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Research Article

Awareness and Adoption of Central Bank Digital Currency: A Study on Public Perception in Chennai

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ABSTRACT

Central Bank Digital Currency (CBDC) is an emerging financial innovation that has garnered significant attention from policymakers, economists, and the public alike (Raphael, Jon, & Leonardo, 2021)[15]. This research paper aims to explore the awareness and preference of individuals of general public in adopting CBDC across Chennai region. As the global financial landscape continues to evolve, understanding the awareness and preference for CBDC becomes increasingly critical in shaping the future of digital currencies and their role in modern economies.

This study employs a combination of quantitative research methods, such as surveys, alongside secondary data analysis in application with SPSS and AMOS Software. Surveys were administered to a diverse sample of 283 respondents including students, staff and employees across Chennai. The survey assessed their knowledge about CBDC, concerns related to its adoption, and perceived advantages over traditional currencies and payment systems. The results from this study provide valuable insights for policymakers and central banks to design effective strategies for the implementation and adoption of CBDC while considering the potential benefits and challenges associated with this transformative financial technology.

Keywords: Central Bank Digital Currency, Financial Innovation, Awareness.

INTRODUCTION

Money as a concept has evolved over time, starting with the barter system where goods were utilized as a form of 'currency,' advancing to metals, then paper money, banking instruments, and now digital currency (PwC, 2021)[14]. Despite the changing forms of money, it has always has three basic characteristics: (i) it is a store of wealth (ii) it can be used as a medium of exchange (iii) it acts as a unit of account. Currency is the 'form' of money which issued by the central bank of any jurisdiction, holds liability for and considered as legal tender. In India, Central bank (RBI) is most important pillar of the financial ecosystem.

The Reserve Bank of India defines Central Bank Digital Currency (CBDC) as a digital representation of legal tender. It holds the same value as fiat currency and can be exchanged on a one-to-one basis with physical paper currency. Unlike physical money, CBDC exists solely in electronic form, often referred to as electronic money, cyber-cash, or e₹ (digital rupees). With no physical presence, CBDC transactions occur through online platforms or electronic wallets linked to the internet or established networks. CBDC is essentially a digital rendition of fiat currency, serving as a direct substitute for traditional paper or metal currency. Issued by the central bank, it guarantees safety and government support, functioning as the ultimate means of settlement. Its denomination is in alignment with the national unit of account as determined by the RBI, and its value remains tied to the official currency of the issuing nation. Countries motivation to issue a CBDC depends on their financial situation. Some of the motivations are: promoting financial inclusion by providing easy and secure access to money for the underserved and unbanked; introduce competition and restructuring of the local payments industry, which will require incentives to provide cheaper and better access to funds; improve payment and reduce transaction costs; generate revenue and increase transparency in revenue; and providing for the smooth and effortless flow of both monetary and fiscal policies. In the annual report for 2022-2023, the central bank wants to expand the on-going pilot of the CBDC and incorporate various use cases and features in 2023-24. The Reserve Bank of India has introduced two variations of the digital rupee: CBDC-Wholesale (CBDC-W) and CBDC-Retail (CBDC-R). The CBDC-W is designed to be accessible only to

specific financial institutions, whereas CBDC-R is available for use by a broader spectrum of individuals and entities. This includes private businesses, non-financial customers, and various businesses across the board.

The first phase for the wholesale digital rupee (CBDC-W) was inaugurated on November 1, 2022, focusing on secondary market transactions involving government securities. The central bank's intention behind CBDC-W is to enhance the efficiency of interbank transactions. A total of nine banks have been included in the CBDC pilot initiative, which encompasses prominent names such as the State Bank of India, Yes Bank, Kotak Mahindra Bank, IDFC First Bank, Bank of Baroda, UBI, HDFC Bank, ICICI Bank, and HSBC. Subsequently, the inaugural launch of the retail digital rupee (CBDC-R) pilot program took place on December 1, 2022. This initiative aims to provide digital representation of physical cash, ensuring attributes like trustworthiness, security, and irrevocable settlement in a digital framework. According to the report published earlier by RBI, it is proposed to divide the digital rupee market into two-tier structure. The RBI will issue and use the e₹, while the distribution and payment services will be delegated to the banks (RBI, 2022)[17]**.** At the global front (Atlantic, 2023)[6], 130 countries are exploring CBDC and are making active efforts to incorporate; 64 of them are in the advanced stage of exploration. 11 countries have fully launched digital currency successfully and they are Bahamas, Nigeria, China, USA, Jamaica, UAE, Ghana, Malaysia, Singapore and Thailand. Out of these, China's CDBC is considered to be huge as it covers 260 million people and is effective also.

LITERATURE REVIEW:

The purpose of this literature review is to clarify research questions, expand the knowledge base of this research area, and understand the theoretical background of this research. Literature Review has been done on three aspects to cover the overall knowledge – The concept of Fintech, The concept of CDBC and Relevance of CDBC among people across the world.

One of the notable references to the research is (Guild, 2017)[9]; By examining varying degrees of success in the adoption of Fintech services in Kenya, India and China this paper argues that adopting a responsive regulatory approach when compared to an overly interventionist one is the most suitable framework for improving financial inclusion through technological advancements. (Ahmad, Csaba, & Judit, 2021)[2]; A robust regulatory oversight is essential for the effective integration of Fintech, aiming to enhance financial inclusion. As the pandemic COVID-19 continues to reinforce changing payment habits as there is a physical risk of becoming infected when using non-digital means of payment. Consequently, this shift has propelled a broader societal embrace of intelligent payment solutions and has also impacted the intentions of Generation X by amplifying their recognition of the vulnerabilities tied to conventional payment practices.

Another notable reference to the research is (Sireesha, 2021)[18]; India has the largest smart phone adoption so the Direct Bank transfer is feasible because of digital and Fintech. Fin-tech has the potential to positively impact small and medium-sized enterprises (SMEs) by offering cost-effective loan solutions. The appeal of financial technology applications extends to the modern generation of banking clients. As a result, Fintech emerges as a contemporary approach to achieving financial inclusion with a focus on sustainability. (Cristina & Luis, 2021)[7]; the findings point towards a shared ground between sustainable finance and Fintech, highlighting the potential for Fintech to enhance the overall sustainability of financial enterprises through the advancement of green finance principles. Additionally it describes several proposals to improve the detection of green-washing and other deceptive behavior by firms.

The next reference to the research is (David, Li, & Yu, 2021)[8]; it concludes that CBDC will be the primary tool in the future digital economy, and countries that are acquainted with the technology will have a competitive advantage. Learning from implementation, continuously reviewing the existing rules and regulations, and improvising whenever there is a change in the international landscape are vital attributes of a successful implementation. (Gürkan & Murat, 2021)[10]; although most central banks continue their research on CBDC, very few have started pilot projects. Skepticism regarding CBDCs continues due to perceived cost-benefit concerns, their advanced features hold the potential to enhance payment infrastructure, enable personalized digital economies, and introduce efficient mechanisms like programmable money, smart contracts, and affordable micropayments.

One of the significant references to the review is (Aditya, 2022)[1]; the research observes that a lot of people support the "Digital Rupee" but some of them are still not aware of the concept and are sceptical about its features. The research inferred that adopting the 'Digital Rupee" could certainly influence the Indian diaspora and its trading impact to enhance its function as a reserve currency. The final reference to the review is (Asraful & Shoaib, 2023)[5]; Education and awareness campaigns may be necessary to overcome the challenges and promote adoption of CDBC. The structure should integrate with important payment gateways in India, such as digital wallets and UPI. The government should come up with clear guidelines and regulations to boost up confidence and trust among people.

4. OBJECTIVES OF THE STUDY:

i. To identify the factors influencing perception and attitude of the general public towards the usage of Central Bank Digital Currency.

ii. To analyse the preference of the users towards adopting CBDC.

iii. To suggest effective measures for the regulatory body in India.

5. NEED AND SCOPE OF THE STUDY:

Central Bank Digital Currency (CBDC) has been attracting interests across the globe with most of the central banks actively exploring and examining it. India has already come up with its pilot program backed up by RBI in the wholesale and retail sector consisting of participating customers and merchants in a closed user group. For the success of such an initiative, public's opinion must also be assessed; this creates a need for understanding the awareness and preference of general public towards the usage of CDBC due to their potential to revolutionize the financial landscape. This study attempts to fill the above need by analysing and interpreting the level of awareness and preference to use CDBC among the consumers in Chennai city. Findings of this research will provide knowledge to the regulating body on creating successful strategies for making the general public towards adopting it.

6. RESEARCH METHODOLOGY:

In order to attain the objectives of the study, a sample survey was conducted in online mode and the responses were collected from the individuals across the Chennai region. In this research, questionnaires were distributed to get primary data from individuals to understand their perception towards the usage of Central Bank Digital Currency.

6.1 Research Design:

Sampling method	Convenience sampling
Sample size	n(s)= 283
Age range	21yrs – 60yrs old
Data collection method	Self-administered survey questionnaires
Methodology	• Descriptive Analysis • Anova Analysis • Cronbach's alpha Reliability Test • SEM Model
Tool used	SPSS and AMOS Software

6.2 Design of the Questionnaires:

A self-administered survey questionnaire has been developed for the purpose of this research. It has been divided into two sections - Section A, and Section B. In section-A, respondents are requested to provide their demographic information including: age range, gender, occupation, qualifications and monthly income. Section B examines the factors which influence individual's perception and attitude towards the usage of Central Bank Digital Currency. In this questionnaire, all the questions in Section A and B have multiple choice answers where the respondents have to choose one answer which suits them appropriately.

6.3 Sample Size:

In this research, convenience sampling has been used as a sampling method with a sample size of 283 individuals from a population residing in Chennai city. Convenience sampling (also known as availability sampling or appropriate sampling) is a specific type of non-probability sampling approach that involves gathering data from readily available members of a population who are willing to take part in the study. It is a type of sampling in which the first available data is used for study without the need for additions. In other words, these models involve participants wherever they can be found. In the sampling elements, the target respondents are general public who fall in ages ranging from 21 years old to 60 years old and are residents of Chennai. The sampling elements are the demographic variables such as gender, age, occupation, qualification and monthly income.

7. ANALYSIS AND INTERPRETATION:

7.1 Descriptive Analysis

Descriptive Analysis	Majority	Frequency	Percentage
Age	21 to 40 years old	204	72.10%
Gender	Female	214	75.60%
Qualification	Post Graduate	158	55.80%
Occupation	Students	163	57.60%
Monthly Income	No Income	142	50.20%

Interpretation

For conducting descriptive analysis, the above 6 variables were used and for all such variables, the majority of the values in each variable was described in terms of frequency and percentage. The first variable (Age) has the majority value of 21 to 40 years old with the percentage of 72.1% and the next variable (Gender) has a majority value of Female category with the percentage of 75.6%. When it comes to the aspect of education; majority of them are students, who are post graduates. For the variable monthly income, majority value was No income with a percentage of 50.2%. For the last variable, values were provided in the form of rating scale of 1 to 5 (1 – Strongly Agree, 5 – Strongly Disagree). The variable (Familiar with Digital Currency) has the majority value of 3 (Neutral) with a percentage of 33%.

7.2 **ANOVA Analysis – One way Anova**

Independent Variable	Dependent Variable	Significance (p-value)
Age	Willingness to use paperless currency	0.018
Qualification	Awareness of RBI's digital rupee pilot	0.04
Occupation	Ease of using digital currency daily	0.009
Occupation	Digital currency vs. traditional payments	0.014

Interpretation

For conducting one-way Anova analysis, the above variables were used at the level of significance of 5% (0.05). From the results it was interpreted that there's a significant difference between the means of independent (Age, Qualification, Occupation and Monthly Income) and dependent variables (Sustainability, Awareness and Perceived Ease of Use). Qualification and Awareness - That RBI Has Launched 'The First Pilot Of Digital Rupee' has the highest significant difference at 4% and the lowest significant difference was Monthly Income and Sustainability - Use DC For Eradicating Poverty at 0.6%.

7.3 Cronbach's alpha Reliability Test

Reliability is a measure of test score stability or consistency. It is used to measure the quality of the research study. Reliability is the consistency and error-free nature of construct measurements. The reliability test was done using Cronbach's Alpha tests. This is an easy way to check if the score is reliable. Cronbach's alpha reliability test normally ranges between 0 and 1. However, the coefficient has no lower limit. The closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the scale (Gislaine & Maria, 2013)[19]. One can get negative numbers while measuring reliability as well. A negative reliability depicts some inconsistency or incorrectness in the data.

RELIABILITY STATISTICS FOR OVERALL ITEMS

Cronbach's Alpha	N of Items
.862	31

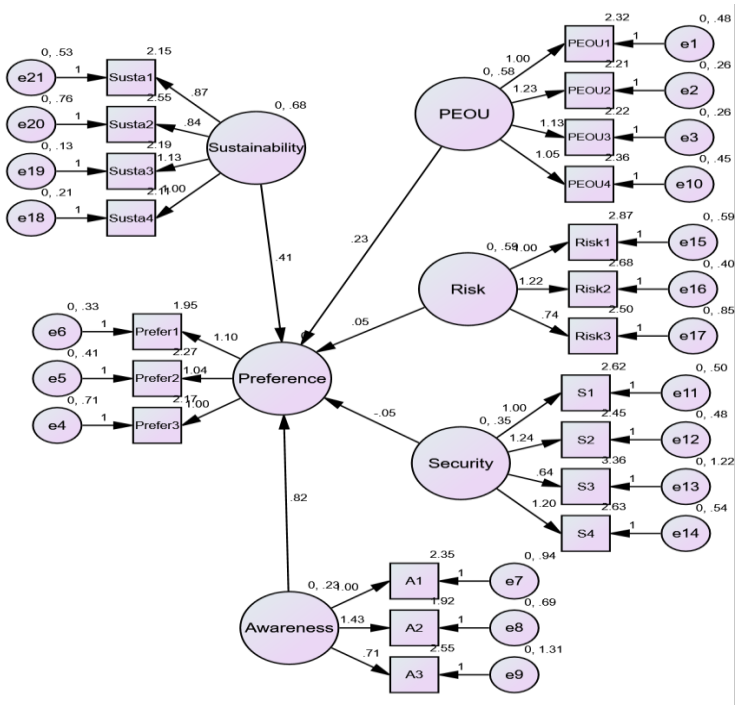
The resulting α coefficient of reliability ranges from 0 to 1 in providing this overall assessment of a measure's reliability. Here it is 0.862, which signifies there is GOOD internal consistency among all the variables in the questionnaire.

7.4 Structural Equation Modeling Analysis

SEM analysis is a statistical method that examines the relationship among numerous variables in a simultaneous way (Multiple independent variables, mediating, moderators and dependent variables). It is not a single procedure but rather a family of related statistical techniques; this family of analysis techniques is often seen as a combination of regression and factor analysis.

SEM model is divided into two models: **1. Measurement model** assess the quality criteria of the constructs and points out whether they are reliable and valid; **2. Structural model** assess the significance of paths or test of hypothesis and it can be processed only after the measurement model is satisfied.

In the analysis, the independent variables are Perceived Ease of Use, Risk, Security, Sustainability and Awareness whereas the dependent variable is 'Preference'.



Interpretation

Results of the SEM Analysis are given in the above figure. Perceived Ease of use explains 23% variation in the dependent variable 'Preference to Use'; Sustainability explains **41 %** variation to the dependent variable 'preference to use'. Risk explains 5% variation to the dependent variable 'preference to use'.

PATH ESTIMATES FOR THE SAMPLE

Interpretation

The path estimates for the sample consists of one endogenous variable (preference to use) and five exogenous variables (ease of use, security, sustainability risk and awareness). Sustainability has a positive and significant impact on preference to use ($\beta = 0.409$, $p < 0.00$), Ease of use has a positive and significant impact on preference to use ($\beta = 0.226$, $p < 0.00$). Risk has a positive and significant impact on preference to use ($\beta = 0.056$, $p < 0.00$). Awareness has a positive and significant impact on preference to use ($\beta = 0.86$, $p < 0.00$). Hence the SEM analysis shows that the data largely supports a hypothesis that has been proposed in the research paper.

8. SUGGESTION:

- Public Education and Awareness Campaigns:

Initiate an all-encompassing public education and awareness initiative to educate the public about CBDC, its advantages, and the potential effects on the economy. Utilize diverse media platforms, including websites, social media, television, and radio, to effectively engage a broad audience. Guarantee accessibility of CBDC services for all, including individuals in rural or underserved regions.

- Transparent Communication:

Ensure transparent and accessible communication channels to address any doubts, concerns, or misconceptions regarding CBDC. Engage with the public, businesses, and other stakeholders through forums, town halls, and public consultations. Keep the public informed about the progress and developments of CBDC initiatives through regular updates and reports.

- Collaborate with Financial Institutions:

Collaborate with commercial banks and financial institutions to promote the integration of CBDC into their services. Encourage them to offer CBDC-compatible accounts and services to facilitate its adoption by the public. Banks must provide rewards to general public for frequently using CBDC for encouraging them.

- Safeguarding Privacy and Security:

Assure the public that CBDC transactions will be secure and private. Implement robust cyber-security measures to protect against potential threats and data breaches. Government and banks must try to create the trust within the people that using CBDC is safe.

- Regulatory Sandbox:

Establish a regulatory sandbox where businesses can experiment with CBDC applications and innovations in a controlled environment. This will promote the development of new use cases and services and encourage entrepreneurs to incorporate it.

- Encourage Financial Inclusion:

CBDC can be designed to promote financial inclusion by providing access to banking services for individuals without traditional bank accounts. It can facilitate efficient cross-border transactions between countries, reducing settlement times and costs.

9. CONCLUSION:

The research demonstrates that awareness of Central Bank Digital Currency (CBDC) varies among individuals from financial backgrounds, where majority of the people have a satisfactory understanding and only few individuals have clear information with regard to CBDC. Even though consumers are aware of CBDC, they are not confident enough to adapt it in their daily life due to security constraints. Educating the public about the benefits and risks of CBDC are essential to ensure widespread acceptance and their long-term sustainability. Also building public trust and confidence is crucial for the successful adoption of CBDC. By leveraging the insights gained from this research, regulatory bodies can formulate effective strategies to promote the adoption of CBDC, and increase its potential to revolutionize the financial landscape while addressing public concerns.

10. SCOPE OF FURTHER RESEARCH:

1. There is a scope for further research in the other regions and rural areas of the economy since this study focused only on the Chennai region.
2. Further research can be done for businesses and entrepreneurs towards their adoption in CBDC.
3. Research can be done by combining quantitative research with qualitative one, to arrive at a more accurate result.
4. Further research can be done on the spending pattern of customers especially when they are using CBDC.

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