant regulatory challenges.

In its development, fintech is growing rapidly to become a global phenomenon that cannot be avoided. With support from the government and followed by various research and academic discussions on this topic, fintech is increasingly important to be considered as an indicator of economic development. Mention (2019) argues that in fact fintech is an umbrella for various technologies and innovations that enable financial services and various forms of business related to these services to be accessed by the public. Gobble (2018) mentions digitization and digitization as fintech drivers, which enable fintech users to be able to use financial services and the digital economy for everyday transactions.

According to Fintech Revolution (2018) the existence of financial technology helps shape the financial industry to be more efficient and cost-effective because it can improve the quality of financial services while creating a more diverse and stable financial landscape. According to Lee and Shin (2017), technological developments in terms of infrastructure, big data, data analysis, and mobile devices have made the development of financial technology companies able to differentiate themselves from traditional financial service companies with services that are more personal, unique, and centralized. . Furthermore, Lee and Shin (2017) found five elements forming a financial technology ecosystem, namely: (1) the existence of fintech startups, (2) the existence of technology developers, (3) the government (legislative policy makers, (4) financial customers (individuals and organizations), as well as (5) traditional financial institutions. Fintech startups that usually have entrepreneurial power are the main drivers of the financial technology ecosystem with the ability to disclose financial services that can be provided digitally so that they become the main drivers of fintech growth. Technology developers are tasked with providing various digital platforms which can be used to disseminate information on financial services using social media, big data analysis, cloud computing, artificial intelligence, smartphones, and mobile services. According to Holland FinTech (2015), the government has a role to play in providing various regulatory environments that can support the development of fintech Financial service customers are a source of new income for many financial technology companies where in general the important types of customers are individual customers and MSMEs. Traditional financial services are also a major driver of fintech development because these traditional financial services can become an environment for fintech to develop with financial technology innovations. Lee and Shin (2017) found that there are several challenges in fintech development, namely: (1) management challenges, (2) customer challenges, (3) regulatory challenges, (4) technology integration challenges, (5) service and data security challenges. personality, and (6) the challenge of risk management.

In simple terms, the fintech ecosystem involves various parties such as regulators, market players, consumers, and entities related to fintech services and products (Ilya and Triyono, 2021). The interaction between members of this ecosystem is built through the exchange of values between them, which results in changes in the balance of the ecosystem where these changes are unavoidable. With digital technology innovation as the foundation for fintech development, changes that result in development are natural where the dynamics of these changes also influence interactions between various market players, both through competition and collaboration with these financial technology investors.

Central Bank Digital Currency (CBDC)

In the development of digital technology, many countries in the world are compelled to innovate in digital payment systems so that the need arises to provide regulated digital currency

with government regulations and supervision, or better known as the central bank digital currency - CBDC. Unlike digital money with other crypto technologies (cryptocurrencies), CBDC is designed to have a level of security that can only be accessed by the issuer, in this case the central bank. The central bank has the authority and responsibility to regulate the amount of CBDC supply and distribution network to the public. CBDC is digital money that is issued and controlled by the circulation of the central bank in the country and is used as a means of payment that is legally recognized to replace currency. According to the Indonesian Ministry of Finance, CBDC is a digital representation of a country's currency which will later fulfill three basic functions of money, namely: as a means of storing value (value storage), a means of exchange/payment (medium of exchange), and a means of measuring the value of goods and services (units of accounts).
Dupuis, Gleason, and Wang (2022) provide an understanding of several types of CBDC as follows:

1. Wholesale CBDC. It is a type of CBDC which is limited to interbank transactions.
2. Popular CBDC or better known as Retail CBDC, is a type of CBDC that has several features like Wholesale CBDC but can also be used by the general public (public).
3. Central Bank Account, can be used together with cash.

According to Minwalla (2020) the different types of CDBC might offer different benefit and risks that once CBDC is implemented, the ecosystem where it being distributed will be a high- value target. CBDC may draw a lot of attention from major companies and nations that may cause the central bank to made more effort in maintaining a secure way for CDBC usage. CBDC emerged as a response of the government banking financial institutions to the emerging thrend indigital finance such as cryptocurrency. Although CBDC and cryptocurrency may be considered as digital assets, the differences in monetary policies, regulations, surveillance, and underlying principles, has determine the profiles for each of these assets. The research by Chohan (2022) indicates that CBDC may help the Government in this case the Central Bank to face forward important challenges caused by the the usage of cryptocurrencies and their attached risks.

Laboure et al (2021) indicate that the socio-economic and historical factors are identifies as the primary catalysts behind the current rush in digital currency implementation. Cryptocurrency istself gained significant popularity as valuable investment starting around 2017. This was primarily due to the increase in the price of Bitcoin, the most well known cryptocurrency, in 2017 it reached about 20,000 USD. This remarkable increase in the value attracted the attention from all kinds of investors, leading to the increase in interest and adoption of the asset in the investments' portfolio. However, the issue of fraud and security in transaction arised not long after, causing the governmnet to have to meddle and adress the issue. CBDC surge as the main cure to the downside of investing in cryptocurrency.

The connection : Synergy in Digital Finance

As many countries through the central bank is now pursuing the study to implement CBDC, it is with full awareness that it can not be done without first educate the people of the nation regarding the digital finance and the importance of being bankable. Fintech plays an important role in promoting financial inclusion, mostly because the only way one can enjoy the easyness of using mobile and digital transaction is by having a bank account, thus improving one's financial inclusion. Fintech is aimed at providing affordable financial services to the public at a low cost of transactions. Fintech innovations, such as mobile banking, digital wallets, and peer-to-peer landing platforms enable individuals and businesses to access financial services more conviniently and at lower costs. These technologies can reach populations without traditional banking infrastructure, opening up avenues for savings, payments, credit, and insurance. Fintech can also facilitate the development and adoption of CBDC by providing the technological infrastructure required for its implementations. Fintech companies can develop secure digital payment platforms, identity verification systems, and other necessary tools to support CBDC transactions. Moreover, fintech innovations can enhance the user experience and functionality of CBDC systems, making them more accessible and convenient for individuals and businesses.

CBDC has the potential to significantly improve financial inclusion by extending access to digital financial services. By leveraging CBDC, central banks can create digital wallets directly accessible to individuals, even those without traditional bank account. This allows undeserved populations to participate in the formal financial system, conduct transactions, save money, and build a financial history, which can further facilitate access to creadit and other financial services. When combine together, CBDC, fintech, and financial inclusion can create a great synergy in finance ecosystem. Fintech innovations can be leveraged to develop user-friendly interfaces and tools that enhance the accessibility and usability of CBDC. This can drive adoption among udesrved populations, leading to greater financial inclusion. Finetch companies can also collaborate with central banks to develop regulatory frameworks, security measures, and interopreable systems for CBDC implementation. Fintech can act as enabler for both financial inclusion and the adoption of CBDC. By leveraging fintech innovations, CBDC can be made more accessible, user firnedly, and cost effective, thereby promoting financial inclusion and expanding financial services to undeserved populations.

The interconncetion between fintech, financial inclusion, dan CDBDC presents a powerful opportunity to address the challenges of financial access and create a more inclusive financial ecosystem. Fintech innovations can play a crucial role in facilitating deveelopment, adoption, and usability of CBDC, making it more accessible and user-friendly for undeserved populations. By leveraging fintech solutions, CBDC can enhance fianncial inclusion by providing individuals and businesses with convenient, affordable, and secure digital financial services. Colabborative efforts between fintech companies, central banks and regulatory bodies are essential to ensure the successful integration of fintech, financial inclusion and CBDC, leading to a more inclusinve and efficient financial system that will benefit many.

4. Conclusion

The interplay between fintech, financial inclusion, and central bank digital currency presents a promising opportunity to overcome the barriers of financial access and foster a more inclusive financial ecosystem. Fintech innovations play a crucial role in making CBDC more accessible and user-friendly, particularly for undeserved populations. By leveraging fintech solutions, CBDC can enhance financial inclusion by providing convenient, affordable, and secure digital financial services to individuals and businesses. achieving this vision requires collaboration among fintech companies, central banks, and regulatory bodies to ensure a successful implementation. Through this collaborative effort, a more inclusive and efficient financial system can be established, benefiting individuals, businesses, and society as a whole. By embracing this transformative potential, we can create a more equitable and accessible fianncial future for everyone.

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