Public Perception and Adoption Approaches for Digital Currencies: Analysing Influencing Factors

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***Abstract*— This study investigates public perception and the factors influencing the widespread adoption of the eNaira, Nigeria's Central Bank Digital Currency (CBDC). The eNaira aims to ensure secure transactions, encourage financial inclusion, and support the drive for a cashless society, yet adoption rates have fallen short of expectations. Using an online survey form, we gathered data from 467 respondents, focusing on factors such as privacy concerns, convenience, and financial inclusion. Our analysis of the data, employing one-way ANOVA, independent t-test, and correlation tests revealed interesting insights. Findings indicate that eNaira is believed to be a valuable digital payment option, also its perceived convenience and ability to reduce reliance on cash are significant for its acceptance. Education levels greatly impacted people's belief in the eNaira, with less educated people showing more faith in government adoption strategies. This study emphasizes the importance of tailored adoption strategies that respond to demographic variations. By addressing these variables, decision-makers and interested parties can create efficient plans to encourage the broad implementation of the eNaira and other CBDCs.**

Keywords— eNaira, eNaira adoption analysis, digital currency acceptance, data-driven solutions.

I. Introduction

The introduction of Central Bank Digital Currency (CBDC), signifies a technological revolution in digital finance, bearing significant implications for the global financial landscape [16] [31]. CBDC, such as the eNaira, is the digital form of the sovereign fiat currency of a country that is issued by the central bank. According to [30] "a CBDC is a digital form of central bank money that is different from balances in traditional reserve or settlement accounts". Some of the benefits of CBDCs include enhanced security and reliability in monetary transactions, financial inclusion, fight against money laundering and terrorist financing, and contributing to the actualization of a cashless society [3] [4] [22] [29].

The Nigerian digital currency, the eNaira, launched in October 2021, stands out in pioneering the implementation initiative of CBDC in Africa [23]. In addition to the perceived advantages of CBDC, it is anticipated that eNaira will also encourage economic growth, improve remittances from the diaspora, facilitate the collection of government revenue, and support the execution of government social welfare drives in Nigeria [21]. Looking at the benefits of the eNaira, it appears to be a wise initiative bearing several benefits for the banking sector, the government, and its people. Despite the commendable strides achieved by launching Africa's first CBDC, its widespread use has been slow. This is evidenced by decreased wallet downloads, inactive wallets, and low transaction volume, a trend considered to be disappointing as reported in the study by [25]. Although it is believed that people approach new technologies with caution [11], the low adoption of the eNaira could also be linked to the phased implementation and the fact that it cannot be imposed on citizens [25]. However, the successful adoption of eNaira depends largely on understanding and addressing public concerns about the digital currency [10] [26].

Considering this, the motivation of this research comes from the understanding that insights derived from public opinion can aid in developing and executing successful endorsement measures. Hence, this study explores the nuanced context of public perceptions about eNaira, using data-driven methods to guide adoption initiatives. By identifying different factors that impact public acceptance and use of eNaira, this study intends to present valuable guidance that would help in designing impactful and effective adoption strategies.

To achieve the intended objectives of this study we followed several steps. First, we sought the thoughts and views of respondents on various factors that influence the adoption of eNaira with a questionnaire. Secondly, we performed a comprehensive investigation of the entire data and focused on two significant demographic segments, gender, and level of education. We employed 3 statistical approaches, correlation tests, one-way ANOVA, and independent sample t-tests to discover trends and relationships within the data.

In sum, this paper contributes to the current conversation on CBDCs by providing an in-depth examination substantiated by significant empirical data regarding public views on eNaira. Furthermore, it seeks to broaden the process of decision-making while promoting the adoption of electronic currency in Nigeria

and other parts of the world by addressing the gap between academic research and real-world policymaking.

The rest of the paper is structured as follows: section II presents a background of the study and review of related works; section III presents the methodology used; section IV holds information about the results and discussions; and section V concludes the paper

II. Background

A. Central Bank Digital Currency

Digital currency is a kind of money that only exists in electronic form, it can either function under the regulation of a central bank or independently. Digital currency redefines the economy because it is a modern form of exchange that simplifies and improves online transactions [26] [12]. With the internet being an integral part of modern life, the introduction of digital currencies does not come as a surprise as it promises to simplify financial transactions. A common type of digital currency is Cryptocurrency, which is an independent or private electronic currency, popular examples include Bitcoin, Ethereum, and Dogecoin. [22] and [23] argued that due to the volatility, risk, and unreliability of cryptocurrencies, central banks considered the option of releasing a different digital currency, CBDC, that is more dependable and less risky to address the challenges presented by cryptocurrency.

CBDC is a type of digital currency that is issued by the central bank and has the authority of the government, it has the same value as cash but only exists in digital form [15] [23]. In addition to having the advantages of an electronic payment system, such as speed and convenience, CBDCs have added advantages because they are developed to be as trustworthy and safe as cash. The debate around the benefits and challenges of CBDC and its value addition to digital payments has continued to gain traction around the globe [7]. Moreover, Central banks around the world are at different stages of decision concerning CBDC; while a few have already launched a CBDC, some are in pilot testing phases, proof of concept phase, and research phase, and a few have cancelled the decision to have a CBDC altogether. The Bank of International Settlement, BIS, reports that 86% of central banks around the world are investigating, testing or getting ready to launch their CBDC [6] [8].

There are several possible motivations behind the issuance of CBDCs, while some are common to nations around the globe others are more specific to jurisdictions. Previous research suggests that possible considerations for issuing CBDC are financial market stability and preservation of monetary policy, which is a motivation shared by different countries [12] [18] [19]. Another motivating factor is financial inclusion, arguably more important to developing countries than developed nations, as the former is yet to ensure that more people have access to banking services. [30] held that Africa can satisfy the need to offer the 'unbanked' access to financial infrastructure by issuing CBDC. Moreso, [9] added that not only is financial inclusion relevant to emerging economies it is also one of the main reasons for more than 50% of central banks. Other key reasons include reducing the need for cash, enhancing safe payments, easing international transfers, and aiding in the fight against money laundering and terrorist financing [21] [23].

B. The eNaira and Factors Affecting its Adoption

The eNaira is the digital version of the Nigerian official currency, the Naira. It is designed not as a replacement to the paper currency but to exist alongside the fiat money and bear the same value. In addition to the previously mentioned motivations for the issuance of CBDC, the introduction of the eNaira by the Nigeran government was also influenced by the need to have a digital currency backed by law to counter cryptocurrencies that were viewed as a threat to the nation's financial stability, to react to the rise in financial technology (Fintech), reduce the printing cost of cash, and to support the government's plans towards a cashless society [14] [17].

After the introduction of the eNaira in 2021, one would expect that it would have gained broad usage at this time, but this is not the case [25]; this can be attributed to factors that people consider before using digital money for their regular transactions. In the study by [26], they showed that people's willingness to embrace digital currencies are perceived value, impact on society, trustworthiness, and ease. Moreso [20], further added that efficiency of government, trust in government institutions, privacy, ability to use technology, and wealth disparity influence public perception of CBDC, hence the willingness to adopt it. However, [17] argued that people might not see the need for another digital payment channel and hence question why they should adopt it. The eNaira would be an addition to payment channels such as mobile banking, online banking, telephone banking, and so on. Nevertheless, [21] opined that user experience on the eNaira wallet is an important factor that influences the adoption of the digital naira.

In addition, scholars have emphasised the importance of demography in determining how the eNaira is adopted by individuals. [1] and [2], in their study maintained that people's views and actions regarding the adoption of electronic naira are greatly influenced by demographic considerations such as age, social status, level of education, gender, etc. Additionally, [13] also stressed the necessity to include more demographic variables such as location, gender, and age group in future studies to gain insight into gender and demographic-based sentiments. Employing this approach would enable a more holistic understanding of the demographic viewpoints regarding the adoption of digital currency.

C. Review of Related Works

Different researchers have attempted to understand public perception of CBDCs using sentiment analysis on data from social media and reviews see [1] [13] [21] [24] [28], these studies all demonstrated a high percentage of neutral sentiments which could be linked to factors such as uncertainty, lack of knowledge and other concerns [28]. This calls for deeper research into the different aspects of CBDCs that drive public acceptance.

Using a different approach, [29] carried out empirical research to understand factors related to the adoption of Bitcoin in mainland China. With 376 questionnaire responses, they carried out structural equation modelling and descriptive statistics to find out the factors that citizens consider relevant to their adoption of Bitcoin. Their study suggested that awareness and perceived trustworthiness are pivotal to the intention to embrace Bitcoin. In a related work, [26] examined the factors

that are critical to the adoption of digital currency in the United Arab Emirates (UAE). With a survey sample of 181, the study found that Intention to Use (ITU) digital currency is determined by perceived trust, perceived ease of use, perceived usefulness, and social influence, with perceived trust being the most influential determinant.

Furthermore, [27] examined the impact of eNaira awareness, adoption, and usage on real estate transactions in Kano metropolis, Nigeria. Using descriptive and inferential statistics they analysed 287 questionnaire data and found that awareness and adoption of eNaira among property practitioners has witnessed a slow but steady growth however, it is not widely used in the property market. In a related study, [5] ventured into Kano municipal residents' perception of the eNaira, using survey and descriptive statistics. They argued that individuals are aware of the eNaira but unaware of its value, they view it as an asset or cryptocurrency. Moreso, [17] adopted a quantitative methodology using questionnaires to investigate factors that influence the adoption of the eNaira in Gombe state, Nigeria. Findings from this study indicated that intention to use eNaira is determined by trust, effort expectancy, performance expectancy, and perceived risk; performance expectancy was found to be the most important factor. These studies are limited to one state in Nigeria.

Based on these stated pieces of literature, a growing interest has been observed in the discussion on Africa's first digital currency, the eNaira since its launch. Nevertheless, research on understanding factors that impact the public acceptance of this digital currency is significantly insufficient. Studies have been done to understand general sentiments about eNaira using social media data [1] [13] [24] or reviews [21] and classify the sentiments as positive, negative, or neutral. The aforementioned works are not directed at the factors that could influence these sentiments thereby leaving room for future research. Subsequently, [5] [17] and [27] adopted an empirical approach to examine factors such as awareness, trust, and performance expectancy and how they influence the adoption of Nigeria's digital currency. However, their works were focused on one local government area [5] or one state [17] [27] in a country that has 36 states and the Federal Capital Territory. Consequently, this study seeks to investigate the indicators of the eNaira acceptance by people in Nigeria. By exploring the intriguing relationship between factors such as demographics, convenience, and the role of government, this study seeks to provide useful guides that would aid policymakers and stakeholders in developing customized data-driven strategies to enhance public adoption of the eNaira. As far as current knowledge allows, this is the first study to explore factors identified from the above-reviewed pieces of literature that can influence public acceptance of the eNaira in Nigeria and investigate the relationship that exists between these factors using a statistical analysis approach.

III. Methodology

The current study utilises a quantitative methodology with a cross-sectional survey. Data was gathered with a questionnaire designed and administered electronically using Google Forms. The study population comprises people living in Nigeria, recruited via random sampling. The questionnaire has three segments: the first introduces the study to participants and seeks consent, the second gathers demographic data such as age, gender, education, and social status; and the third comprises four sections with fourteen closed-ended questions using a five-point Likert scale where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree (Figure 1). The questions were constructed following factors such as convenience, ease of use and security concerns, identified from the review of previous works. A pretest was conducted with a few population samples to ensure the reliability and validity of the questions; and to refine the final document. In addition, ethical guidelines were adhered to, including confidentiality.

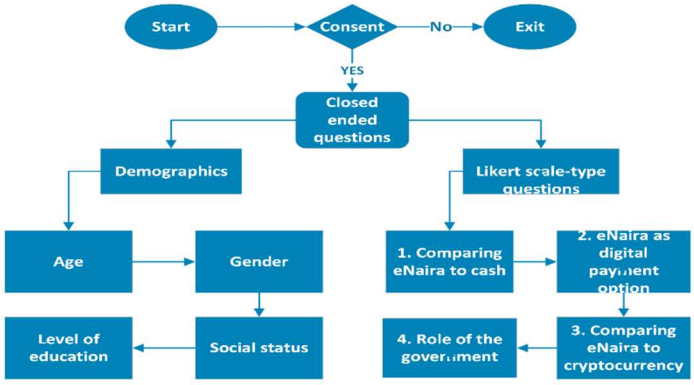

Figure 1: Flowchart of questionnaire

Participants were asked 5 questions about their opinions comparing eNaira to cash in terms of convenience, safety, ease, and control of illicit payments, in line with studies by [14] [17] [21] [23] [26]. Also, 4 questions that cover aspects of the eNaira that seek to know if the public believes the digital naira is a useful addition to digital payments, adopted from studies by [17] and [20] were asked. On the other hand, questions that seek to discover people's level of awareness of eNaira in comparison to cryptocurrency, and to know their level of privacy and security concerns, following studies by [20] [27] [29] and [26] were included. In addition, 2 questions to know the perception of respondents regarding government efforts in driving the adoption process in line with the study by [20] were asked.

A total of 467 responses were gathered; the data was analysed using the Pandas Python library and Statistical Package for Social Sciences (SPSS).

IV. Results Analysis & Discussions

The data generated for this study was pre-processed and cleaned using the Pandas Python library. This step of Exploratory Data Analysis (EDA) was necessary to inspect the data, handle missing values, handle inconsistent formatting, rename columns, and prepare the data for further SPSS analysis. Correlation tests, independent sample t-tests, and one-way ANOVA were performed on the data with particular interest in the gender and level of education demographic factors.

Understanding public perception is crucial for the successful adoption of any new technology, and Nigeria's Central Bank

Digital Currency (eNaira) is no exception. A correlation test was conducted to understand how Nigerians perceive various aspects of the eNaira. The results reveal a fascinating web of interconnectedness in their views. People who find the eNaira convenient compared to cash (average score of 3.49) are more likely to believe it will reduce reliance on cash altogether (average score of 4.27). This strong correlation (0.534) suggests that convenience acts as a gateway to broader positive perceptions. Similarly, those who view eNaira as a safe alternative to cash (average score of 3.94) also tend to see its potential in controlling illegal payments (average score of 3.86). Here, the correlation (0.534) indicates that perceived safety fosters a sense of security in transactions.

The analysis goes beyond just convenience and safety. Interestingly, belief in eNaira's value within the digital payments system (average score of 3.92) strongly correlates with the idea that it will promote financial inclusion (average score of 3.77). This correlation (0.608) suggests that Nigerians who see eNaira as a valuable player in the digital landscape also recognize its potential to bring more people into the financial system.

These connections highlight the importance of crafting a message emphasizing the interconnected benefits of the eNaira. By showcasing how eNaira's convenience can lead to a broader shift in financial habits, or how improved transaction safety fosters a more secure financial environment, policymakers can create a more comprehensive and persuasive narrative to encourage eNaira adoption.

Secondly, the study investigated potential gender differences in how people view the eNaira, employing independent samples t-tests to compare the means of male and female respondents on a range of eNaira-related questions (Table 1). A series of were performed as the T-tests are ideal for such comparisons because they account for potential variations within each group (men and women) while assessing the significance of any observed differences in their average scores.

The results reveal some interesting insights, with both similarities and a few key distinctions between how men and women perceive eNaira. On a positive note, there are no statistically significant differences between genders in their perceptions of several core aspects of the eNaira. Both groups see eNaira as relatively convenient (mean scores around 3.5-3.6) and accessible (around 3.3). They also hold similar concerns regarding the general challenges of digital payments (around 3.9-4.1) and the need for digital literacy (around 3.6-3.7). This suggests a baseline level of comfort with the technology itself, regardless of gender.

Table 1: Gender Differences in eNaira Perceptions

Aspect of eNaira	**Gender**	**Mean Diff**	**p-value**	**Effect Size***	**Implication**
Reduce Need for Cash	Males > Females	0.283	0.002	Small-to-Medium	Men see greater potential to use the eNaira instead of cash
Transaction Safety	Males > Females	0.226	0.017	Small-to-Medium	Men feel the eNaira is safer for transactions
Control of Illegal Payments	Males > Females	0.23	0.019	Small-to-Medium	Men believe the eNaira can help fight illegal activity
Management by Government	Males > Females	0.206	0.034	Small	Men show a slightly greater preference for government management

However, some crucial information can be noted from the above table (Table 1). It can be summarised that men perceive the eNaira as having significantly greater potential in key areas: reducing cash use, transaction safety, and combatting illegal payments. This highlights a need to emphasize these benefits in messaging, especially to female audiences. Also, the preference for government management of the eNaira, while showing a small effect, suggests potential differences in trust levels between genders. Tailored communication strategies might help bridge this gap. Men assigned a significantly higher mean score (4.39) to the statement "eNaira would reduce the need for cash" compared to women (mean score = 4.11). This difference, while small (0.028), is statistically significant (p-value = 0.002), indicating that men see eNaira as having a potentially greater impact on cash use. Similarly, men perceived eNaira as offering a higher level of safety in transactions compared to cash (mean score = 4.03 vs. 3.81 for women), with a small-to-medium effect size according to Cohen's d (0.134). The same pattern holds for perceived control over illegal payments with eNaira, where men expressed a stronger belief in its effectiveness (mean score = 3.96) compared to women (mean score = 3.73).

Another significant difference also emerged regarding government involvement. Men expressed a stronger preference for the government to manage eNaira (mean score = 3.42) compared to women (mean score = 3.22). While the effect size here is small (Cohen's d = 0.120), it suggests a potentially important distinction in their views on the role of government oversight.

These findings offer valuable insights for policymakers and stakeholders as they strive to promote eNaira adoption. The lack of major differences in convenience, accessibility, security concerns, and the need for digital skills suggests a general openness to eNaira across genders. However, the observed differences in how men perceive the potential for reduced cash dependence, increased transaction safety, and control over illegal payments present an opportunity for targeted messaging campaigns. Highlighting these aspects could resonate more strongly with male audiences.

A One-Way ANOVA was done to explore how Nigerians' educational background influences their perception of the eNaira. While the average scores across education levels tend to be similar for most aspects of the eNaira, there are a few noteworthy exceptions. Education doesn't seem to be a major factor in perceptions of convenience, accessibility, security, or the potential of eNaira to reduce cash use. For instance, the average score for "enaira convenience over cash" ranged from 3.61 (HND/Bachelor) to 3.77 (Diploma), with no statistically significant differences ($p > 0.05$) detected by the ANOVA. However, a significant difference ($p = 0.005$) emerged in how

concerned people are about privacy (Figure 1). Those with a Diploma (mean score of 4.54) expressed a significantly higher level of privacy concern compared to other groups. This might be an area for further investigation, perhaps exploring if Diploma holders have had prior experiences influencing their privacy worries.

education expressed notably higher privacy concerns than other groups. This highlights the need for targeted messaging campaigns to address potential anxieties about data security specifically for this demographic. Secondly, a link exists between lower education levels and stronger support for government adoption of the eNaira. Future research could

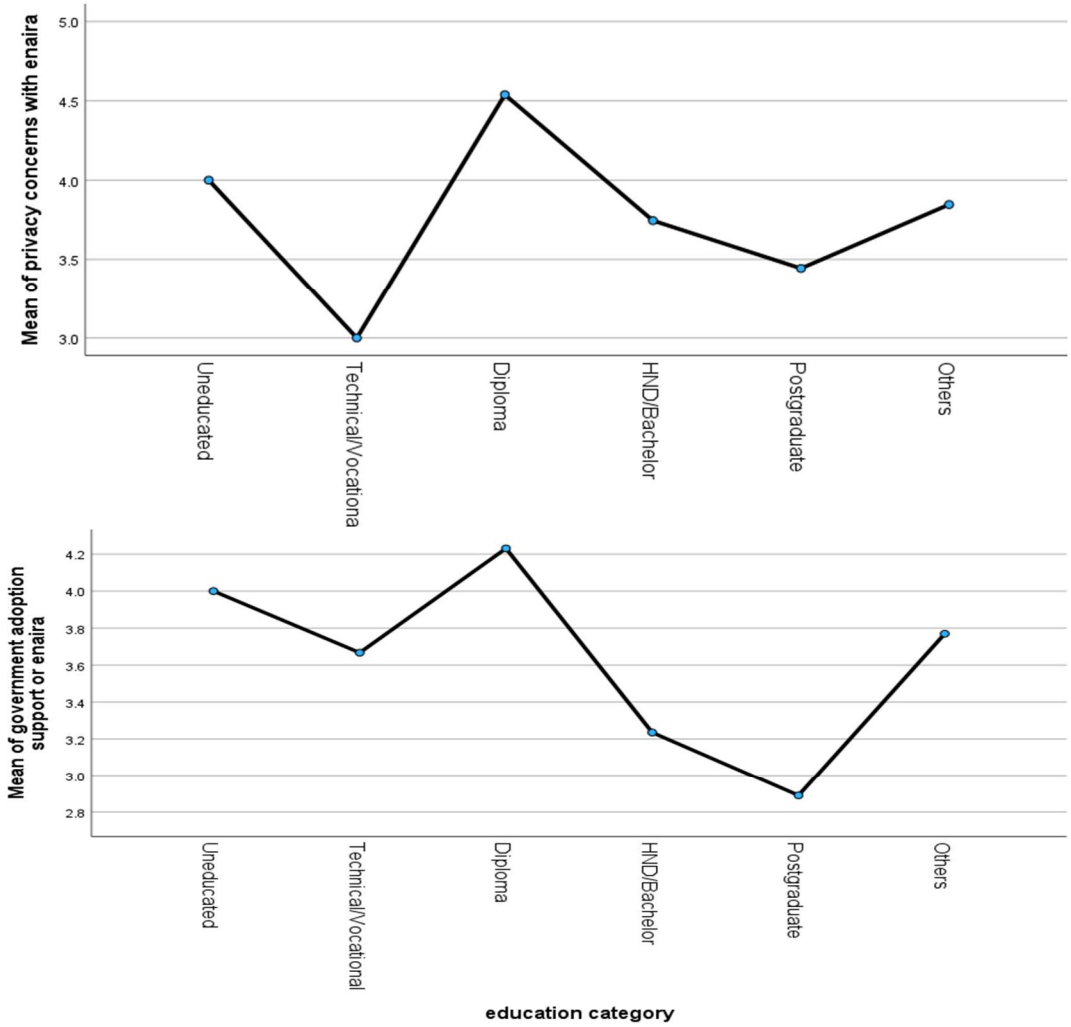

Figure 3: "Uneducated" and Technical/Vocational showed a stronger tendency to support government adoption of eNaira.

Another interesting finding is government adoption support. Here, education level seems to play a role. People with lower education backgrounds, like the "Uneducated" (represented by only one participant) and "Technical/Vocational" (mean score not shown, but likely low based on the significant difference), showed a stronger tendency to support government adoption of eNaira compared to those with higher education (e.g., Postgraduate mean score 2.89). Understanding the reasons behind this difference could be valuable for policymakers aiming to broaden eNaira's appeal.

The ANOVA results revealed two statistically significant areas (Figure 2 & 3) where Nigerians' perceptions of eNaira differ based on education level. Firstly, those with diploma-level

explore why this disparity exists – perhaps those with less formal education have greater trust in government institutions. This understanding would aid in crafting communication strategies that resonate across diverse segments of the Nigerian population.

V. Conclusion

Any people-centred innovation requires public acceptance to be successful; this is also the case with the eNaira. This study revealed the compelling relationship between different factors that influence public acceptance of the eNaira. A strong correlation exists between convenience and reduction in the dependence on cash; between safety and control of illicit payments; as well as between value to digital payment systems

and financial inclusion. Despite the revelation that male participants believe in the potential of the eNaira more than female participants, differences in gender-based perceptions are not statistically significant. Furthermore, though education does not appear to be crucial to certain factors, it is indeed important to people's trust in the government; our findings reveal that those with lower levels of education have stronger levels of trust in government adoption strategies, which calls for further exploration.

In addition, the study was limited to two demographic factors, gender and level of education, future works should investigate other demographic aspects such as age and social status. Future research endeavours could also contemplate augmenting the data to gather more intricate viewpoints and ensure data inclusivity by enlisting participants from underrepresented demographics such as the unemployed. Moreover, video conferencing could be used to engage directly with a few participants to gain a more in-depth understanding of their views and gather richer explanations.

Findings from this study will aid policymakers and stakeholders in making data-driven decisions towards creating targeted strategies to encourage the widespread adoption and use of the eNaira.

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