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An empirical study on the acceptance of CBDC by Indian bankers: A structural equation modelling approach

Jyoti Mehndiratta Kappal[1]
Neha Parashar[2]
Mugdha Mujumdar[3+]
Rahul Sharma[4]
Praveen G Nair[5]

[1]*ATLAS SkillTech University, Equinox Business Park, Ambedkar Nagar, Kurla West, Kurla, Mumbai, Maharashtra 400070, India.*
[1]*Email: jyotikappal@gmail.com*
[2,3,5]*Symbiosis School of Banking and Finance, Symbiosis International (Deemed) University, Symbiosis Knowledge Village, Symbiosis Campus Path, Lavale, Pune, Maharashtra 412115, India.*
[2]*Email: director@ssbf.edu.in*
[3]*Email: mugdha.mujumdar@ssbf.edu.in*
[5]*Email: Nairg37@yahoo.co.in*
[4]*School of Business, Skyline University College, Sharjah, United Arab Emirates.*
[4]*Email: rahulgsharma@gmail.com*


(+ (Corresponding author)

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ABSTRACT

The purpose of this empirical study is to examine the aspects that are driving factors for the acceptance of central bank digital currency (CBDC) among Indian bankers using a structural equation modeling (SEM) approach. The responses of bankers were collected by a questionnaire, and the data was analyzed using AMOS to understand the relationships between various factors and acceptance of CBDC among Indian bankers. We collected the data from 380 bankers in two cities: Mumbai and Pune. The data was collected using the justified and snowball sampling method used in this research study. The findings show that several factors, including key factors such as Perception of Digital Currency (PDC), Financial Literacy Competency (FLC), Digital Currency Usage (DCU), and Digital Technology and Adoption (DTA), play a significant role in affecting Intention to Use (ITU) CBDC. The study finds a significant positive relationship between all these factors and the intention to use them. The implications of this research study are important for policymakers, central banks, and financial institutions aiming to implement CBDC initiatives and launch CBDC design frameworks. By accepting the factors, participants can make strategies to promote CBDC adoption, address the potential concerns, and leverage the transformative potential of digital currencies in India's financial ecosystem.

Contribution/ Originality: The study gives empirical insights into awareness and acceptance of CBDC by Indian bankers, who are the distributors for the digital currency. The study is the first to provide perspectives of Indian bankers who play an important role in Indian Financial System and can facilitate adoption of CBDC by users.

1. INTRODUCTION

The technological disruption at the beginning of the 21st century has led to a digital development (Boros & Horváth, 2022). Mohapatra and Verma (2018) claim that acceptance and adoption of digitalization are paramount for good governance and sustainability. Miller and Anderson (2022) have investigated the environmental footprint of block chain-based digital currencies, focusing on energy consumption and carbon emissions associated with

mining operations. The further study provides quantitative analysis and modeling approaches to estimate the ecological cost of popular crypto currencies (Miller & Anderson, 2022).

The Digital India initiative undertaken by the Government has greatly assisted with the growth of digital transactions in India. Kaur (2010) emphasizes how demonetizing 85% of the paper currency in circulation in Rs. 500 and Rs. 1000 notes played a massive role in the adoption of digitalization. The shortage of paper currency in circulation meant an increased focus on recorded electronic transfers, which helped to reduce corruption and remove black money from the economy. This move was a massive step toward creating a digitally empowered society. As the impact of digitalization grew more profound, fintech emerged as a disruptive force in areas like Insurance, Lending, Payments, Wealth Management, Risk Management and Regulation. The financial sector saw growth due to the innovative use of Fintech Solutions in existing value chains. These innovations brought about a radical change in the market and facilitated the creation of new technology in the BFSI (Banking, Financial Services, and Insurance) industry. Secure payment gateways for electronic fund transfers, platforms for online trading, online banking opportunities, robot-advisories and payment options like Google Pay and Amazon Pay made it easy for the customer to access the products and services offered and yielded enormous returns for the innovators.

In the BFSI sector, technology has caused disruption on multiple fronts, one being the emergence of new avenues of payments. The core of a financial sector is payment, and the central bank must continuously evolve to offer newer payment methods to stay competitive. According to Bissessar (2016), one of the significant innovations in Fintech and Digital Financial Services was the creation and development of digital or electronic currency and mobile money solutions. Bitcoin is a digital currency referred to as crypto currency which operates on decentralized network called block chain. The key feature of Bit coin is its limited supply. Technological developments are inciting the global economies and stability of financial systems. The pandemic triggered digital payments and other innovations in the financial system. This gave impetus to the design and launch of Central Bank Digital Currency (CBDC). CBDC is a topic of interest, as the majority of the central banks are either implementing the digital currency, running pilots, or planning to implement it in the very near future. The much-talked-about benefits, such as quick settlement, safer cross-border transactions, low fees, and easy accessibility, are rendering extensive research interest in this field.

Digitalization and Innovation in the Fintech sector, along with a need for regulation, have led to the creation of Central Bank Digital Currency (CBDC), also referred to as digital rupee and e-rupee. It is still nascent and heavily regulated by the central bank. An e-wallet can facilitate the transfer of CBDC, an alternative to physical paper currency. RBI launched CBDC (e-rupee, digital currency) in 2022. Two versions of the same were launched by the central bank (Reserve Bank of India, 2022).

The Reserve Bank of India is focusing on making CBDC popular and taking it to the retail segment in the near future. Rubi issues CBDC tokens, and the wallet loaded with CBDC operates outside the banking accounts framework for a maximum transaction amount of Rs. 50000. As India surges towards a $5 trillion economy in 2024-25, robust digital payments backing consumer growth remain vital (Ojha, 2024).

CBDC has features that allow customers to do transactions even when offline and link the e-rupee to the Unified Payments Interface (UPI). UPI is the payments system that operates in real time, allowing customers to transfer amounts across banks without disclosing the bank details. There is an initiative to make e-rupee interoperable with UPI through QR (Quick Response Code) code. The e-rupee is available in different currencies, and the idea is to make it convenient and accessible to a larger audience. The banks are used as intermediaries to distribute CBDCs, which are transferred to them by the central bank. Since CBDC is in the very initial stages of its launch, there is a scarcity of literature on the willingness to adopt CBDC by the general public. There had been research studies that touched upon various factors, such as public opinion of governance, level of democracy, regulatory framework, network readiness, forex reserves, etc, that affected countries' CBDC adoption status.

Nonetheless, the research reflecting the intention to use CBDC is not thoroughly investigated, which is very crucial in countries where the pilot stage of CBDC implementation is ongoing. Further, there have been research studies understanding what CBDC can achieve and how it can benefit the economy and monetary policies; nonetheless, the perception of people who will be critical intermediaries of the CBDC framework is not given due consideration in the previous research. As the user experience and perception have been studied for UPI in the Indian context in previous research, the same needs to be done extensively for CBDC implementation.

Since banks are the intermediaries that will play a crucial role in making CBDC-R successful, it is pertinent to understand if the bankers are willing to adopt it. The customers search for advice from bankers before purchasing a financial product, as they believe that bankers would have investigated the advantages of the product. It is the firm belief of the researchers that before CBDC is offered to the general public, the bankers should be educated on the nuances of the products. If bankers are willing to adopt CBDC-R, it translates into confidence for banks' customers to adopt the new innovation offered by RBI. This study therefore focuses on how bankers working in the Indian ecosystem perceive CBDC.

This appears to be a new study, understanding factors that influence the intention to use digital currency through the lens of bankers. The research study and conclusions will fill the gap in literature on intention to use the digital currencies, which have emerged as a key invention in the global financial landscape. Leveraging the technology acceptance model and current research on digital currency, this study makes a robust theoretical framework to discover the factors influencing the CBDC implementation. This model incorporates several elements that affect the intention to use it. We have studied and analyzed different parameters to gain a deeper understanding of the intention to use them.

Below are the objectives of the research-

1. To recognize the factors impacting on digital currency intention to use.
2. To assess the model using 'structured equation modelling' for intention to use the CBDC.

This research focuses on bankers and how factors, such as perception of digital currency, financial literacy and competence, digital technology adoption, and digital currency usage, can impact their intention to use and adopt CBDC. Two cities, namely Pune and Mumbai, were considered for this study. Mumbai is the financial capital of the Indian subcontinent, and all the banks have their head offices here. Pune is one of the prominent information technology hubs of the country. Its proximity to Mumbai has led to the IT (Information Technology) industry.

Companies provided services and support to the BFSI sector, opening their offices in Pune. Therefore, the ecosystem in these two cities provides access to the latest information and technology. A detailed questionnaire designed after an in-depth literature review was used to study the influence of various factors on the use of digital currency by Indian bankers in Mumbai and Pune.

This research study of CBDC is essential to understand in India, as it holds a special importance due to various technological, financial, and economic factors that are aligned with India's fintech landscape. This study of digital currency is important because in developing countries like India, a huge under banked and unbanked population exists, so it's time for countries like India to make use of digital currency, which will enhance financial inclusion. The CBDC can promote cashless transactions. The penetration of CBDC can drive economic growth and innovation. This study delves deeps down into the drivers that are responsible for the intention to use CBDC.

The paper is structured into different sections; the first section reviews the existing literature, whereas part two explores research design and methodology. Part three analyzes the outcome of the research, and the next part compares the study with existing literature and discusses the results. The final section provides a conclusion, implications, and limitations along with future areas of research.

2. LITERATURE REVIEW

The role of a central bank is to maintain and stimulate the financial ecosystem of a country and provide a conducive financial environment for the economy to thrive. Issuing currency notes is a basic function of a central bank. With the launch of crypto currency, the most common being bit coin, the central bank's role as the sole authority for issuing currency notes came under threat. As a response to innovative digital payment systems, many central banks have taken a heightened interest in CBDCs, which can offer better currency efficiencies and act as an alternative to new digital payment systems. With the advent of the digital financial world, the CBDCs are expected to benefit the economies. Currently, there are four operational CBDCs, and more than ninety central banks or currency jurisdictions are investigating or testing their launch. Digital currencies like CBDCs have attracted significant attention recently. The growing interest in CBDC imitates important change in the worldwide economic landscape, as CBDCs can be perceived as central banks' policy response to crypto currencies and to new payment innovations (Wu, Yang, & Hu, 2022).

This literature review explores the main factors influencing users' intention to adopt digital currency. It synthesizes high-quality research papers on the CBDC implementation, design framework, and intention to use digital currency, providing insights into critical drivers for users' intention to use digital currency

2.1. Defining CBDC

CBDC is a form of digital currency issued by a country's central bank. This type of currency is similar to cryptocurrency except its value is decided by a central authority and is not equivalent to the country's fiat currency. Governments and central banks globally are exploring digital forms of fiat currency termed "CBDC." CBDC is likely to offer increased payment safety and transparency.

According to the RBI Report, CBDC is a new form of money or legal tender issued digitally by the central bank. The government backs it, making it a sovereign currency that can serve as both a store of value and a mode of payment. You can exchange it on the same terms as printed money. The CBDC issued can be for wholesale or retail segments. Authorized financial institutions can use wholesale CBDC to settle interbank transfers, whereas individuals, non-financial institutions, and businesses can use retail CBDC. CBDC is an easily accessible and secure method for payments and settlements. Wu et al. (2022) described digital currency as a decentralized payment system created using an algorithm that allows peer–to–peer transmission independent of any organization. Boros and Horváth (2022) found that 90% of the central banks worldwide are now pursuing CBDC (Central Bank Digital Currency) initiatives to combat such issues while encouraging digital transactions. Another report by PWC asserts that 114 countries are exploring digital currencies, including India.

2.2. Benefits and Challenges of CBDC

Ozili (2022) has figured out more benefits of CBDC, like CBDC can improve the efficiency of digital payments, and it can be considered a policy initiative by central banks to newer payment mechanisms. Further CBDCs can aid central banks in effective monetary policy implementation. One drawback is the amount of effort the bank needs to plan, create, and regulate CBDC. Additionally, the full investigation of challenges related to cyber security risks and users' acceptance remains incomplete. The CBDC initiative is still in its nascent/testing phase in most countries. The lack of information about CBDC will ensure trust remains a hurdle in adopting this payment method. Banks will also need to ensure that the technology is accessible to all. Smith and Brown investigate scalability issues with block chain technologies in relation to digital currencies. Block chain technologies offer security and decentralization benefits; its current limitation is speed, which hinders its scalability. One more challenge of CBDC deployment is the probable impact it could have on deposits at commercial banks. Users may shift their funds from bank accounts to CBDCs, which could have a negative impact on the deposits and lending capacity of the banks.

2.3. CBDC and UPI

Despite their shared connection to digital payments, the CBDC and UPI are distinct entities. The purposes and the level at which they operate are altogether different. CBDCs are purposed to be used as legal tender and have the same characteristics as a physical currency. UPI is a payment mechanism created for convenience and digitalization.

It facilitates instant fund transfer between bank accounts via mobile phones. UPI allows users to transfer money, pay bills, and make payments without the need for cash. Thus, UPI is a payment mechanism/interface, while CBDC is digital currency equivalent to cash. The objective to deploy CBDC along with UPI is to achieve higher financial inclusion, reduce the cost of transactions, and improve monetary policy measures (Parikh, 2024).

2.4. Intention to Use (ITU)

Intention to use can be explained as the degree to which an individual is inclined to adopt the technology. The research by Lee, Lee, and Choi (2021) investigates the factors that impact users' intention to use digital currencies. The factors perceived as risk and trust in digital currency platforms impact the intention to use them (ITU).**The** study by Narayan, Sharma, and Manoharan (2020) discovers the factors impacting intention to use CBDC. Trust is the key factor for intention to use digital currency. In research on blockchain and cryptocurrency, the authors claim that user trust is crucial for adoption of digital currency.

2.5. Intention to Use Digital Currencies

Ajzen and Fishbein (1980) proposed the theory of reasoned action (TRA). This theory reflects how people's intention to use shapes their beliefs and attitudes. The theory of reasoned action explains the relationship between attitudes, intentions, and behaviors. We use it to predict behavior by taking into account pre-existing attitudes.

Ajzen (1991) explained the research work to present the theory of planned behavior (TPB), aiming to explain the association between behavioral intention and action, explaining that individuals are more likely to engage in a behavior if they perceive themselves as skilled of performing it.

Saif Almuraqab (2020) conducted research to assess the citizens intention to use the digital currency in the UAE. The research was conducted on students of higher education in the UAE. Perceived trust, social influence, perceived usefulness, and perceived ease of use determine the citizens' intention to use digital currency. It was further found that perceived ease of use and perceived usefulness mediate the relationship between awareness and intention to use.

Liu, Wang, Wu, and Zhang (2024) conducted research in China to assess the intention of the users to use central bank digital currency (CBDC). The research contributed to the sparsely available literature on CBDC. It was found that perceived security, awareness, perceived usefulness, and perceived ease of use directly and positively influence an individual's intention to use CBDC. Even though perceived compatibility was found to not directly influence the intention of individuals to use CBDC, its influence on the intention of individuals to use CBDC is completely mediated by perceived usefulness, perceived security, and perceived ease of use.

Miraz, Hasan, Rekabder, and Akhter (2022) conducted research on crypto currency in Malaysia to assess their intention to use it. The study focused on determining the factors that lead to an intention to use and adopt crypto currency in Malaysia. The research found that the role of trust, volatility, transaction transparency, and facilitating conditions are the factors that facilitate the adoption of crypto currency. It was further found that "intention to use" played the role of a mediator in Malaysia's digital market.

Mohammed, De-Pablos-Heredero, and Montes Botella (2023), in their research, explore the influence of technological, environmental, legal, and economic factors on CBDC adoption in various advanced and emerging countries. The study reveals that the level of democracy in the country and good governance practices have a more positive impact on CBDC adoption than technological and environmental factors.

Though the study has been done to understand macro factors affecting the adoption of CBDC in a country, the area of intention to use is not fully investigated.

2.6. Financial Literacy and Competence

Financial literacy can be defined as degree of understanding of financial concepts possessed by an individual (Stolper & Walter, 2017). Financial literacy and competence help people to take informed financial decisions. People tend to participate more in financial markets if they have financial literacy. Many studies explain that financial literacy positively affects financial decisions (Ajzen, 1991). All these research studies have highlighted nexus between literacy, belief, and perceived behavior. Researchers explained there was a relationship between financial literacy and intention to use (Banerjee & Sain, 2016; Rachna & Singh, 2013; Van Rooij, Lusardi, & Alessie, 2011). All the researchers have studied the effect of financial literacy and intention. Individuals receive support to enhance their knowledge of financial products and develop their financial literacy skills. Financial knowledge points to better selection of investment products, which impacts financial satisfaction (Saurabh & Nandan, 2019). Hu and Bentler (1999) established that the main reason behind imparting financial literacy and its enrichment is enhancing consumers' aptitude to comprehend and assess the financial risk associated with different financial options. The research found the role of financial literacy to be extremely important and impactful on the attitude and intention of investors and users towards different financial instruments like Financial Literacy.

Fujiki (2020), who conducted research in Japan on evidence from Financial Literacy Survey of 2019, found a positive impact of Financial Literacy on ownership of cryptocurrency. Stolper (2018) conducted research in a household scenario and assessed if the financial advice can overcome the state of financial illiteracy. The research found that standardized financial advice cannot nullify the lack of financial literacy. Even the best financial advisors' advice will be ignored if the household is financially illiterate. The research stated that only financial literacy can inculcate confidence in taking financial advice and implementing the same. Stolper and Walter (2017) conducted research on financial literacy, financial behavior, and financial marketing. The research found that if financial programs are implemented well, then it can lead literate individuals to adequate levels, thereby improving their quality of financial behavior. Furthermore, the research revealed that financial advice can serve as a viable alternative to financial literacy. This can facilitate individuals' financial decisions without any financial education. Montagnoli, Moro, Panos, and Wright (2017) conducted research in Britain to assess the role of financial literacy in attitudes toward income redistribution. A negative relationship was found to exist between financial literacy and the attitude of people towards intervention of government to induce redistribution of income.

Van Rooij et al. (2011) Van Rooij et al. (2011) conducted research on financial security and Financial Literacy. The research found that people have a very limited financial knowledge and literacy. The basic terminology of inflation and interest rate compounding is also not very well known. It was further found that people have limited knowledge of stocks and bonds. The understanding of the concepts like risk diversification financial markets operations are far from perfect. This limited Financial Literacy makes the people to less orient towards stock market investments.

Based on all the studies mentioned, following hypothesis is formulated:

H_1: Financial Literacy and Competence (FLC) positively impacts Intention to Use (ITU).

2.7. Perception of Digital Currency (PDC)

In the TAM model, perceived ease of use and perceived usefulness are important factors in users' intention to adopt new technologies. People will use CBDC more if they see tangible benefits such as greater accessibility, low transactional costs, faster processing times, and increased financial inclusion.

The utilization of digital currency is steadily increasing. People's perception of the technology significantly influences its adoption rate in a given society. The intention to use the digital currency for minor purchases

indicates a potential willingness to embrace digital currency in the future. This implies that individuals who feel at ease using the digital currency in low-risk scenarios may gradually increase their use for all the transactions. According to the students' perceptions, they have minimal or no limited familiarity with digital currency. Owing to this unfamiliarity, students develop hesitancy or lack of comfort with digital currency (Horton, Parker, & Pharris, 2018). This makes their perception of digital currency not very welcoming. They are not forthcoming to use it as well. Tenk, Chin, Heong, and Saleh (2019) conducted research on perception of digital currency in Malaysia by taking into consideration the scenario of Bank Negara Malaysia. The research found a positive perception of digital currency in Malaysia. Digital currencies were found to be very popular. Further, it was found that people are ready to explore it. Tangwattanarat (2017) found that people's perception of digital currency is very speculative in Thailand. This is because in Thailand, the market and the investors are dependent on more individualistic aspects like positive news and referral individuals. It was also found that most of the investors are short-term and like volatility in the market and have high risk exposure.

Few studies analyze the factors that influence the intention to use digital currency. So, it is necessary to check the probability of the impact of the perception of digital currency on the intention to use, which gives the following hypothesis:

H_2: Perception of digital currency (PDC) positively impacts the Intention to Use (ITU) digital currency.

2.8. Digital Technology Adoption (DTA)

Digital technology adoption is defined as a stage where every digital tool and asset of your organization is fully utilized to its maximum potential (Varma, 2022).

Based on the analysis, perceived usefulness of technology, attitude towards usage, and enabling surroundings have considerable impact on the intention to use technology. Technology Acceptance Model (TAM) (Gustavsson, 2009; Karavasilis, Zafiropoulos, & Vrana, 2010; Rigopoulos & Askounis, 2007) aligns these results with its planned relationships. Perceived ease of use and social norms indirectly affect the intention to use technology by influencing attitudes towards usage and perceived usefulness, respectively. Consumers perceive technology as advantageous and trust its use will improve productivity; their intention to adopt it rises. So, from the above studies, the following hypothesis is formed.

H_3: Digital Technology Adoption (DTA) positively impacts the Intention to Use (ITU) digital currency.

2.9. Digital Currency Usage (DCU)

Digital Currency is both technology and service from the perspective of functionality. Digital currency usage has swift and decentralized transactions using cryptographically signed digital tokens (Rachna & Singh, 2013). Research on digital currency adoption varies, highlighting acceptance for adoption and exploring trust, security, and perceived risk as factors influencing adoption beforehand (Albayati, Kim, & Rho, 2020; Arias-Oliva, de Andrés-Sánchez, & Pelegrín-Borondo, 2021; Nadeem, Liu, Pitafi, Younis, & Xu, 2020).

Theories such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been widely used to explain both acceptance of new technology and usage (Venkatesh & Davis, 1996).

From all the analysis above, the below hypothesis is formulated:

H_4: Digital Currency Usage (DCU) positively impacts the Intention to Use (ITU) digital currency.

On the basis of extensive literature review, the authors propose a conceptual model as depicted in Figure 1. A detailed questionnaire was designed, and the data was analyzed using AMOS 26 (Analysis of moment structure).

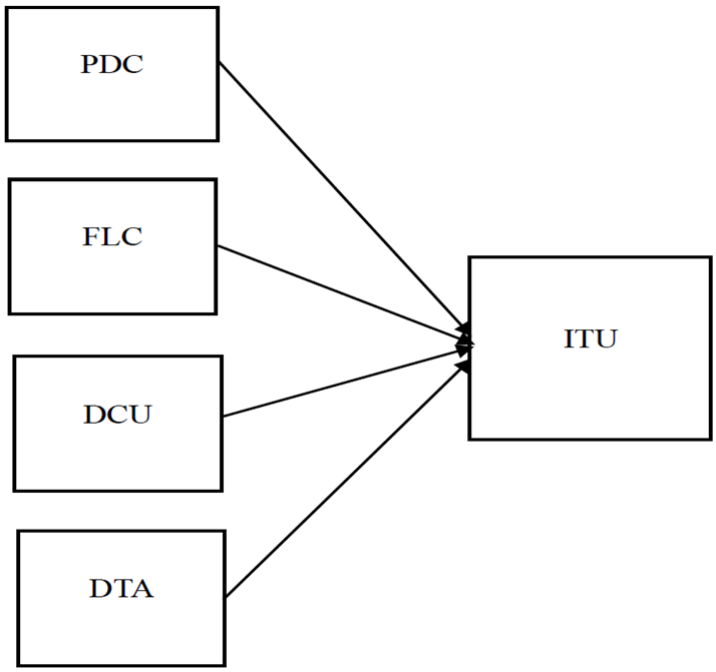

Figure 1. Conceptual framework: Factors affecting intention to use digital currency.

Synthesis of literature review has revealed the existing literature on CBDC is to understand how the end user perceives CBDC and are they willing to adopt CBDC. The studies also emphasize the role of trust which leads to adoption of CBDC. For a successful adoption of CBDC it is critical that bankers who are the link between CBDC and the end users are aware of its benefits and are willing to adopt CBDC which will translate into trust and confidence for the customers to smoothly transition into CBDC. This research therefore focuses on intention of use in Indian bankers which will pave way for easy adoption by the general public at large.

International studies have reflected technological factors, highlighting technological advancements and readiness, but they have overlooked local aspects and users' behaviors in specific countries like India, which impact the adoption process of CBDC. The absence of explicit geographic research means recommendations may not align with local needs and expectations. Prior research points to technological or economic approaches; however, behavioral factors like perceptions, financial literacy, and trust in digital technology are unexplored (Narayan & Ray, 2022).

This is a key research gap, as users' intentions to adopt digital currencies may be driven by factors such as financial literacy, trust in digital platforms, and perceived ease of use, which are not included in existing research models. This study integrates a dynamic model that considers technology factors like Digital Technology Adoption (DTA) and Digital Currency Usage (DCU) but also critical behavior factors such as perception of digital currency, Financial Literacy Competency (FLC), and Intention to Use (ITU). This grouping of factors gives a comprehensive process and offers insights into how individual perception and competencies, alongside technological factors, influence adoption of CBDC. There are many research studies on CBDC in highly developed countries alongside technological factors impacting adoption of CBDC. This study focuses on India, the nation with rapid development of digitization in the financial ecosystem.

This study has adopted a structural equation modeling approach to provide a strong assessment of the relationship between various factors driving CBDC adoption. SEM technique provides insights and analysis of latent constructs and provides an advantage over regression models used in previous research of CBDC. Previous research on CBDC is groundwork for understanding the implications of digital currency, but this study is a step further, providing a country-specific analysis that integrates both technological and behavioral factors.

3. RESEARCH METHODOLOGY

The collected data was analyzed through different steps. First, the reliability of the questionnaire was measured using Cronbach's alpha method (Lehmann & Lehmann, 2010). Secondly, principal component analysis was performed using SPSS 26. Principal Component analysis is conducted to reduce the number of variables, preserving most key information, like major trends or patterns. Third step is conducting CFA (Confirmatory Factor Analysis). The hypothesis testing was conducted by examining structural equation models.

3.1. Survey Instrument

A detailed questionnaire was designed after an extensive literature review. Table 1 shows the items used for the constructs identified. We used a seven-point Likert scale as a measurement scale. The sampling frame was from two cosmopolitan cities of India: Pune and Mumbai. We created a Google form and shared it with the prospective respondents. The form was accompanied by an email that mentioned that the data collected would be used for research purposes only. To maintain the confidentiality of the respondent, personal details like name, contact number, and email ID were not collected in the form. The respondents chosen were bankers with a minimum of two years of experience. This segment has been used for this study, as being bankers, they would have some knowledge of CBDC. The questionnaire was floated to 450 bankers, and 400 responses were received. After data cleaning, 20 responses were discarded, and 380 responses were used for further analysis.

Table 1. Constructs with coding and literature review.

Main construct	Code	Reference
Financial literacy and competence	FLC	Wu et al. (2022)
Perception of digital currency	PDC	Wu et al. (2022)
Digital technology adoption	DTA	Wu et al. (2022)
Digital currency usage DCU1	DCU	Wu et al. (2022)
Intention to use	ITU	Wu et al. (2022)

3.2. Sample Composition and Sample Size

The target segment is bankers who have two years of experience. The respondents were selected from two cities Mumbai, and Pune. Mumbai is the financial capital of India and is home to head offices of most of the major banks. Thus, the staff is closer to decision makers and most of the new policies are piloted there first. Pune is the closet cosmopolitan to Mumbai and is home to Fintech companies with a strong learning ecosystem. The sample was decided using the judgment/purpose first using the researchers' knowledge of the samples required. This typically minimizes the risks and errors. The bankers with experience and operating from large branches and offices were chosen. Further, snowball sampling is used to increase the sample size and to reach to the correct set of samples. The respondents were selected on the basis of following criterion:

1. The respondent should be working in the banking sector.
2. The respondent should have a minimum of two years of experience in banking.

The first set of respondents were identified using judgment sampling, where the researcher identified the respondents who can serve the objective of the study. Subsequent survey subjects were shortlisted on the basis of abovementioned selection criteria. Furthermore, snowball sampling is used, where the existing networks of bankers in these two cities gave references for next set of respondents. A basic mail was floated in the networks which had the criterion for respondents as stated above. The ones who responded positively to the mail and qualified the criterion were mailed the detailed questionnaire.

In total the researcher reached out to 450 people for participating in this study. Out of these 400 respondents reverted and qualified to participate in the survey. Detailed questionnaire was shared online with these 400

respondents and 380 shared their responses. Twenty responses were not complete and therefore were discarded, thus dataset of 380 respondents were used for further analysis.

Sample size was calculated with a variable to case approach. Using the ratio of 1:10 (Saunders, Lewis, & Thornhill, 2009) for 27 variable statements, the appropriate sample size comes to 270 (27 * 10). Thus, a total sample size of above 270 was finalized to be acquired for this research. The dataset for the current research is 380.

3.3. Reliability and Validity

The internal consistency of the instrument was measured by calculating Cronbach's alpha for each item of the scale. The reliability of the factors identified was verified and Table 2 gives the Cronbach alpha for the factors.

Table 2. Results of Cronbach alpha, AVE.

Component	Cronbach alpha	Composite reliability	Average variance extracted (AVE)
FLC	0.857	0.858	0.547
PDC	0.889	0.892	0.579
DTA	0.947	0.97	0.822
DCU	0.848	0.85	0.586
ITU	0.927	0.929	0.724

As per Hair, Risher, Sarstedt, and Ringle (2019), if the value of the composite reliability value is above the threshold of 0.70, the data is considered to be reliable. In this research, the checks for composite reliability and Cronbach's alpha showed values higher than 0.70, indicating that the data is reliable.

3.4. Discriminant Validity

Discriminant validity refers to the independence of the dimensions, and it is used to differentiate (Bryan, 1994; Litwin & Fink, 1995).

Discriminant validity measures whether constructs that theoretically should not be related to each other are unrelated. The discriminant value, which is greater than 0.7, is acceptable.

In this study, all discriminant validity values of variables are greater than 0.7.

Table 3. Discriminant validity.

Construct	PDC	DTA	FLC	DCU	ITU
PDC	0.761				
DTA	0.419	0.847			
FLC	0.456	0.461	0.74		
DCU	0.113	0.396	0.166	0.766	
ITU	0.410	0.414	0.398	0.330	0.851

3.5. Validity Test

A face validity test was conducted to ensure questionnaire is measuring what it is intended to measure. This is a key test, a qualitative measure used in questionnaire design to assess whether questions appear to be valid. The Traditional method of questionnaire pretesting is taking experts feedback on questionnaire. A rigorous expert review of the questionnaire is conducted where five industry experts and five academicians are contacted to give expert feedback on the questionnaire.

3.6. Exploratory Factor Analysis

The initial EFA was conducted to examine 27 scale items signifying Financial Literacy and competence, Perception of digital currency, Digital Technology Adoption, Digital currency Usage and intention to use. Especially when the facts of dimensionality are limited. The final factor solution explained 71.223% of the variance.

The KMO value should be greater than 5 for satisfactory factor analysis. The Kaiser-Meyer-Olkin test, or KMO, assesses the adequacy of data. This indicates factor analysis is suitable for the collected data. KMO and Bartlett's test was done on SPSS to check the sampling adequacy, and it was found to be 0.930 with a p-value of 0.001. Subsequently, exploratory factor analysis (EFA) was done using SPSS 20 to confirm the factors identified. The five factors identified explained 71.223% of variance, and no common method bias was found. Table 2 gives details of KMO and Bartlett's test, and Table 3 gives the total variance explained.

It can be inferred from the above Table 3 that all the extraction values are high depicting a high.

Proportion of each variable's variance being explained by the retained factors.

Table 4. Results of exploratory factor analysis.

Total variance explained									
Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	9.434	34.940	34.940	9.434	34.940	34.940	5.334	19.756	19.756
2	3.193	11.827	46.767	3.193	11.827	46.767	3.939	14.589	34.345
3	2.681	9.931	56.697	2.681	9.931	56.697	3.898	14.438	48.783
4	2.042	7.562	64.259	2.042	7.562	64.259	3.252	12.045	60.828
5	1.880	6.964	71.223	1.880	6.964	71.223	2.807	10.395	71.223
6	0.630	2.332	73.555	-	-	-	-	-	-
7	0.556	2.059	75.614	-	-	-	-	-	-
8	0.532	1.969	77.583	-	-	-	-	-	-
9	0.498	1.844	79.427	-	-	-	-	-	-
10	0.480	1.777	81.204	-	-	-	--	-	-
11	0.442	1.639	82.843	-	-	-	-	-	-
12	0.422	1.565	84.408	-	-	-	-	-	-
13	0.380	1.408	85.815	-	-	-	-	-	-
14	0.367	1.358	87.173	-	-	-	-	-	-
15	0.358	1.326	88.499	-	-	-	-	-	-
16	0.348	1.289	89.789	-	-	-	-	-	-
17	0.329	1.219	91.007	-	-	-	-	-	-
18	0.313	1.159	92.166	-	-	-	-	-	-
19	0.286	1.059	93.226	-	-	-	-	-	-
20	0.274	1.015	94.240	-	-	-	-	-	-
21	0.265	0.983	95.223	-	-	-	-	-	-
22	0.245	0.906	96.129	-	-	-	-	-	-
23	0.237	0.879	97.008	-	-	-	-	-	-
24	0.216	0.800	97.808	-	-	-	-	-	-
25	0.210	0.778	98.586	-	-	-	-	-	-
26	0.198	0.732	99.318	-	-	-	-	-	-
27	0.184	0.682	100.000	-	-	-	-	-	-
Extraction method: Principal component analysis.									

Table 4 illustrates total variance explained, i.e., the sum of variance of data. The total variance explained for all dependent variables in the model is 71.22%. In SEM, total variance explained helps to quantify the effectiveness of the model in explaining the relationship between variables.

4. RESULTS

The responses were perceived based on their demographics in the portfolio and banking experience. In the past, researchers have emphasized the importance of demographic aspects like gender, age, education, profession, and annual income. The descriptive statistics are calculated in Table 5. All the respondents have banking experience of a minimum of 2 years.

4.1. Demographic Profile

In this study, respondents are from two cities, Pune (55 percent) and Mumbai (45 percent), and have an educational level of graduation (35.1 percent) or post-graduation (62.8 percent). The population consists of females (33 percent) as well as males (66 percent), with work experience ranging from a minimum of two years to seven and above. Age bracket may cover early professionals, mid-career folks, and highly experienced individuals. Respondents having work experience of 3-5 years is 51.8%, 5-7 years is 22.5%, and above 7 years is 26%. The respondents in this study who have work experience with private banks are 66.5%, public sector banks are 27.7%, and cooperative banks are 5.8%. The demographic profile is shown in Table 5, which is shown.

Table 5. Demographic profile.

City	Frequency	Percent	Age	Frequency	Percent
Pune	209	55	25-35	285	75
Mumbai	171	45	36-45	57	15
-	-	-	45-55	19	5
-	-	-	55 and above	19	5
Type of bank	Frequency	Percent	Education	Frequency	Percent
Private	250	66.5	Graduate	133	35.1
Public	103	27.7	Post graduate	235	62.8
Cooperative	27	5.8	Other	12	2.7
Work experience	Frequency	Percent	Gender	Frequency	Percent
3-5 years	228	60	Female	133	35
5-7 years	53	14.1	Male	240	63.2
Above 7 years	99	25.9	Others	7	1.8

A pilot study of around 100 participants was conducted to make sure questions are understood. A pilot study conducted a small-scale original study steered before the main research to check various aspects of the research design and methodology. It allowed researchers to identify and address possible issues, refine the measures, and improve the quality of the main study. We checked the feasibility of the study and refined the research method. Pilot study helped researchers to improve quality and validity of study leading to robust research findings. Questionnaire framework with additions was pretested the experts and related stakeholders. After discarding the incomplete responses, a final sample size of 380 respondents was final.

4.2. Confirmatory Factor Analysis

The factors and their related variables identified earlier have been verified in this section using confirmatory factor analysis. CFA was done with SPSS AMOS 26 to ensure the construct validity. We performed CFA using SPSS AMOS 26 to verify the construct validity. Degrees of freedom is 314. **I**n summary, based on the provided fit indices, the model appears to have an excellent fit. The CMIN/DF (Goodness of fit index), CFI (comparative Fit Index), SRMR (Standardized Root Mean Square Residua), RMSEA (Root Mean Square Error of Approximation), and P Close all fall within the recommended thresholds, indicating a well-fitting model. As per Marsh and Hocevar (1985), CMIN/DF < 3 indicates a good fit of the model. As per Byrne (1994), a GFI value of less than 0.95 depicts a good fit. According to Hu and Bentler (1999). Values for CFI and GFI indices to be greater than 0.9 are considered to be a good fit.

Table 6. Model fit indices.

Indices	Values	Results
CMIN/DF	<5	1.531
CFI	>0.9	0.975
GFI	>0.9	0.961
RMSEA	<0.08	0.037

Based on the above discussion, as Table 6 presents, it is clear that the model is confirmed and all the sub factors are best fit for the factors taken into consideration.

The model is fit for further analysis. The R-square value is a coefficient of determination, a statistical measure that represents the proportion of variance in the dependent variable that is predictable from the independent variable. The R-square value is 0.306. (R^2 = 0.306). A higher value of R-squared indicates a better model fit. The model explains 30% of the variability in ITU.

Table 7. Hypothesis testing results.

Dependent variable	Relationship	Independent variable	Estimate	S.E.	C.R.	P	Results
ITU	<---	FLC	0.177	0.061	2.921	0.003	Supported
ITU	<---	DCU	0.236	0.062	3.831	***	Supported
ITU	<---	PDC	0.276	0.067	4.128	***	Supported
ITU	<---	DTA	0.141	0.061	2.320	0.020	Supported

Note: *** denotes statistically significant value.

As Table 7 illustrates, we have used SEM method because our objective in this research is theory testing and confirmation of relationships. SEM technique takes the data to be normal.

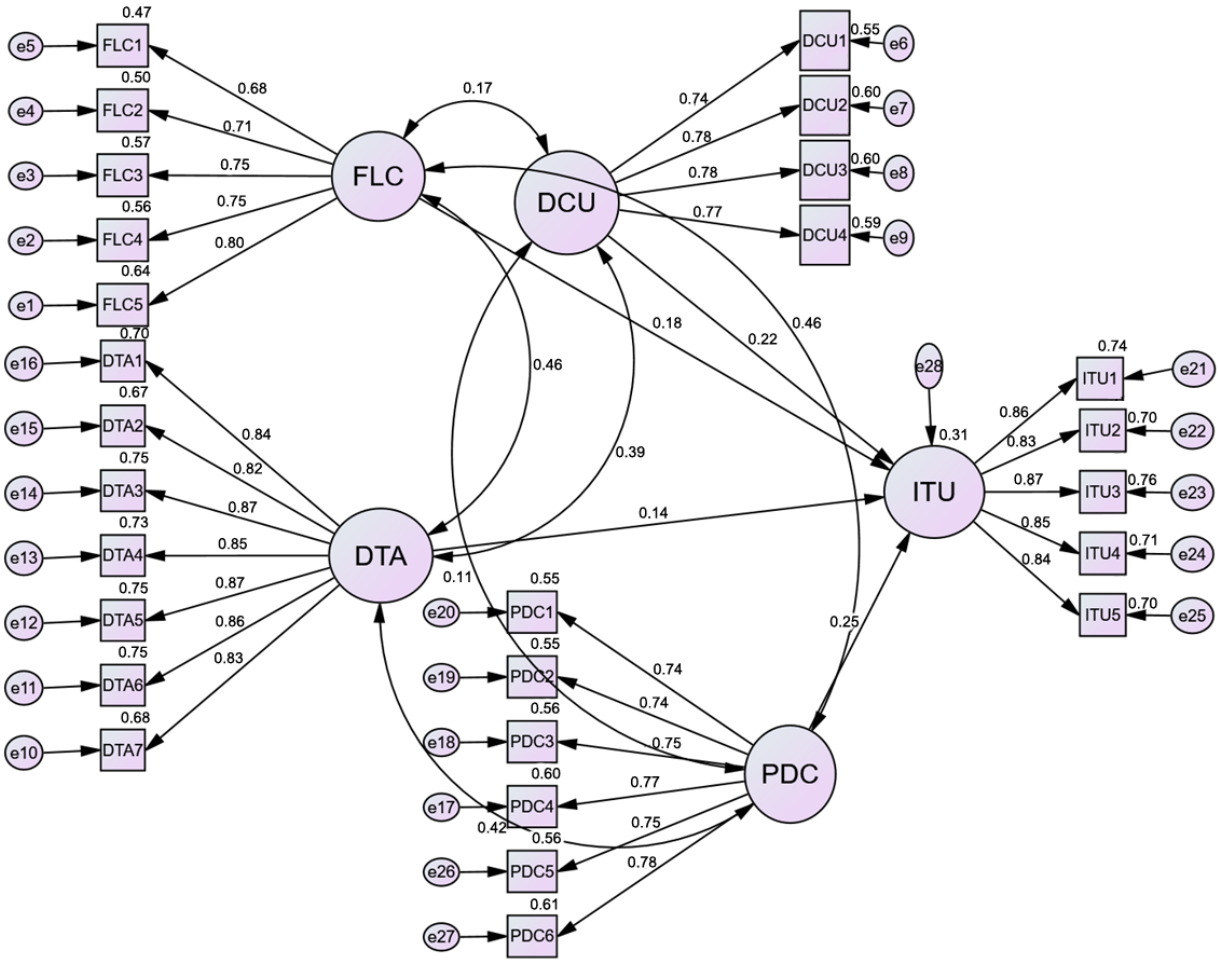

Figure 2. SEM path analysis.

As per Figure 2, which illustrates SEM path analysis, the R-square value gives the degree of variability in the target variable that is explained by the model or the independent variables' R-square value ranges from 0 to 1. (R^2 = 0.306). The higher the R-squared, the better the model fit. The model explains 30% of ITU's variability.

5. DISCUSSION

The study gives an insight into the factors influencing the intention to use CBDC. This research touches upon the human aspect which is critical for CBDC adoption. A large number of people in India uses digital payments. Digital currency i.e. CBDC is also a topic in which RBI has started the pilot and there are around fifty lakh subscribers to this pilot. Thus, this study is relevant to the factors affecting on intention to use digital currency in Indian context. After analyzing results, all the constructs have significant impact on intention to use. The study explores the relationship between financial knowledge and competence, concerns and risks regarding digital currency, intentions and future usage of digital currency, and their impacts on individuals' perceptions and behaviors. Participants showed moderate levels of financial knowledge and competence, but there is room for improvement. They also showed moderate to high levels of concerns and risks about digital currency, such as security concerns and volatility. Participants expressed a moderate level of intention to use digital currency in the future, with mean scores ranging from 4.21 to 4.88 out of 7, indicating an interest in using it. Regression coefficient estimates show that for every one-unit increase in perceived digital currency competence, there is 0.272 unit increase in intentions and future usage of digital currency. For every one-unit increase in financial digital currency competence, there is a 0.226 unit increase in intentions and future usage of digital currency. For every one-unit increase in current digital currency usage, there is a 0.236 unit increase in intentions and future usage of digital currency.

The standardized regression weight table reveals that individuals with higher concerns and risks about digital currency are less likely to intend to use it in the future. Those who currently use digital currency are more likely to intend to use it in the future. Additionally, those with higher financial knowledge and competence are more likely to use digital currency. These findings suggest that individuals with digital currency use are more likely to use it in the future.

This research study focuses on the digital currency adoption, stressing the acceptance for adoption and exploring trust, security, and perceived risk as factors influencing adoption to use (Albayati et al., 2020; Arias-Oliva et al., 2021; Nadeem et al., 2020). First of all, the findings suggest that the perception of digital currency positively and significantly impacts the intention to use digital currency. This result is aligned with other studies on behavioral intentions to use financial products and services.

The research study has been conducted regarding the effect of financial literacy and its impact on intention to use. Some researchers have found that there was a relationship between financial knowledge and intention to use. Similar outcomes have been previously suggested; the author has analyzed the effect of financial literacy on financial behavioral intention (Narwal, Pathneja, & Yadav, 2015). So, this research study has stressed the positive relationship between financial literacy and intention to use.

The usage of digital technology and digital currency is a constantly evolving and dynamic field. There are many studies on digital currency usage. They are highlighting technology usage and the relationship between technology usage and intention to use and exploring different factors like reliability and perceived risk (Albayati et al., 2020; Arias-Oliva et al., 2021; Nadeem et al., 2020).

Like the previous studies, this study also boosts the impact of digital currency usage on intention to use, and hence digital currency usage does have an impact on intention to use.

The foundation of digital currency is block chain technology. The block chain technology will enable the real-time tracking and the ledger maintenance (Varma, 2022).

The perceived usefulness of technology has a considerable impact on the intention to use it. These studies are similar in nature, having analyzed the relationship between digital technology adoption and intention to use. Like previous studies, this research emphasizes the significance of using technology. This study has analyzed that there is a significant positive impact of digital technology on intention to use.

6. CONCLUSION

The launch of CBDC is a big step for a country like India where the financial literacy rate is low and digital adoption is work in progress. Given the advantages of CBDC, it is important that the users adopt to it fast. As a first step in understanding the intent to use e-rupee, this study focuses on Indian bankers who are the first point of contact for customers and play an important role in educating and sensitizing customers. The intent of the study is to understand the knowledge level of Indian bankers on the concept of e-rupee/CBDC and are they willing to use e-rupee in future. The study emphasizes the importance of considering multiple variables in understanding the relationships between various factors influencing individuals' intentions and behaviors related to digital currency.

Digital rupee is an alternative to paper currency and currently the central bank, Reserve Bank of India (RBI) is conducting a pilot on launching it for retail and wholesale segments. Issuance and circulation of physical currency are an expensive proposition and it also leaves carbon footprint. A large amount of physical cash has demerits like cost of printing and distribution, risks of counterfeits and theft which is the primary motive for RBI to launch CBDC. In nutshell perception of digital currency is complicated and multifaceted, affected by several factors defined in the study such as digital technology adoption, financial literacy and competence, perception of digital currency. The awareness level of CBDC among banners is low and RBI needs to design focused interventions to increase the awareness and acceptance of CBDC. RBI can work on fostering partnerships with traditional banks to increase the awareness and thus adoption of CBDC in the coming years. There are policy implications of research findings. It is beneficial to have specific policies and practices for making robust financial education and usage experience. As digital currency, crypto currency is volatile in nature, there are many security issues, needs to be taken care of when crypto currencies will be widely adopted as the main currency. From the government and regulators point of view, digital currency security is at risk for monetary policy. Many stakeholders are exploring ways to accommodate the digital currency into the existing financial system with efficient regulations. Consumers have curiosity to use digital currency but are not sure about its applications. Many consumers find digital currency complicated to understand. In developing countries, digital currency can view as more stable option however challenges are lack of infrastructure and education. A digital currency evolves and mature, its perception is likely to change for adapting new development. The stakeholders who are eager to use digital currency see it as future of finance. The significance of this study is that, this study explores factors impacting on CBDC but also by proving invaluable suggestions for policymakers, central banks and financial institutions; by applying structural Equation Modelling approach, this research deals rigorous analytical framework for understanding complex relationships between variables. The limitations of the current study are that banker from Mumbai and Pune were included in this study. A bigger study including bankers from other geographical areas should be conducted. RBI would need to work closely with Fintech companies to overcome the stiff competition that CBDC faces from established payment systems like UPI. Similar research should also be conducted on employees of Fintech companies. An incomplete enabling effect can also be confirmed if perceived value mediates the path between financial literacy and intention to use. The study can contribute to theoretical understanding of technology acceptance models by understanding how its constructs apply significantly to CBDC adoption among bankers in India. The study contributes to literature on financial innovation. The study could also add to policymakers about willingness of banking sector of CBDC implementation. Banks can use study findings to develop strategies for integrating CBDC into their operations, finding potential risk factors about associated with risk management strategies. The insights from this study can help banks to educate and guide the customers. This study will be useful for central banks to gauge the sentiments and readiness of banking sector for CBDC implementation. In nutshell, this empirical study on the acceptance of CBDC can provide insights for both academics and industry stakeholder. Future scope of digital currency is dynamic and multifaceted with potential to reshape global financial landscape empowering the financial ecosystem globally. However, challenges such as scalability, technological innovation, regulatory instability remains key factors for deciding the extent of development of digital currency. This research can help for taking strategic

decision, and policy intervention for promoting the use of digital currency. There are policy implications of research findings. It is beneficial to have specific policies and practices for making robust financial education and usage experience. The policy implications of CBDC are widespread, specifically for countries like India where digital financial systems, monetary policies and banking procedures and practices are developing rapidly. CBDC can impact the monetary policies and consequently may indirectly affect the economic demand. Nonetheless, the effect of CBDC on the banks' deposits and their balance sheets still remains critical aspect which needs further study. With the CBDC implementation, the deposits and balance sheet size of a bank may diminish. Further, the liquidity assessment and forecasting can become cumbersome against this backdrop and the role of central bank and government remains crucial during CBDC implementation. This research can help for taking strategic decision, and policy intervention for promoting the use of digital currency. The policy implications of CBDC are enormous and multi-faceted touching everything from monetary policy and financial inclusion to privacy concerns and cyber security risks. As central banks remain to discover and grow the use of CBDCs, they will need to navigate challenges to ensure benefits. As central banks see and development CBDC, they will need to go through encounters to ensure benefits balance the potential risk. Global collaborations, regulatory frameworks, and technological structure are useful to maximize potential of CBDC. Banks are the vehicles which are used by the government to launch any new financial product. It is critical that the bankers who are the spokespersons for these products understand the product and are willing to use the product which then gets translated into general public gaining confidence to adopt the product. With government focusing on launch of CBDC it is critical that the bankers are open to adopt the product. To the best of knowledge of the researchers there is no investigation to understand the perception of Indian bankers' on CBDC and on their intention to adopt it.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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