Adoption of Central Bank Digital Currency in the Era of Mobile Money in Ghana

EDWIN OSAFOH, MICHAEL KODOM (Corresponding)

Abstract: *The global push towards central bank digital currencies (CBDCs) presents a unique challenge in developing economies with established mobile money (MoMo) ecosystems. This study investigates the determinants of CBDC adoption in this context, focusing on Ghana's eCedi. Data from 1,001 survey respondents and 16 in-depth interviews were analyzed using a probit model. The results indicate that tertiary education increased adoption likelihood by 25.6%, mobile phone ownership by 7.1%, and prior eCedi awareness by 6.6%, with notable gendered variations in these drivers. Crucially, the decision to adopt is contingent on the eCedi offering superior utility—such as lower transaction costs and enhanced security—compared to incumbent MoMo services. Conversely, concerns over potential fraud and high fees are identified as significant barriers to adoption. This study provides critical insights for policymakers, demonstrating that the success of a CBDC in a MoMo-saturated market depends not on replication, but on offering a demonstrably better value proposition to users.*

Keywords: eCedi, Central Bank Digital Currency (CBDC), Mobile Money, Adoption, Financial Inclusion

Introduction

Edwin Osafoh (edwin.osafoh@gmail.com) PhD Candidate, Accra Institute of Technology; and works at Banking Supervision Department, Bank of Ghana
Michael Kodom (mkodom@ug.edu.gh) ISSER, University of Ghana

The confluence of technologies is driving the global development of digital currencies and payments globally (Sun & Ryan, 2023). Digital currencies can take many forms, and cryptocurrencies are currently among the most popular digital currencies. However, cryptocurrencies are not issued by central banks or other central authorities, making them difficult to regulate (Ozili, 2024). Simultaneously, in several countries, cash use declined very slowly. In response to global economic phenomena, increasing attention is being paid to the possibility of introducing digital currencies (Singh & Yadav, 2025; Bank for International Settlements, 2020).

Central bank digital currency (CBDC) is a digital representation of the sovereign currency issued by a jurisdiction's monetary authority, which appears on the liability side of the monetary authority's balance sheet (Boar & Wehrli, 2021). It is a central bank's electronic fiat liability used for storing value and as a payment medium for payments (Meaning *et al*., 2021). Thus, CBDC is an electronic value that can facilitate payments similar to paper currency (Bordo & Levin, 2017; Duho *et al*., 2022). A CBDC fulfils three core functions of money: a store of value, a medium of exchange, and a unit of account. More specifically, central bank money comprises cash and required reserves, with the latter being digital, earning interest rates, and accessible only to limited financial institutions, while not preserving user anonymity, which distinguishes it from cash (Bank for International Settlements, 2020). Initiatives for CBDC have sprung up worldwide in the last decade, and interest in this subject is continuously growing. The potential benefits of CBDCs are manifold, namely, the provision of risk-free digital means of payment, preservation of monetary sovereignty, increased competition with bank deposits, strengthening of the transmission of monetary policy, and protection of privacy with digital payments (Darbha & Arora, 2020; De los Rios & Zhu, 2020). CBDCs also have the potential to increase financial inclusion, enhance remittance flows, reduce tax evasion, and improve national monetary policies (Ozili, 2023).

CBDC adoption is contingent upon five key factors: clear policy objectives, broad stakeholder support, robust legal framework, advanced technology, and market readiness (Cheng *et al*., 2021). According to Tan (2023), the objectives of CBDC can be achieved if both consumers and merchants adopt and use them. Convincing the two to adopt CBDC remains a major challenge for countries that have issued or are planning to issue one (Tan, 2023). Evidence from 11 countries that have already rolled out their CBDCs shows that the adoption period has been prolonged. For instance, the adoption rate of the eNaira in Nigeria is approximately 0.5%, whereas that in Bahamas is as low as 0.1%. Similarly, the adoption of the Eastern Caribbean DCash and Jamaica JAM-DEX has been very poor, with the Bank of Jamaica citing non-adoption by merchants as a significant challenge (Tan, 2023; Ree, 2023).

On the other hand, the leading CBDC is the Chinese Digital Yuan (e-CNY). China was the first country to launch a pilot program in four major cities in May 2019 and expanded into seven regions in July 2021. As of June 2021, there were more than 20.87 million personal wallets and over 3.51 million corporate wallets, with transaction volumes and values of approximately 70.75 million and RMB 34.5 billion, respectively (People's Bank of China, 2021). A recent study found that people's willingness to adopt e-CNY is influenced by their perceived security, usefulness, and comparative advantage (Liu *et al*., 2024). In an earlier study, Xia, Gao and Zhang (2023) found that payment privacy, system characteristics, and government support influenced the decision to adopt, with the cost of switching negatively affecting adoption.

If well designed, CBDC has the potential to spur growth in developing economies. However, it is uncertain whether African economies can harness the potential of CBDC due to constraints such as underdeveloped payment systems, high digital illiteracy among the populace, cybercrime, and poor infrastructure. Additionally, African economies have yet to put systems in place to mitigate potential risks with CBDC, most of which may be discovered only with increasing use (Ozili, 2023). Notwithstanding these constraints, central banks in some African economies have advanced to the stage of piloting and issuing digital currency. Ghana is one of the few African countries that has taken steps to test and roll out digital currency as part of its financial sector digitization program. Other African countries attempting to introduce digital currencies include South Africa, Nigeria, Tunisia, and Senegal (Duho *et al*., 2022). Given the failures of other pilot CBDCs, why would Ghana's outcome be any different?

Ghana has aggressively pursued a digitalization agenda since 2017 under the 'Digital Ghana Agenda.' The Bank of Ghana's (BoG) pursuit to issue its digital Cedi (eCedi) falls "within the framework of Ghana's financial sector digitization program and the overall digitization agenda" (BoG, 2022, p.6). The eCedi is a retail-token-based CBDC for digital payment transactions. According to BoG (2022), the design of the eCedi is expected to achieve five strategic goals: "increase digitization of the Ghanaian economy; foster financial inclusion and consumer adoption of digital payments; anticipate the future role of BoG as an active regulator and facilitator of a digital economy; foster the possibility of a more secure, efficient, and resilient payment system; and address the risk of unregulated privately issued digital 'currencies' or virtual assets" (BoG, 2022, p.6). eCedi is expected to promote innovative and affordable digital financial services that can expand financial inclusion and drive the adoption of digital payments as an alternative to cash (BoG, 2022).

Despite the potential of the eCedi to drive Ghana's cashlite agenda, there are concerns among some stakeholders as to whether the government is rushing through the process, given that "central banks of other major economies such as the UK and USA have adopted precautionary tactics to roll out the digital currency" (Duho *et al*., 2022, p.4). Additionally, the introduction of CBDC in Ghana is occurring at a time when mobile money (MoMo) services have gained widespread prominence among the entire population. MoMo adoption has consistently increased since it entered Ghanaian financial market in 2009. Although the adoption rates were initially low, the convenience of making transactions, ease of use, and the level of social influence from other users, combined with the increasing proliferation of mobile phones and MoMo agents across the country and the growing use of mobile phones, has spurred the adoption rate (Kodom *et al*., 2022). Over the last decade, Ghana has witnessed a significant growth in the adoption and use of MoMo. Between 2012 and 2023, the number of active MoMo account holders increased by almost 6000 percent (from 345,434 to 20.9 million). Within the same period, the volume of MoMo transactions increased from 18 million to 6.8 billion, the value of transactions increased from GH₵594 million (US$315.7m) to GH₵1.9 trillion (US$158.8 bn), and active agents increased from 5,900 to 609,000 (BoG, 2024, 2016). Additionally, Ghana's successful completion of the interoperability platform enables users to transfer funds across different MoMo wallets, and between MoMo wallets and bank accounts. There is a possibility that Ghana's eCedi will suffer similar abysmally low adoption rates as Nigeria's eNaira if the BoG does not fully comprehend the factors that will drive its adoption. If MoMo already serves the same purpose as eCedi as a tool for digital financial payment transactions, what is the probability that people will adopt it when it implemented? What factors will influence Ghanaians' decision to adopt eCedi in the era of mobile money? What factors may hamper adoption? What key considerations should the central bank address to drive eCedi adoption? Answering these important policy questions is critical to provide the

Central Bank of Ghana and other developing countries who have high MoMo acceptability and yet are considering introducing digital currency into their economy.

The results of this study show that Ghanaians have a high willingness to adopt eCedi even in an era of high MoMo adoption. Factors such as education, mobile phone ownership, and awareness significantly increased the likelihood of eCedi adoption with gendered variations. More importantly, decision of people to adopt the eCedi is contingent on the value it offers over its competitor, MoMo. Thus, people are willing to adopt the eCedi if it offers superior value and utility relative to MoMo, notably lower transaction costs, and enhanced security but not if it offers same value or less. Concerns regarding fraud and high fees present substantial barriers to adoption.

The study makes a significant theoretical and policy contribution to contribution in three ways. First, applying the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) in a competitive landscape, it hypothesizes and confirms that for a new financial technology (CBDC) to succeed where a dominant incumbent (MoMo) exists, "perceived usefulness" is not absolute but comparative. The core finding—that adoption is contingent on the superior utility of eCedi over MoMo—refines UTAUT's "performance expectancy" construct. It shows that in saturated markets, adoption is driven by relative advantage (Rogers, 1995) in terms of cost, security, and convenience. Furthermore, by revealing significant gendered variations in how trust and mobile phone ownership influence adoption, the study powerfully validates and applies UTAUT's proposition that demographic characteristics moderate the effects of core constructs, a nuance often overlooked in policy design. Secondly, the financial inclusion discourse has moved beyond measuring basic access to financial services. This study engages with the next frontier: ensuring that digital financial services are not only accessible but also affordable, secure, and competitive. It directly informs SDG Target 8.10 on strengthening financial inclusion and 9.c on increasing access to information technology. By arguing that CBDC must offer superior value, it champions a consumer-centric approach that raises the quality bar for the entire digital finance ecosystem, ensuring that inclusion leads to genuine economic empowerment. Finally, a central debate in development economics revolves around the optimal role of the state versus the market. The MoMo ecosystem is a triumph of private-sector innovation. The introduction of a state-backed eCedi creates a natural experiment. This study provides critical insights for this global debate, suggesting that the state's role is not to replace but to complement and correct market failures—specifically, by offering a more secure, lower-cost, and regulated alternative that can drive down fees and improve standards for all users, thereby fulfilling a crucial regulatory and facilitative function.

The rest of the paper is organised as follows. The next section provides a theoretical review. The next section covers the data sources, estimation methodology, and findings. Based on these findings, the report concludes with policy suggestions.

Theoretical review

Several factors that influence the adoption of digital financial services (or financial innovations) have been hypothesised, based on theories of technological adoption. One of the popular earlier theories, the technology acceptance model (TAM) proposed by Davis (1989), predicts that the adoption of innovations is influenced by people's perceived usefulness and perceived ease of use, with the latter directly influencing the former. Perceived usefulness is the strongest predictor (Venkatesh *et al*, 2003). Studies that have tested TAM have discovered that in addition to these two variables, trust, complexity, relative advantage, risk, compatibility,

and social influence also have an impact on how innovations are adopted (Murendo et al, 2018; Azadavar *et al*., 2011; Echchabi & Olaniyi, 2012).

TAM does not consider variations in the drivers of adoption across demographic groups. The Unified Theory of Acceptance and Use of Technology (UTAUT) propounded by Venkatesh et al. (2003) is a synthesis of eight theories to accommodate the weakness in using one theory to explain the complex drivers and variations in innovation adoption. According to UTAUT theory, innovation adoption is influenced by performance expectancy (perceived usefulness), effort expectancy (ease of use), social influence (external influence), and facilitating conditions (organizational and technical support infrastructures). Venkatesh *et al*. (2003) further explained that demographic characteristics such as age, gender, experience, and voluntariness of use moderate the effect of these factors on the adoption of innovation. Recent studies in Ghana have discovered that perceived utility, perceived trust, transaction costs, social impact, feasibility, visibility or awareness, and compatibility all affect the uptake of digital financial services, such as mobile money, with variations across socioeconomic groups (Kodom *et al*, 2022; Osei-Assibey, 2015).

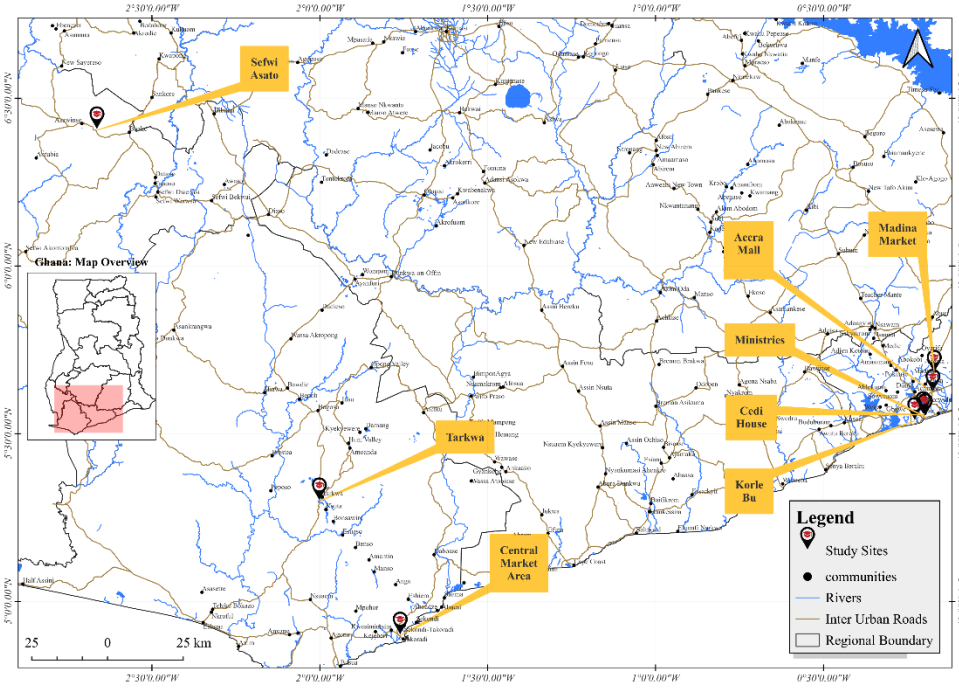
In the context of this study, we hypothesised that an individual's intention to adopt the central bank digital currency (eCedi) in a market saturated by MoMo adoption would be influenced by the superior utility an individual perceives to gain in adopting eCedi relative to MoMo. For instance, individuals will adopt eCedi if they enjoy higher convenience, lower transactional cost, and high consumer protection compared to the statusquo (MoMo). These drivers are expected to vary according to the demographic characteristics of the individuals.

Data and Methodology

The data for this study were collected using a mixed-methods approach comprising a survey and in-depth interviews. The survey was conducted in three regions of Ghana: the Western North, Western, and Greater Accra regions in 2023. These regions were selected because the BoG piloted eCedi. However, these regions are indicative of those across Ghana in terms of income level and economic characteristics. The study was conducted in the districts and communities where the pilot was conducted. Since the Central Bank carried out sensitization and education programs in the districts, it was assumed that some residents of these communities would have fair knowledge of the CBDC and its usefulness in informing their adoption decisions.

The intervention was piloted in eight communities: five in the Greater Accra region, two in the Western region, and one in the Northwest region (see Figure 1). A quota sample of 100 was allocated to the communities in the Greater Accra (500), 150 to each of the communities in the western region (300), and 200 to the communities in the Western North region (200). Thus, a total of 1000 respondents, with one additional interview bringing the total sample to 1001.

Figure 1: Map of the Study Area



Note: This map was constructed by the authors using the geocoordinates of the communities.

A systematic sampling approach was used to select the respondents. Each community was divided into four quadrants, and the samples were equally distributed among them. The numerators canvassed the length and breadth of the quadrant to estimate the total number of structures in the quadrant, which was then used to estimate the sampling interval. The survey protocol permitted only one randomly selected adult to be interviewed. Informed consent was obtained before the interviews were conducted, to ensure voluntary participation in the study. Data were collected using a Computer-Assisted Personal Interviewing (CAPI) system to minimise data entry errors and analysed using STATA 18 software. The interviews were conducted in person.

In addition to the survey, 16 people (all above the age of 18) were engaged in in-depth interviews to gather explanations to triangulate and further explain the survey results. Eight participants from the Western region and four participants from the Western North and Greater Accra regions were interviewed. They comprised nine males and seven females: 12 workers, 2 students, and 2 unemployed individuals. The interviews centered on their awareness of eCedi, the factors that influence their adoption or otherwise, and the perceived challenges that may hinder the adoption and use of the service. The interviews were recorded with the participants' consent, transcribed, and coded. They were then analyzed thematically (and deductively). Direct quotations from some respondents were used to support the findings.

Descriptive Characteristics

Table 1 presents descriptive characteristics and their associations with perceived eCedi adoption. Most of the respondents were male (53.7%) and young (70.2%). The results show no significant gender difference in eCedi adoption (p=0.635). This supports other studies which found no significant gender effect on digital finance (Zaimovic *et al*, 2025; Chamboko,

2024). However, the adoption rate was significantly higher among youth than among adults (p=0.000). Research has shown that young individuals are more responsive to CBDC awareness campaigns, adoption and use possibly due to their need to secure b

A greater proportion of the respondents had secondary (46.3%) and tertiary education (22.1%). E-cedi adoption significantly increased with higher levels of education, from 61.7% among those with no formal education to 94.8% among those with tertiary education. Higher education levels tend to increase digital literacy and financial literacy, which are crucial for enhancing people understanding and use of digital currencies (Sharma & Vashishtha, 2024; Mulyono et al., 2024). Education also enhances individuals' ability to analyse the risks and benefits associated with a particular digital currency thereby promoting informed decision on adoption or otherwise (Singh & Gulia, 2024).

Most respondents were employed (71.6%); however, employment had no significant association with eCedi adoption. Most of the respondents (98.2%) had mobile phones. The ownership of mobile phones significantly increased eCedi adoption by 32.3 percentage points compared to those without mobile phones. Ownership of mobile phones enhances accessibility and convenience for users of digital financial services especially in areas with limited banking infrastructure, thereby bridging the financial inclusion gap (Tunzina et al., 2024; Kodom et al, 2019).

A significant regional difference was observed in eCedi adoption (p=0.003). The intention to adopt eCedi was highest in the Western North Region (97%), despite it being the poorest of the sampled regions, followed by the Greater Accra region (88.4%), and the Western region (83.9%). This result may be driven by the intensity of public sensitization that the Bank of Ghana had before piloting eCedi.

Less than one-third of the respondents (30.4%) had heard of eCedi. The intention to adopt among those who had heard was eight percentage points higher than among those who had not heard (p=0.000). This is expected because awareness of the central bank digital currencies will influence individuals' perceptions about the functionalities and usefulness of the service. Like education, higher awareness of any digital financial tool through public education and stakeholder engagements increases people perception about its relevance, reduces misinformation about the service and thereby enhances trust in the service to drive adoption intention (Kumari et al., 2023; Almuraqab, 2020).

Table 1: Adoption of eCedi across Demographic Characteristics of Respondents

Variables	**Freq.**	**Percent**	**eCedi adoption *(%)***		
			Yes (%)	**No (%)**	**Chi-square Test**
Gender					
Male	559	55.84	89.62	10.38	$\chi2 = 0.225$
Female	442	44.16	88.69	11.31	Pr = 0.635
Age category					
Youth (18 – 35)	703	70.23	91.47	8.53	$\chi2 = 12.469$
Adult (Above 35)	298	29.77	83.89	16.11	Pr = 0.000
Educational status					
None	65	6.49	64.62	35.38	$\chi2 = 60.151$
Basic	253	25.27	83	17	Pr = 0.000

Secondary	462	46.15	93.07	6.93	
Tertiary	221	22.08	95.48	4.52	
Employment status					
Employed	707	70.63	88.4	11.6	$\chi2 = 1.637$
Unemployed	29.37	29.37	91.16	8.84	Pr = 0.201
Mobile phone ownership					
Yes	985	98.40	56.25	43.75	$\chi2 = 18.353$
No	16	1.60	89.75	10.25	Pr = 0.000
Regions					
Greater Accra	500	49.95	88.2	11.8	$\chi2 = 25.015$
Western North	201	20.08	98.51	1.49	Pr = 0.003
Western	300	29.97	84.67	15.33	
Heard about the eCedi					
Yes	304	30.37	94.74	5.26	$\chi2 = 13.852$
No	697	69.63	86.80	13.2	Pr = 0.000
Total	1001	100	89.21	10.79	

Source: field data, 2023

Estimation model to examine the drivers of eCedi adoption in Ghana

The decision to adopt Ghana's CBDC is unobserved as the Bank of Ghana has not yet deployed it. In this study, we estimated an individual's willingness to adopt eCedi when the Central Bank rolls it out. Probit regression was used to identify the significant predictors of the intention to adopt e-Cedi. An individual's decision to adopt Ghana's CBDC is defined as

$$c = \beta_i x_i' + \varepsilon_i$$

where x_i is a vector of explanatory variables, β_i is a vector of estimated parameters including a constant term, and ε_i is a random error term with a zero mean that follows the standard normal distribution. The latent dependent variable is defined as follows:

$c^*_i = 1$ if $c_i > 0$ (the individual will adopt eCedi)

$c^*_i = 0$ if $c_i > 0$ (the individual will not adopt eCedi)

The probability that an individual will adopt the eCedi user, given a set of explanatory variables, is obtained as:

$$\Pr(c^*_i = 1 | x_i) = \Pr(c > 0) = \varphi(\beta_i x_i')$$

where φ denotes the cumulative density function of a standard normal distribution. The explanatory variables included the demographic characteristics of the respondents (gender, age, education, ownership of mobile phones, and knowledge of eCedi), as well as other theoretical variables (cost, ease of use, convenience, and trust). For demographic characteristics, gender was dummy coded with 1 for males and 0 for females. Age was categorised into youth and adults, with adults as the reference group. Education was categorised into four variables: no education and basic, secondary, and tertiary education. The reference category was no education'. Mobile phone ownership, knowledge of e-Cedi, and all theoretical variables were excluded. Prior to the regression analysis, reliability and validity checks were conducted; the constructs demonstrated good internal consistency (Cronbach's $\alpha > 0.7$), and

variance inflation factors (VIF) were all below 5, confirming the absence of multicollinearity and the suitability of the variables for the model.

Determinants of eCedi Adoption

A logit regression analysis was conducted to examine the significant drivers of eCedi adoption and determine whether these drivers vary by gender. In the overall model, the drivers of eCedi adoption were education, ownership of mobile phones, knowledge of eCedi, convenience, and trust in the service provider (see Table 2). The likelihood of adoption increases with higher levels of education: 14.7% higher among individuals with basic education, 23.3% higher among those with secondary education, and 25.6% higher among those with tertiary education compared with those without formal education. Educated individuals are more likely to understand and trust digital financial systems, which enhances their willingness to adopt new technologies such as eCedi (Anane and Nie, 2022).

Having a mobile phone increased the likelihood of eCedi adoption by 7.1%. Mobile phone ownership is a significant driver of digital financial services adoption in Ghana. The proliferation of mobile phones facilitates access to digital financial services (Kodom *et al*., 2020). The integration of mobile technology with financial services has been shown to bridge the financial inclusion gap, particularly in rural and underserved areas (Dávid and Afadzinu, 2024). Access to mobile phones removes access and information barriers, making it more convenient and easier to implement technological innovations (Gupta *et al*., 2019). Agyekum *et al*. (2016) find that the widespread use of mobile phones in Ghana facilitated the expansion of financial services and increased the involvement of non-financial institutions. Importantly, the drive towards financial inclusion via mobile platforms appears to transcend income, class, and age barriers, thereby increasing the likelihood of financial inclusion for those previously unbanked. Thus, mobile phone penetration in Ghana has created significant opportunities to expand financial services, particularly for the unbanked population (Adjei *et al*., 2023).

Controlling for demographic factors, knowledge of eCedi increased the probability of eCedi adoption by 6.6%. Perceived convenience increased adoption by 10.7%, whereas trust in the central bank increased it by 8%. These results underscore that successful adoption relies not only on basic awareness but also on the clear communication of purpose, practical benefits, and risks which are critical to building public trust (Yashwanth & Suresh, 2024). This nuanced challenge is vividly illustrated by the experience of The Bahamas' Sand Dollar. Despite a shared strategic goal with Ghana's eCedi to enhance financial inclusion (BIS, 2020; BoG, 2022), the Sand Dollar has experienced a sluggish adoption rate of just 0.1% (Tan, 2023). This outcome aligns with scholarly work suggesting that low adoption can stem from insufficient public understanding and a lack of a compelling perceived value (Ozili, 2023; Singh & Yadav, 2025). The Bahamian case, therefore, acts as a real-world validation of the Ghanaian model—it demonstrates the tangible cost of the awareness and trust gaps. The Sand Dollar's struggle likely reflects a shortfall in effectively conveying its convenience and building the foundational trust necessary for widespread use. Therefore, for the eCedi to avoid a similar fate, the Bank of Ghana's strategy must leverage these specific insights, moving beyond basic sensitization to mount a campaign that demonstrably articulates and proves the CBDC's superior utility and security, directly targeting the drivers of convenience and trust that our data confirms are critical.

Heterogeneity analysis shows that some determinants of eCedi adoption vary by gender. The effect of education on eCedi adoption is similar across genders, although the effect sizes are higher for males than for females. While mobile phone ownership increased eCedi adoption by 13.8% among males, the reverse was true for females (a decrease of 9.6%). The

effect of knowledge on eCedi adoption was similar for both males (6.5%) and females (7%). Convenience increased eCedi adoption by 12.7% among females but not males. On the other hand, trust in the Central Bank had a positive influence on eCedi adoption only among males (8.5%). In financial markets, trust plays a significant role in economic exchanges; however, its impact may vary according to gender, as seen in studies focusing on young female micro-entrepreneurs (Bongomin *et al*., 2018). Gender differences in trust and reciprocity have been observed, with men generally exhibiting higher levels of trust in economic exchanges (Cox, 2002). Research indicates that women tend to trust less than men do, which may affect their adoption of new technologies differently (Migheli, 2007).

Table 2: Drivers of eCedi Adoption and across Gender

Variables	Overall	Male	Female
Gender (Male)	-0.028		
	(0.018)		
Age (*ref: Adult*)			
Youth	0.011	-0.018	0.021
	(0.020)	(0.026)	(0.028)
Education (*ref: None*)			
Basic	0.147***	0.243**	0.095
	(0.053)	(0.097)	(0.058)
Secondary	0.232***	0.318***	0.180***
	(0.054)	(0.097)	(0.062)
Tertiary	0.256***	0.342***	0.205***
	(0.056)	(0.100)	(0.063)
Has a mobile phone	0.071*	0.138***	-0.096**
	(0.040)	(0.053)	(0.047)
Knowledge about eCedi	0.066***	0.065**	0.070**
	(0.024)	(0.031)	(0.035)
Less costly to use	-0.012	-0.026	-0.040
	(0.031)	(0.040)	(0.054)
Ease of use	0.048	0.009	0.107
	(0.044)	(0.056)	(0.073)
Convenience	0.107***	0.082*	0.127**
	(0.035)	(0.047)	(0.056)
Trust in service provider	0.080***	0.085**	0.068
	(0.028)	(0.039)	(0.044)
Wald chi2(12)	128.35	60.07	85.86
Prob > chi2	0.000	0.000	0.000
Pseudo R^2	0.220	0.156	0.355
Observations	1,001	559	442

Robust Standard errors in parentheses Source: field data, 2023
*** p<0.01, ** p<0.05, * p<0.1

Some factors that the interview participants added as drivers of adoption include perceived usefulness, security, social influence, cost, and understanding. Many participants

(13/16) explained that they would adopt eCedi if they offered better services than what they currently receive on MoMo. From their view, eCedi must provide superior benefits to MoMo to influence its adoption. One respondent explained,

> *Everyone is looking for better services. I use MoMo to do almost everything, from paying my utility and other bills to paying my children's school fees and others. I carry less cash with me because I can make MoMo payments directly from my bank account, even if I have a low balance in my MoMo wallet. So why would I need to adopt a similar tool if it offers the same things* (Female Beautician, Accra)?

Indeed, utility plays a significant role in the adoption of digital currency, influencing the willingness of both individual and commercial users to integrate it into their financial activities. The utility of digital currencies, encompassing their practical benefits and ease of use, is a critical determinant of their adoption (Davis, 1989; Kodom et al., 2020). Studies have shown that users who find digital currencies to be beneficial for their transactions are more likely to adopt them. This is particularly evident in contexts where digital currencies offer unique advantages such as lower transaction costs and faster processing times (Hern *et al*., 2024; Roussou *et al*., 2019). Similarly, if users perceive digital currencies as easy to use, they are more inclined to integrate them into their daily financial activities. This ease of use is often linked to the user-friendly design of digital currency platforms and the simplicity of the transaction processes (Hern *et al*., 2024). Utility is also a function of service quality. Thus, the quality of digital currency offerings will serve as a major predictor of adoption, further extending the tenets of the UTAUT.

Closely linked to utility is the issue of cost and charge associated with using digital services in Ghana (13/16). MoMo users currently pay a 1% service charge on transfers, and the recipient also pays a 1% service charge when withdrawing funds. Until 2025, users paid an additional 1% electronic levy for every transaction exceeding GHS100 ($6.4) per day. This makes MoMo services expensive, especially for the poor. Therefore, participants explained that they would adopt eCedi if the service charges were lower than those of eCedi. Some of them think that because this is driven by the government and not private entities, they expect the service charges and fees to be too low to entice Ghanaians to adopt. One explained that:

> *The MoMo charges and fees are very expensive for some of us who earn a low income. Since the eCedi is issued by the Bank of Ghana, if they reduce the fees and charges, I believe many people will adopt it* (Male barber, Western Region).

Another major issue was security (of 13/16). The frequency of fraud and security lapses with bedevilled MoMo services is a growing concern for many participants. Some participants showed that they lost huge sums of money due to MoMo fraud. The security architecture of eCedi and the extent to which the system limits the activities of fraudsters will influence people's decisions to adopt it. One participant shared the following experiences.

> *I have lost huge sums of money to MoMo fraudsters. In one instance, I received a code to enter, and when I entered it, my account was hacked, and all my business capital was withdrawn. I will only adopt the eCedi if the Bank of Ghana can guarantee that my money is safe in their wallet* (Female market trader in the Western region).

Indeed, the effect of security on the adoption of digital currency cannot be overemphasised. While digital currencies offer numerous benefits, the potential for fraud and security breaches poses substantial challenges. Like many emerging economies in Africa, Ghana's digital currency is fast evolving ahead of its regulatory framework to address all the potential security breaches and consumer protection issues. The existing MoMo infrastructure is vulnerable to many security breaches. Ghana continues to experience several complex digital financial crimes in the MoMo ecosystem yet the annual increases in the volume and value of transaction highlights the need for enhancing the security countermeasures to sustain the gains to drive digital financial inclusion.

Others also indicated that they would adopt eCedi only if it became mandatory for every Ghanaian individual (6/16). Thus, if the government creates a policy for everyone to use eCedi, they will have no option but to adopt it. The adoption by family, friends, and business partners also influenced some participants (5/16) to adopt. Studies have shown that social influences, including peer networks and societal norms, also influence digital finance adoption (Chamboko, 2024; Afawubo *et al*., 2020; Bongomin *et al*. 2018; Murendo et al, 2018). This is supported by the UTAUT model, which highlights the role of social influence in technology adoption (Sinulingga *et al*., 2024). Cost considerations, such as transaction fees and taxes, are critical. Users expect lower eCedi costs than MoMo, which can be a decisive factor in their adoption decisions (Bahfen *et al*., 2024). High transactional charges negatively affect the adoption of digital services (Kodom *et al*, 2020).

The findings of this study, which highlight the critical importance of superior utility and addressing security and cost concerns for eCedi adoption, find both resonance and cautionary tales in the experiences of other CBDC pilots in developing economies, particularly Nigeria's eNaira. The starkly low adoption rates of the eNaira, reported at approximately 0.5% (Ree, 2023), serve as a powerful counterpoint to Ghana's potential trajectory. A primary lesson from Nigeria is that merely launching a state-backed digital currency is insufficient if it fails to offer a compelling advantage over entrenched incumbents. In Nigeria, as in Ghana, a vibrant mobile money and digital banking ecosystem already existed. The eNaira's initial struggle was partly attributed to its failure to demonstrate a distinct value proposition in terms of cost, functionality, or user experience compared to existing platforms (Ozili, 2023). Our study empirically validates this, showing that 81% of interview participants would only adopt the eCedi if it provided tangible benefits over Mobile Money (MoMo), such as significantly lower transaction fees or enhanced security against fraud. This underscores that in saturated digital payment markets, adoption is driven by a comparative, not absolute, advantage.

Reasons for non-adoption of eCedi

Approximately 12 percent of the respondents indicated that they were unlikely to adopt eCedi when it came into force. Table 3 shows why these respondents indicated that they did not intend to adopt eCedi when operational. About half (50.4%) indicated that they did not trust the government's digital currency. They believe that an electronic levy (e-levy) will be imposed on the eCedi. Thus, eCedi is seen as another tool by the government to impose an electronic tax on them (35.4%). Others did not adopt it because they had not heard of it and were hearing about it for the first time (44.3%). Some also did not have enough information to make a decision, while others expressed fear of being defrauded (25.7%).

Some interview participants added that they would not adopt eCedi if their functionalities did not differ from those of mobile money. Others have added that if the system is porous to fraudsters and there is little consumer protection, as experienced in the current MoMo services, they will likely not adopt it. One participant explained this as follows.

I will not adopt it if it becomes susceptible to fraud. The mobile money service providers have done little to prevent fraudulent activities on the MoMo platform. Fraudsters are devising increasingly sophisticated ways to steal people's money daily. The level of sophistication of their tricks continues to increase in complexity, and consumers are at risk. If the eCedi system does not demonstrate enhanced security against fraudsters, then there is no need to adopt it, as it would increase our risk of losing more funds (Male retail business owner, Western North region).

Table 3: Reasons for non-adoption of eCedi

Variables	Total	Male	Female
I don't trust it/trust anything from government	50.4	48.3	52.8
I am hearing about it for the first time	44.3	41.7	47.2
I don't know much about it	44.3	43.3	45.3
Fear of being taxed	35.4	35.0	35.9
Fear of being defrauded/losing funds	25.7	20.0	32.1
Nobody in my network will use it	14.2	11.7	17.0
Other	9.7	5.0	15.1

Source: field data, 2023

High transaction cost driven by both policy and service charge has been found to disincentive the adoption of digital payments like MoMo even among financially excluded population (Hamdan, Lehmann-Uschner & Menkhoff, 2021). Even though the elevy was repealed in April 2025 by the current government, the introduction of new taxes by the current administration makes some people fear that in the event of low revenue mobilization to accomplish the government's ambitious 'reset' policies, another form of electronic tax may be imposed in future, which will make electronic transactions more expensive.

Trust is a fundamental component in the acceptance of any form of currency, and this is particularly true for digital currencies issued by central banks. The perception of government reliability and the effectiveness of its monetary policies play a crucial role in shaping public confidence in CBDCs. When trust in government is low, it can hinder the adoption of CBDCs, as individuals may be reluctant to transition from traditional fiat currencies or private digital currencies to a government-backed digital currency (Yashwanth & Suresh, 2024). The politically exposed nature of Ghana's central bank thereby hindering their regulatory autonomy from to the control of the government (Osei-Owusu, 2024) makes people afraid of the possibility of a government weaponzing CBDCs to increasing government revenue through taxation as was the case of the e-levy.

Conclusion

The drive towards a cashless economy is a global agenda driving central banks to test initiatives aimed at achieving financial inclusion alongside a cashless economy. The Bank of Ghana intends to introduce eCedi into the financial market at a time when MoMo transaction volumes and values are skyrocketing at 745 million and GHS334.8 billion (US$ 22.7 bn), respectively, as of December 2024 (Oduro-Mensah, 2025). This presents both a challenge and an opportunity. The eCedi is unlikely to match this entry competition in the short-to medium-term if it does not offer superior products and services to MoMo. The intended eCedi offerings appear similar to the MoMo offerings. Similar government initiatives, such as GhQR and Myghpay, have suffered from abysmal performance because they offer the same utility as MoMo. Given that MoMo is a private sector-led initiative, the BoG will need innovative

strategies to outcompete MoMo if the competition intensifies. The question is: Will the Central Bank be bold enough to take the required steps to remain relevant in such a space?

Despite the increasing adoption of MoMo, the service continues to suffer from security concerns (MoMo fraud), consumer protection issues, and high user fees (service charges). The eCedi could potentially disrupt this landscape by offering a state-backed alternative to mitigate the MoMo challenges. As a central bank digital currency, eCedi is likely to have a stronger regulatory oversight, potentially addressing some of the security and regulatory issues MoMo faces. The eCedi may benefit from government initiatives to promote its use, as was the case in China. This could enhance its competitiveness against MoMo services. On the flip side, this will likely push MoMo providers to innovate and improve their services to retain users, thereby enhancing the user experience. Thus, while eCedi can compete with MoMo, there is also potential for both tools to complement each other in driving Ghana's cashless agenda through the integration and interoperability of both services.

The findings present a critical, actionable mandate for policymakers and financial regulators: in a market saturated with private digital money, a state-backed CBDC cannot succeed by mandate alone but must compete on value. To avoid the low adoption rates seen in pilots like Nigeria's eNaira, regulators must ensure the CBDC offers a demonstrably superior value proposition—specifically through lower transaction costs and a more robust security architecture that directly addresses user fears of fraud. Ultimately, the state's role is not to replicate but to elevate the market by providing a secure, low-cost, public alternative that drives competition and raises standards for all users.

Policy Recommendations

Countries such as Kenya, Uganda and Tanzania where growing MoMo markets may face similar hurdles if their central bank decide to introduce a digital currency to augment their cashless agenda. Based on the findings of this study, these recommendations are made for the consideration of central banks:

- Central banks should enhance public awareness and education campaigns. Comprehensive public education campaigns should be developed to inform citizens about digital currencies, highlight its benefits, and clarify how it differs from the existing MoMo services.
- Secondly, addressing security concerns is paramount for fostering user confidence. Central banks should prioritise the development of a robust security architecture for their digital currencies, which minimises vulnerability to fraud and cybercrime. Furthermore, establishing clear consumer protection policies that guarantee the security of user funds enhances trust in the system.
- Also, ensuring a competitive fee structure is essential for encouraging adoption. Offering lower transaction fees than the existing MoMo services can be a significant incentive for users. A fee-free period for early adopters could further promote initial uptake. Transparency in communicating the associated fees will help prevent misconceptions regarding hidden costs.
- Leveraging mobile technology is another critical strategy for the success of digital currencies. Central banks should ensure that their currencies are easily accessible through existing MoMo platforms and applications, thereby facilitating its seamless use. Promoting interoperability between eCedi and other digital payment systems will enhance user convenience and encourage adoption.
- Establishing feedback mechanisms will allow users to share their experiences and concerns, thus enabling prompt response to any issue. Continuous monitoring and evaluation

of adoption rates are necessary to identify barriers and to refine strategies when implementation begins.

- Finally, targeted strategies should be developed to address gender and demographic variations in adoption. Tailored approaches that consider the unique needs and concerns of different demographic groups, particularly women and individuals with lower education levels, are essential.

Limitations and further studies

Owing to funding constraints, the study was limited to three regions in Ghana, where the eCedi was piloted. A survey across all 16 regions of Ghana, along with a regional heterogeneity analysis, can provide the central bank and its stakeholders with more information on regional dynamics to consider enhancing uptake.

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