

Agpaytech's Research

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Africa CBDC Series

Comparative Analysis: eCedi CBDC and Mobile Money in Ghana



Agpaytech

Foreword

"CBDC presents a great opportunity to build a robust, inclusive, competitive, and sustainable financial sector, led by the Central Bank. From all indications, the concept has a significant role in the future of financial service delivery globally. This project is a significant step towards positioning Ghana to take full advantage of this emerging concept".

*Dr. Ernest K. Y. Addision
(Governor of Bank of Ghana)*

Executive Summary

Keywords: · Central Bank Digital Currency (CBDC) · eCedi · Mobile Money · Ghana
· digital currency

This report provides a more robust understanding of Digital Cedi (eCedi) and Mobile Money (MM) Payment in Ghana. It focused on the global perspective of mobile money and Central Bank Digital Currency (CBDC), their associated features, design models, and potential implications and interrelationships in achieving cash lite economy. The report explores the evolution of mobile money and digital currencies and the perceived positive impact on financial inclusion. The paper highlighted the political and CBDC design concerns and justified the operational features and advantages among eCedi and Mobile Money.

This report is developed based on existing literature on the mobile money payment system, central bank digital currency (CBDC), eCedi, and cross-border payment models.

The report indicated that mobile money is used widely in the Ghanaian communities, with a fierce competitive advantage from flexibility, service convenience, familiarity, and offline operability. Besides, the MM has provided jobs to millions, eased peer-to-peer transactions, and linked with the commercial banks to offer several banking services.

The proposed eCedi is expected to perform similar functions as mobile money and overcome cross-border settlement challenges. In the midst of Ghana introducing E-Levy poses a significant acceptance obstacle to retailers or individual consumers. Currently, no distinct operational feature of eCedi is known apart from being issued by the Central Bank of Ghana as the official and legal tender.

This paper concludes that the launch of eCedi is a signal of financial inclusion competition and breaking the market dominance of Mobile Money Operators (MMOs) in the financial industry of Ghana.

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Objectives and Approach

Objectives

This report looks at eCedi and Mobile Money Payment systems in Ghana. Agpaytech examines the digital currency designs and features and provides holistic analysis between Bank of Ghana proposed eCedi and Mobile Money.

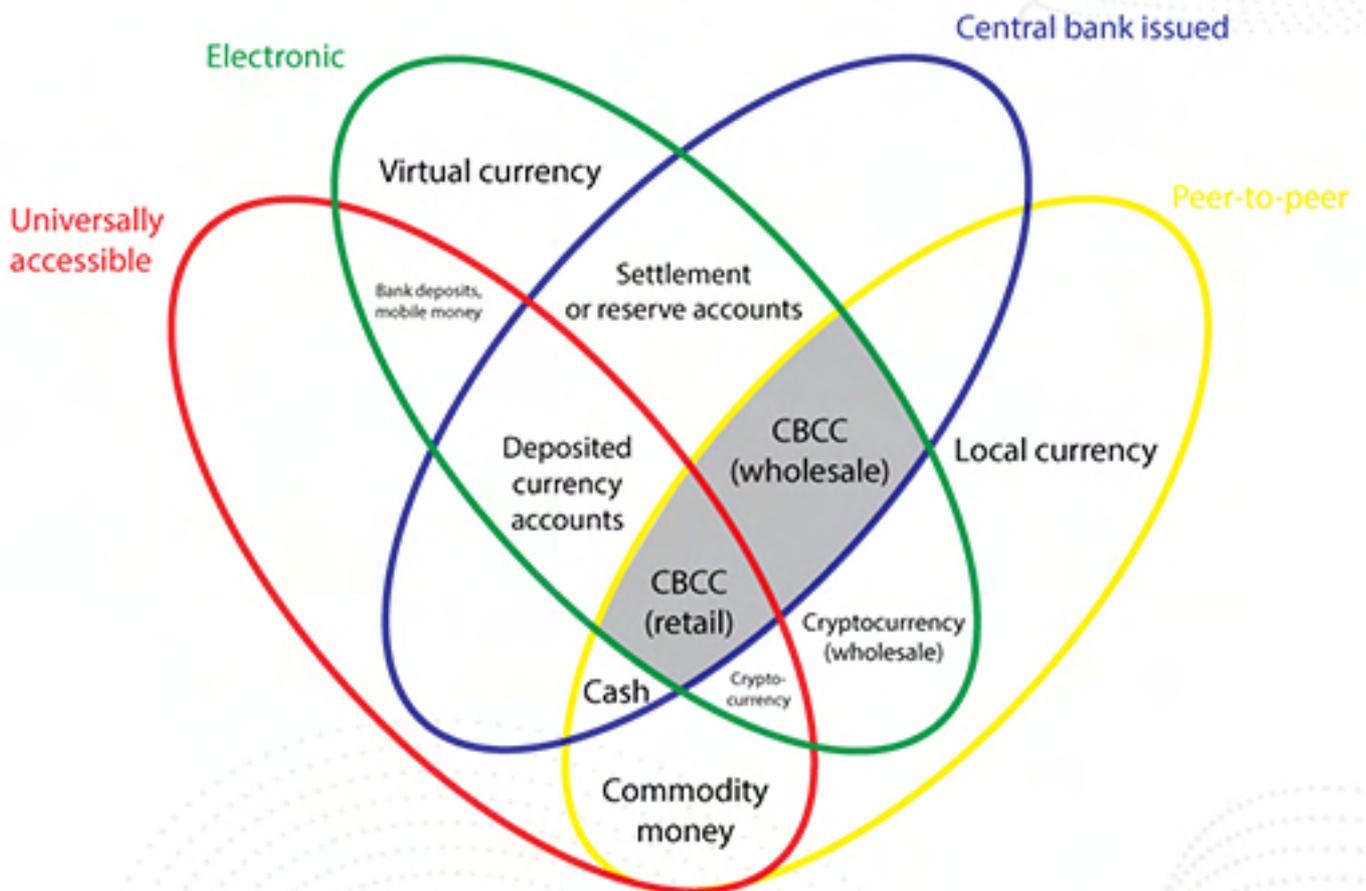
Methodology

This report is developed based on existing literature and reports on mobile money payment system, central bank digital currency (CBDC), eCedi and cross-border payment models.

Introduction

Money has been the most effective and efficient instrument to make transactions solving the problems that exist with barter trade. Currently, the monetary instrument is moving beyond just physical cash to a more convenient, cheap, and user-friendly form of mobile or digital money. The electronic nature of money has made it a means of financial inclusion for millions of people worldwide.

Figure 1: The flow of Money



Source: Bank for International Settlement (2018)

Participants of Payment Systems in Ghana

Ghana's payment system comprises of four actors. Each has a unique and equally importance role in the payment system.

- i) **Central Bank**- The central bank has the legal mandate to regulate all the activities of the other banks and payment service providers. The Bank of Ghana is an overseer, operator, and payment system, participant.
- ii) **Commercial Banks**- Commercial banks participate in the system by making and receiving payments on their behalf or to their customers.
- iii) **Service Providers**- The service providers are the printers of payment instruments and telecommunication companies who provide the infrastructural arrangements for the payment system.
- iv) **Users**- Users are the retail consumers, individuals that pratonize the financial service for thir transactions and other purposes.

Central Bank Digital Currency

Global Perspective

Many countries worldwide are researching, piloting, and implementing diverse versions of Central Bank Digital Currency (CBDC). According to a survey from late 2020, 86% of global central banks are conducting research on CBDCs, and as of July 2021, 56 central banks have publicly communicated their research or development efforts (Boar & Wehrli, 2021; Auer et al., 2020).

Motivations for central bank digital currencies, especially in emerging markets and developing economies, range from main efficiency gaps in the domestic payment infrastructure to broadening financial inclusion (Mancini-Griffoli et al., 2018). Mikhalev et al. (2021) described CBDC as a new form of electronic money that, unlike well-known cryptocurrencies, e.g., Bitcoin or Ether, is issued by central banks of certain countries.



The Central Bank of Bahamas and Central Bank of Nigeria have launched their Sand Dollar and eNaira respectively. Moreover, The Bank of Russia (BoR) has announced the commencement of its Digital Ruble trials despite the higher adoption of Bitcoin in the country.

Bank of Ghana Digital Currency (eCedi)



Like many central banks, The Bank of Ghana (BoG) is working towards issuing its own digital currency namely the eCedi. As part of the “Digital Ghana Agenda”, The Bank of Ghana has signed an agreement with G+D to implement a pilot CBDC project as a precursor to the issuance of a digital form of the national currency, the eCedi (BoG Report, 2021).

What then is Bank of Ghana eCedi?

The eCedi should be legal tender that is changeable into cash and other private monies, denoting that it will have a stable value. In addition, it should be universally accepted as another transactional means to exchange value between peers of retail payers and payees, banks and other statutory agencies.

Following Morales-Resendiz et al. (2021), the eCedi should help to supplement cash for retail transactions with digital convenience at little or no cost. The eCedi should be secure, resilient and adaptable payment infrastructure, whether existing or new. Lastly, eCedi should be interoperable, fully available (24/7) and work on the basis of standards and rules.

Why Bank of Ghana's eCedi ?

i) Complete reliance on physical cash makes payment difficult.



ii) Bank of Ghana needs to have its own digital currency for control, stability and regulatory purposes.

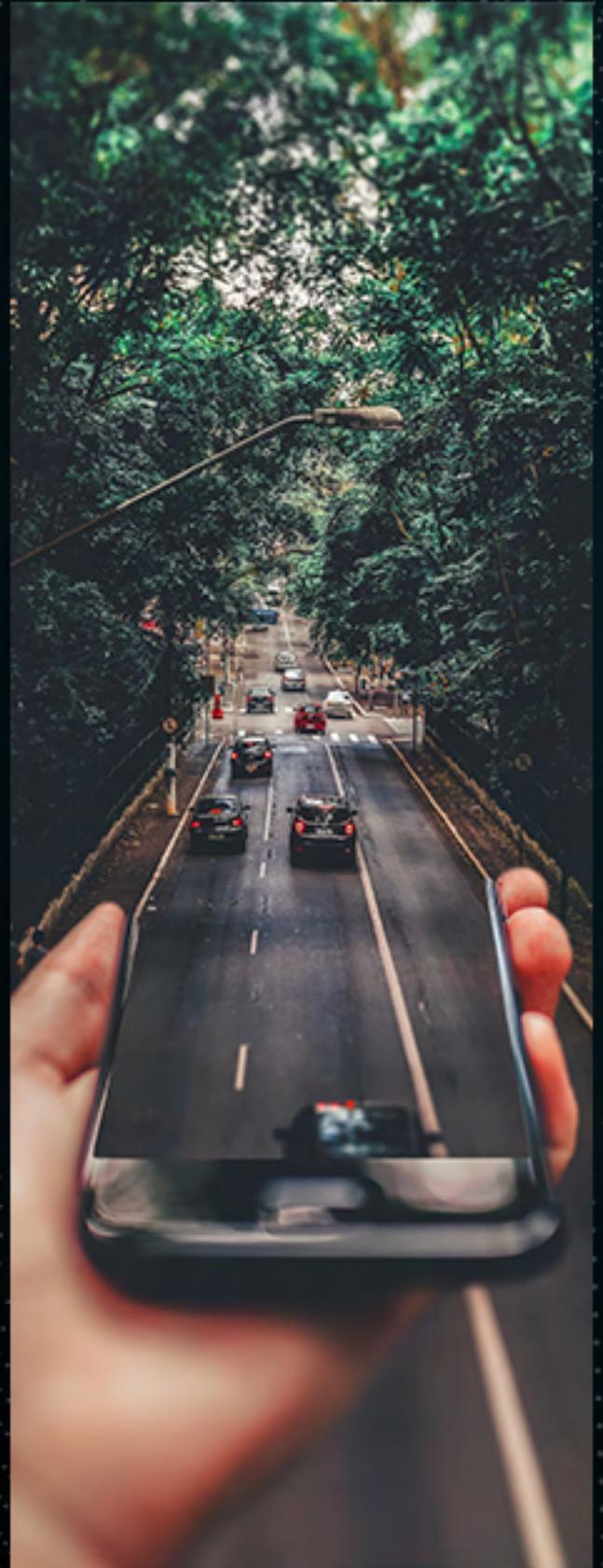
iii) In Ghana, cash remains the most preferred method to pay for goods and services. Majority use mobile money to send and receive money, not to pay for commodities.

Mobile Money Payment

Mobile Money (MM) is an electronic wallet service available in many countries which allows users to store, send, and receive money using their mobile phones operated with or without the internet (GSMA, 2013)

MM has shown considerable early success in driving the digitization of payments in Ghana's cash-dominated economy (GSMA Report, 2020). Interestingly, the Bank of Ghana Financial and Economic Data Report (2020) asserted that the total registered mobile money accounts stood at 32.7 million, whereas the total transactions value of GH¢ 30.1 billion as of February 2020. Moreover, Statista Data (2022) showed that as of January 2021, 38.9% of the population aged 15 years and older had a mobile money account in Ghana.

Similarly, Stanbic Bank Team Report (2021) indicated that MM transactions have emerged as Ghana's most preferred digital payment method. According to the report, mobile money subscribers increased by 15% in 2020, with an estimated value of transactions at GH¢589 billion.



The Politics around CBDC

Global CBDC Politics

The global interest in cryptocurrencies and Stable coin, Facebook Libra, and others have compelled central banks to develop their digital sovereign currencies. For instance, China is leading the pack with the digital yuan. The contest to unveil the world's first major central bank digital currency (CBDC) and its politicization signal the start of a

subtle competition between developed economies, political groups, and regional associations. US policymakers are increasingly cautious of the challenge posed by the momentum of China's digital yuan efforts (Dylan & Karyn, 2021). US Federal Reserve Chair Jerome Powell said in February 2021 that the digital dollar is a "high priority project".

"We are looking carefully, very carefully, at the question of whether we should issue a digital dollar" Powell (Chair of the Federal Reserve of the United States).

The Bank of Japan has also confirmed its launch of a digital Yen. Central Bank of Taiwan's President Yang Jinlong, who said that Taiwan is in "no hurry to launch a digital currency," has since launched its own retail CBDC trial in September 2020. On April 19, 2021, the Bank of England and HM Treasury announced the joint creation of a Central Bank

Digital Currency (CBDC) Taskforce to coordinate the exploration of a potential UK CBDC. They have formed two forums; A CBDC Engagement Forum and A CBDC Technology Forum that seeks all non-technology stakeholders and technology expertise to collaborate and deliberate on a feasible CBDC model deeply.

Ghana's eCedi: Policy Criticisms

The potential introduction of Ghana's digital currency (eCedi) is likely to meet heavy criticisms due to the political circumstances, historical financial fraud cases (collapse of banks, DKM, God is Love, Menzgold, mobile money fraud), and current E-Levy agitations.

On November 17, 2021, the Minister for Finance announced during the presentation of the 2022 Budget Statement and Economic Policy of Government to the Parliament of Ghana the introduction of an "Electronic Transaction Levy" (E-Levy) of 1.75% on electronic transactions above GH¢ 100 per day to take effect from February 1, 2022. The E-levy will be applied to **mobile money payments, bank transfers, merchant payments, and inward remittances** (*MoF Budget Highlights, 2022*).

According to the Finance Minister, the country's total digital transactions for 2020 were estimated to be over GH¢500 billion. As a result, the Government is projecting to generate in tax revenue of about GH¢6.96 billion in 2022 (*PwC Budget Digest, 2022*).



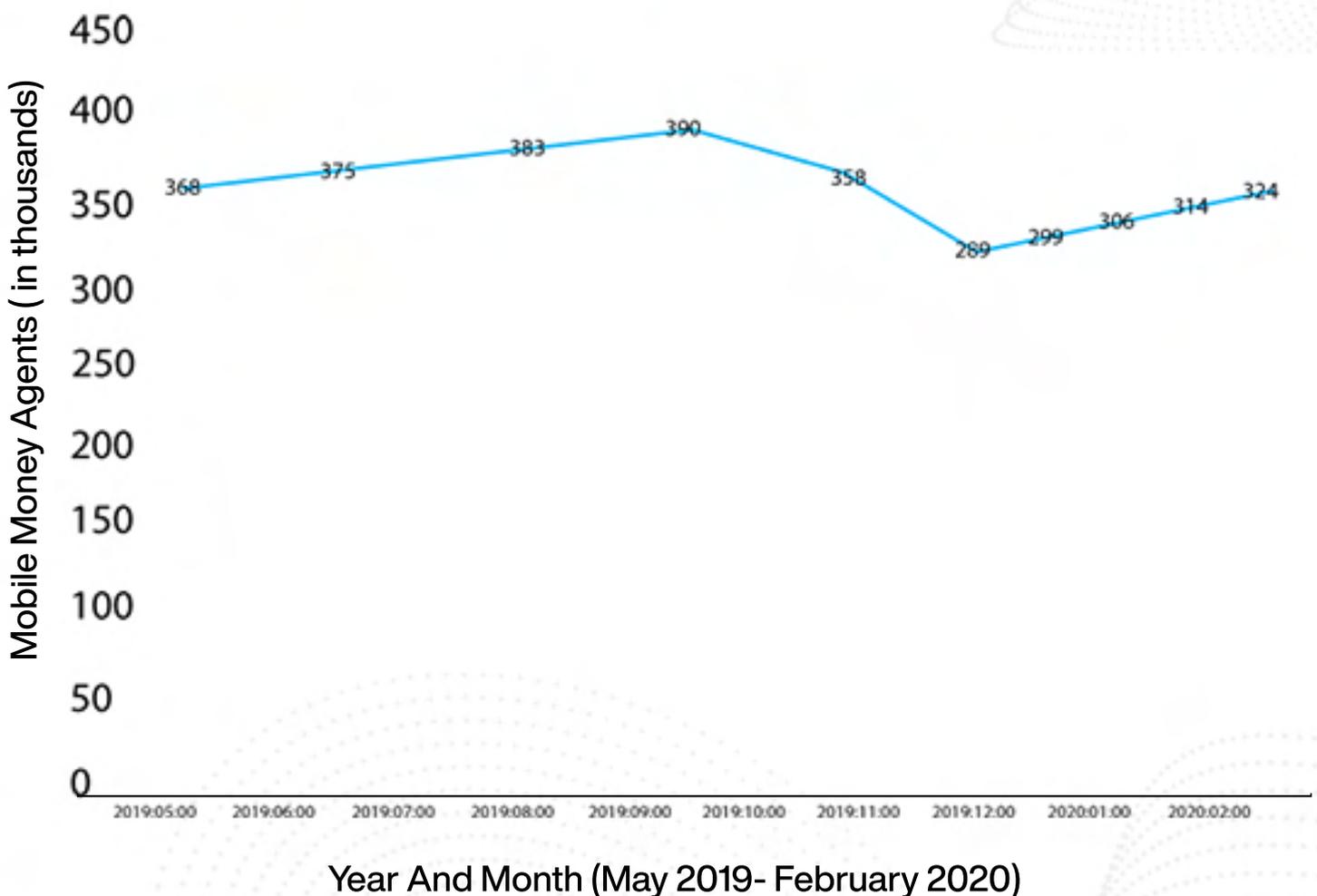
Agpaytech Research Team remains neutral and provides a holistic evaluation of the tax effects on consumer behavior and digital financial inclusion.

- We estimated that E-Levy operationalization will drop the total mobile money transaction value by 20% in the first 36 months. This will make the campaign for eCedi more of a political propaganda than the Bank of Ghana's independent policy. Implementing the tax (E-Levy) will discourage many people from adopting eCedi since they will see it as a tax collection avenue.
- Thoughtfully, the classification of the E-Levy means eCedi is no exemption. eCedi falls under banks to wallet transfer, mobile money payments, or inward remittances, making it justifiable to E-Levy. For instance, a person using eCedi and mobile money payment services will be taxed respectively if passing the threshold of 100 Gh¢ per day.
- Besides, the Ghana Revenue Authority (GRA) says plans are far ahead in taxing electronic commerce and online business from April 1, 2022 (GRA 2022 Management Retreat). The GRA systems, including e-commerce, betting, and gaming platforms that operate on the Ghanaian internet, are tax compliant. For this reason, eCedi Wallet for online transactions purposes will be subject to transactional costs decreasing its user intentions.
- Moreover, examining the financial knowledge spectrum in Ghana, there is no way eCedi acceptance and penetration rate can overtake mobile money in the first decade of its implementation.

Business or Profit Avenue

According to the Bank of Ghana (2020), the total registered mobile money agents as of February 2020 were 324 000. This denotes that mobile money is creating massive employment for many people. The total registered mobile money agents are shown in figure 2.

Figure 2: Registered mobile money agents



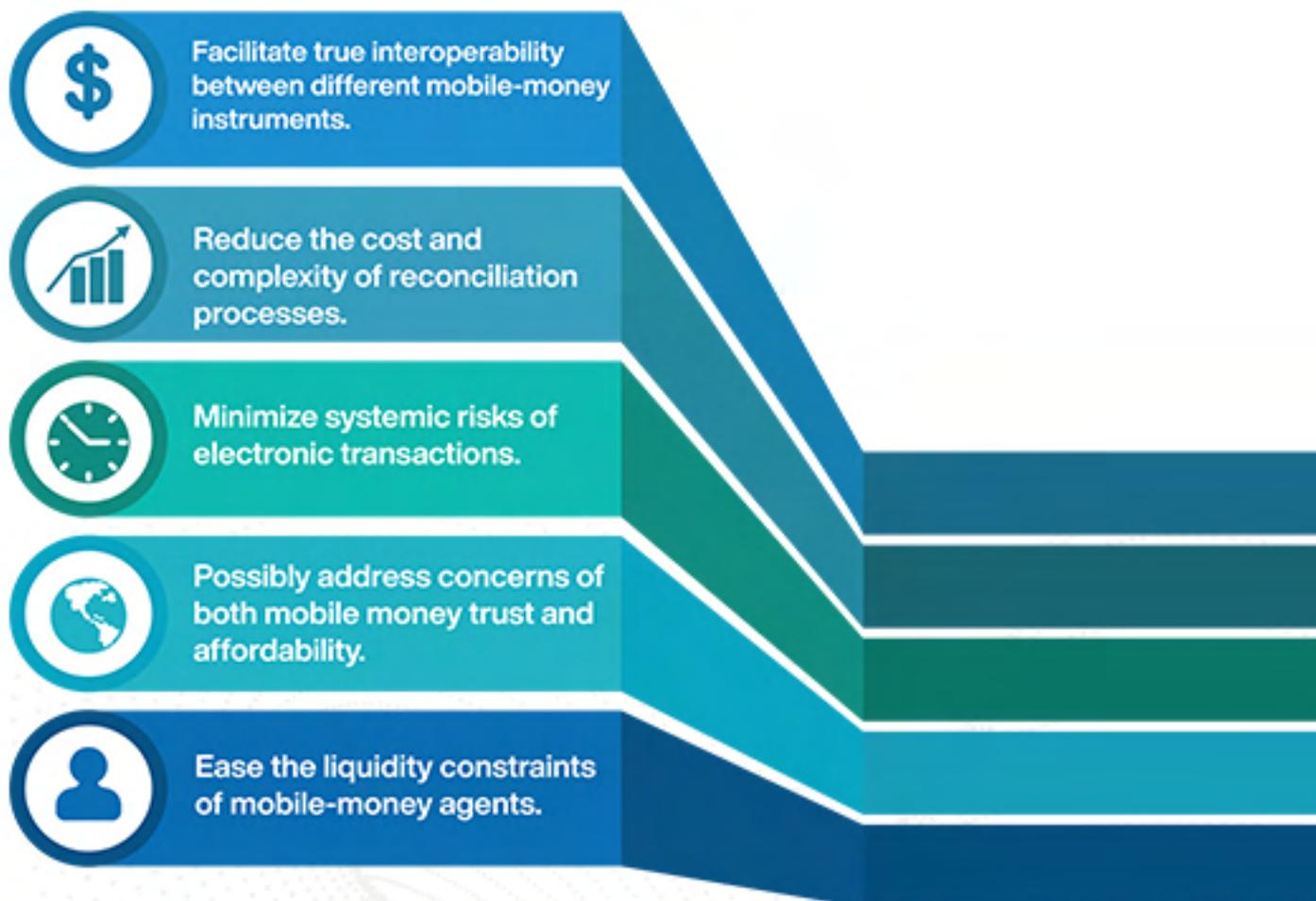
Source: Bank of Ghana Economic Data Report (2021)

eCedi Operational Features

Our earlier report indicated that a hybrid retail CBDC would be more appropriate for Ghana considering the number of private commercial banks and PSPs development. In this case, the most efficient retail eCedi CBDC architectures would involve all the commercial banks and other PSPs as intermediaries while championing both account-based and token-based for consumers to compete with mobile money to achieve financial inclusion.

To coexist and compete effectively with the existing mobile money system, the Bank of the financial objectives since the majority of the Ghanaian population have difficult access to the internet nor use non-smartphones. Ghana explained that eCedi design would have an offline payment feature to achieve.

Figure 3: Expectation of eCedi



Source: Agpaytech Research

Table 1: eCedi features and potentials

<i>Key features</i>	<i>Insight</i>
Philosophy	<ul style="list-style-type: none"> • Do no harm to other payment system • Coexist with all payment systems in Ghana • Promote financial inclusion • Wider digitalization and online business
Purpose	<ul style="list-style-type: none"> • eCedi is a means of payment just like the physical cash • Providing trusted money • offer users privacy, reduce illegal activity, and facilitate fiscal transfers of money
International Cooperation	<ul style="list-style-type: none"> • Potential for cross-border interoperability and payment settlement
Design and technology	<ul style="list-style-type: none"> • eCedi architectural choice is not known yet but it is likely to use the hybrid model where BoG will involve intermediaries to issue eCedi funds to the consumers. • The BoG is encouraged to use a token-based system that could make a CBDC more amenable to offline use (ie when connectivity to the ledger is not available), which is a core feature of a CBDC.
Operational features	<ul style="list-style-type: none"> • Convenient: eCedi payment should be easy to use like cash • It should be acceptable nation wide • eCedi should be at a very low cost no cost to users
Design Features	<ul style="list-style-type: none"> • Interoperable: the system should be compatible and interact with other payment mechanism • Offline functionality: the eCedi should be design in such a way that with or without internet it could function. • Robust: the system should be subject to conditions, it should stand operational failures, and technical compatibilities with other devices. • Authentication: payment validation should be either token or identity-based with recognized user bearing ID • Security and Privacy: eCedi registration and requirement is expected to be easy with by using Ghana Card and Passport as two major identifications to provide secure payment system. This will overcome the insecure and easily accessible mobile numbers where fraudsters could track and withdraw from retailers and merchants.

Source: Agpaytech Research

Figure 4: Mobile money features



Source: Agpaytech Research

Key Findings: eCedi Vs Mobile Money

- Remove the risk of interoperability

eCedi is a self-contained instrument that will improve unified payments across service providers, merchants and retailers that will reduce the connection costs of multiple transfers from intermediaries like the case of mobile money.

- Remove unclear supervision structure

eCedi will be issued and control by Bank of Ghana and they provide clear mechanisms for managing withdrawals, deposits, fraud cases. In the case of mobile money, when fraudsters succeed in withdrawing monies from one account no explicit procedures are taken to traced or get the money back.

- eCedi will boost payment efficiency and reduce risk

eCedi will simplify the elimination of third party-party intermediaries from the clearing and settlement of payments. Money transfer will need the approval and reconciliation from Central Bank unlike the case of mobile money.

- Reduce over reliance of mobile money merchants

Bank of Ghana's eCedi will facilitate the cash flow of rebalancing needs of merchants. The eCedi will be decentralized to individual consumers to make easy withdrawals and deposits thereby reducing the dependency of mobile money agents. Moreover, it is likely the eCedi wallet will allow any bank or merchant to access fund on-demand as independent holders. This process will eliminate the situation where merchants with insufficient balance have to wait on their banks to load them money.

Conclusion

The acceptability and usage of mobile money in Ghana has gone wide. Today, mobile money services are largely used by many to transfer funds and make payment transactions. Its usage experience, familiarity, offline transaction services and service convenience pose greater obstacles to pave way for new digital currency. Mobile money services have improved over the time and most Ghanaians preferred using it to transfer money from one person to another person (P2P), buying airtime, paying for utility bills, Gold and DSTV bills, salaries of some workers, taxi fares, micro-credit, savings, and micro-insurance making it difficult to switch attention other payments platform.

Considering eCedi from the wholesale design perspective, it will have great acceptance and penetration rate among the commercial banks, payment service providers, and the Bank of Ghana like the South Africa's Project Khokha, which focuses on the settlement of high-value transactions between commercial banks and other stakeholders at the wholesale level. On the contrary, retail eCedi is will face countless challenges due to inadequate and poor infrastructure, low literacy rate, over dominance and reliance of mobile money services and skepticism to accept new technology.

Lastly, eCedi also presents the possibility of threatening the intermediation role of traditional deposit-taking banks and reducing the over dependency of mobile money payment across Ghana. With the direct CBDC system, there is likelihood to eliminate over reliance of mobile merchants or agents to transfer money.

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About Agpaytech

AGPAYTECH is a company pioneering in the Fintech Space with a focused approach on building robust technologies for eCommerce Card Processing Solution for Payment Service Providers (PSPs). Additionally, we provide Compliance and Regulatory Umbrella, Remittance-as-a-Service White-Label Solution, Foreign Exchange, Cross Border Payments, digital currency technology. We have partnered with multiple banks, non-banking financial institutions, and corporate organizations to create a solid service delivery model for them and their customers to ease their international remittances and payments. info@agpaytech.com