

Harnessing digital financial currencies for sustainable development

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Abstract

Recently, advancements in technology have enabled the emergence of Digital financial currencies by exploring global finance by enhancing financial inclusion, economic efficiency, and transparency. This new form of money has proved to be effective in achieving a range of the United Nation Sustainable Development Goals. This report assesses the impact that digital currencies have on sustainable development goals by looking into the steps taken by the unbanked population in the digital age. The aid provided through cross-border remittances is almost non-existent, however, the decentralized financial systems can easily spur socio-economic development, assist in the advancement of small and medium enterprises, and enhance prosperity across the globe. This article sets out the premise that well-constructed digital financial policies, when paired with effective regulations, can profoundly increase the development and growth of countless economies while forwarding the objectives of social welfare.

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1. Introduction

The global financial landscape is rapidly evolving due to the rise of Digital Financial Currencies (DFCs). DFCs includes cryptocurrencies, stablecoins, and Central Bank Digital Currencies (CBDCs), are growing beyond their initial view as speculative assets, which are increasingly being valued for their transformative ability to enhance financial systems and social objectives. This goes even further to include most critical areas of sustainable development: economic growth, social inclusion, and improvement of the environment [1, 2]. In examining the potential value to be gained, risks and policy concern, the research goal is to contribute to the understanding of how DFCs can be harnessed to foster a leap towards Sustainable Development Goals (SDGs).

2. Review of literature

Truchet [3] states that Digital sovereignty describes the capability of a nation or region to govern and manage its digital assets, including the infrastructure, data and financial activities of the region. The European Union (EU) has recently moved towards consolidating sovereignty within the financial markets by enacting laws such as the MiCA (Markets in Crypto-Assets Regulation) and DORA (Digital Operational Resilience Act). The EU has created guidelines on consumer protection and risk mitigation which often overshadow security concerns with innovation.

Ozili [4] examined the role of the central bank digital currency (CBDC) and its contribution to the UN Sustainable Development Goals (SDGs) are examined. The researcher looks into how a CBDC can be used to accomplish SDGs will also find this work to be pertinent. According to the author, a CBDC might provide easy access to funds, boost payment efficiency, and unleash financing for each SDG.

Biloskursky [5] performed a SWOT analysis in order to assess the advantages, disadvantages, possibilities, and dangers of utilizing cryptocurrency as a means of funding SDG initiatives. The study will offer insightful information about the possible advantages and disadvantages of using cryptocurrencies to finance SDG projects and pinpoint tactics to reduce risks and optimize opportunities. The goal of this study was to add to the larger discussion on alternate funding sources for sustainable development initiatives.

Mora H et al. examined how social cryptocurrencies might improve local small company collaboration and community development. The key contribution of the work was the formal model, which, by way of practical developing and deploying experiences within the cryptocurrency

technology, automatically makes it possible to achieve sustainable development by systematizing a set of constituent parts and explaining them using specific cases. A thorough survey conducted by the World Bank regarding adult utilization of financial services, emphasising the effects of the COVID-19 epidemic. It emphasizes the rapid advancement of digital payments, the contribution of digital solutions to enhancing governance, and the emerging prospects for financial inclusion, particularly via digital transactions such as government disbursements and salaries. The research, derived from surveys conducted in 123 economies, assesses behaviors associated with financial resilience and highlights disparities in access for women and impoverished individuals, as indicated by the World Bank [7]. Kiff and Alwazir [8] analyzed that the essential factors regarding central bank digital currency (CBDC) intended for public usage, grounded in an extensive evaluation of recent studies, central bank trials, and current dialogues among stakeholders. This examines the motivations behind central banks' exploration of retail CBDC issuance, along with policy and design considerations, legal, governance, and regulatory views, as well as cybersecurity and other risk factors.

Nassiry [9] contended that blockchain cryptocurrencies have the ability to enhance transparency in financial transactions, lowering corruption and enhancing confidence in financial institutions. He also points out the potential of decentralized finance (DeFi) to lower transaction costs and facilitate cross-border remittances. Cryptocurrencies have been examined for their ability to help attain Sustainable Development Goals (SDGs).

3. Research gap

Despite increasing interest in digital financial currencies (DFCs) and sustainable development, there are some gaps in the current literature: Limited Empirical Studies on DFCs and Sustainable Development Goals (SDGs). While digital finance and financial inclusion have been researched only fewer studies have specifically examined how DFCs (such as CBDCs, stable coins, and cryptocurrencies) specifically help achieve several SDGs.

2. Lack of Longitudinal Data on Changes in Financial Behavior Current research is mostly concerned with short-term adoption patterns and not the long-term change in financial behavior induced by DFCs. This research tries to bridge this gap by examining data over several years (2014, 2017, 2021), but more research with longer time periods is needed to capture enduring behavioral changes.

3. Shortage of Regional and Context-Specific Analysis
Most current studies take a global or national level approach overlooking regional difference in DFC uptake. Developing economies especially might have special regulatory, technological, and socio-economic challenges that need localized policy suggestions.

4. Regulatory and Policy Challenges in DFC Implementation
Although literature explains regulatory risks of digital currencies, there is less work on how effective regulation can be in striking a balance between financial innovation and security and economic stability.

4. Objectives

- To analyze the role of digital financial currencies in promoting financial inclusion.
- To examine the impact of digital currencies on sustainable economic growth.
- To explore the potential of blockchain and decentralized finance (DeFi) in fostering transparency and reducing financial fraud.

4. Limitation of the study

The data for the study comes from secondary sources including the IMF, World Bank, and Central Banks for the years 2014, 2017, and 2021.

These datasets provide valuable insights at the macro level, but do not capture the individual user level data, digital literacy, and other economic factors that may influence DFC adoption.

The analysis is restricted to access, transactions, and savings, overlooking investment activities, loans, business financing, and broader funding opportunities.

Differences in policies about DFC adoption across different regions are ignored in this study.

It is likely that some countries with strict regulations on digital finance adoption will differ greatly from those who are more friendly toward cryptocurrencies.

5. Research Methodology

The research was conducted using quantitative method, emphasizing statistical methods in examining how digital financial services are used and how they relate to financial accessibility. This study measures the

association between financial services and financial access with the quantitative correlational research approach. This study is based on the assumption that certain data concerning varying periods of critical financial variables can reveal relationships and changes. Another technique in estimating future.

Data Selection

To account for the evolution of digital financial uptake over various time periods, data for three landmark years 2014, 2017, and 2021 were selected. These are landmark years in the dissemination of digital finance globally, hence enabling comparison of changes in financial behavior. The study has three primary variables:

Active Digital Users: Counts the number of people using digital financial services (e.g., mobile banking, crypto, e-wallets). This is a measure of the trend of financial inclusion.

Digital Payments: This is the volume of transactions that are conducted on digital platforms, providing valuable insights into the growth in digital finance usage.

Financial Institutions Saving: This factor reflects conventional saving behavior, making it possible to study whether rising digital transactions are related to changes in saving behavior.

The chosen variables offer a comprehensive perspective on digital finance uptake, ranging from user engagement, transactional behavior, and savings patterns. Reviewing these variables over time is possible and assesses whether or not digital finance expansion is crowding out, or supporting existing financial customs.

Data Source

The research uses secondary data gathered from globally recognized financial institutions to ensure reliability and accuracy:

- International Monetary Fund (IMF) Offers macroeconomic analysis of digital financial adoption patterns.
- World Bank Global Findex Database An extensive database of information on financial inclusion, use of e-payments, and banking outreach by regions.

6. Data analysis and interpretation

The objective is to quantify both the magnitude and direction of the relation among various financial variables, including digital users, digital payments, and financial savings. Using excel sheet correlation analysis is performed.

The data suggest that there is complete positive correlation of 0.999 among active digital users and digital payments, which indicates where there is growth in digital users, there is the growth of digital payments.

There is negative but weak correlation -0.215 among digital use of financial services (active users & digital payments) and financial institutions' savings, which means that digital financial activities growth does not have strong corresponding growth with increased financial savings.

The Pearson correlation coefficients among the variables are as in Table 1:

Table 1
Correlation coefficients among the variables

Variables	Correlation Coefficient
Active digital users & Digital payments	0.999 (Very strong positive correlation)
Active digital users & Savings	-0.215 (Weak negative correlation)
Digital payments & Savings	-0.172 (Weak negative correlation)

Percentage Analysis:

The table 2 below shows the percentage contribution of each category

Table 2
Percentage Analysis

Category	2014 (%)	2017 (%)	2021 (%)
Active Digital Users	37.8	37.27	42.75
Digital Payments	37.8	37.27	41.65
Savings at Financial Institutions	24.41	25.46	15.6

Active digital users and digital payments have demonstrated a consistent rise in percentage year by year, with active digital users reaching 42.75% in 2021. Savings in financial institutions has fallen considerably from 24.41% in 2014 to 15.60% in 2021, showing a decline in the use of conventional savings methods.

The digital payments and savings gap is increasing, indicating that consumers are increasingly transacting digitally but not necessarily saving through financial institutions.

Time series analysis

To predict the future trends of digital finance adoption and government payments disbursements through to the year 2030. Future trends inform policy formation and investment strategies to ensure financial institutions are well prepared for expansion in digital payment in the future as shown in Table 3.

Table 3
Time series Analysis

Year	Forecasted Government Payments (%)	Forecasted Digital Users (%)
2024	14.9	41.31
2027	18.34	47.66
2030	21.79	54

The amount of government payments received is projected to grow and touch payments received is projected to 21.79 % in 2030. Active Digital users are also projected to increase by 54% in 2030. The trend indicates steady digital financial growth, which would probably be attributed to enhanced usage and government stimulation.

7. Discussion

Role of Blockchain and DeFi in Transparency and Fraud Prevention: While blockchain is still gaining awareness, those familiar with it recognize its potential for transparency and fraud prevention. Higher the interpretation of usage of digitalization higher are fraudulent activities. This study highlights the need for stronger security measures in digital financial transactions.

Blockchain uses a distributed ledger where all the transactions are publicly recorded and cannot be tampered with once authenticated. This Prevents Fraud, double spending, and financial fraud. Blockchain transactions are verifiable by everyone, and this can be audited in real-time. This eliminates the risk of concealed transactions, money laundering,

and accounting fraud. Chain analysis offers blockchain analytics to identify suspicious transactions in DeFI ecosystems.

Traditional finance uses centralized intermediaries (banks clearing houses), which means higher likelihood of fraud and corruption. DeFI platforms facilitate peer-to-peer transactions, decreasing reliance on middlemen and opportunities for bribery, embezzlement and insider fraud. Blockchain monitoring powered by AI can identify suspicious transactions, hacking activity and patterns of fraud in DeFi networks.

8. Conclusion

This research highlights how digital financial currencies (DFCs) can spur economic growth, increase financial transparency, and enhance financial inclusion all of which can greatly influence sustainable development. Since statistical research supports a strong relationship between the use of digital currency and financial access. The findings indicate that digital currencies significantly enhance financial access particularly among the unbanked. Moreover, it was found that the core drivers of economic transformations are blockchain technology and decentralized finance (DeFi)

Finally, although digital currencies provide a potential means to achieve the Sustainable Development Goals (SDGs) smart policy and technology advancements alone will be able to fully exploit their potential. Future research should focus on refining regulatory approaches and exploring innovative DFC applications to enhance their contribution to sustainable development globally.

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