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## AWARENESS LEVEL OF BANK EMPLOYEES TOWARDS CBDCS IN KERALA

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### ABSTRACT

The study focuses on unveiling the awareness level of bank employees towards CBDCs, as they are the main intermediaries in between the RBI and the general public. For the effortless implementation of the digital rupee, the concept must be well and properly understood by the users. It covers the bank employees' understanding on conceptual level, policy and regulatory level, technological level as well as examines their source of information regarding the concept. Primary data have been used for the study which was collected through a structured questionnaire and the same was analysed using descriptive statistics, Mann Whitney U Test, Kruskal Wallis H Test and Dunn's Post Hoc Test. And the results show that the employees possess a moderate level of understanding regarding the concept, regulatory aspects, technological framework, and sources of learning related to CBDC, and the findings suggest that while the foundational understanding of CBDC is emerging among bank employees, gaps remain in technological and policy-related awareness.

**KEYWORDS:** Digital Rupee, CBDCs, Conceptual level understanding, Regulatory Level Awareness, Technological Awareness and Sources of Information

### INTRODUCTION

Money, being the key element in everyday transactions and a store of value gaining its importance in every human life. Its evolution and the journey till now are totally dynamic. Every field has been undergoing drastic innovations and the financial landscape and payment mechanisms are not an exception. While technological innovations and digitalisation processes are being carried out in all the spheres, the payment system is also getting upgraded in every nook and corner of the country. Apart from the traditional physical currencies majority of the world nations are now exploring its own digital currencies and are at various stages of its implementation. CBDC is the digital form of the traditional physical currency in India. It is also known as Digital Rupee or e-Rupee (e ₹). As a breakthrough advancement to the existing financial system of our nation, Reserve Bank of India (RBI) being the central bank of the country," introduced the first pilot in the Digital Rupee – Wholesale Segment (e₹-



W) on November 1, 2022 and the retail Digital Rupee (₹ -R) on December 1, 2022. This places India one of the front runners of CBDC adopting countries in the world “(GOI, 2022). Various nations of the world are in different stages of its implementation due to a number of elements.

At present, India is in its active pilot stage with regard to the CBDC implementation. In order to ensure effective rollout of the digital currency, the users must be well equipped with the overall knowledge such as the feasibility, usability, merits and demerits, interoperability with the existing options, offline functionality, role in financial inclusion etc. about the same. In India, especially in Kerala, the pace of adoption is a matter of fact. So, as an initiation to study the implementation of CBDC, it is vital to understand the magnitude of familiarity of the people about the term. This study aims at exploring the level of awareness among the bank employees in Kerala regarding the digital rupee. Because, bank employees play an inevitable role as intermediaries in between the Central Bank and the ultimate users. They also ensure a smooth transition from the traditional banking practices to digital currency frameworks. In the first phase of adoption users can avail the facility primarily through their bank branches. So, their perceptions, attitudes and the level of knowledge will get reflected in the general public also.

Therefore, the present study throws light on the awareness level of bank employees in Kerala on CBDC. This will aid the RBI and policy makers to know the present conditions, knowledge gap, factors affecting their level of knowledge etc. which will contribute into a smooth implementation of the CBDC in a highly paced manner.

### **STATEMENT OF THE PROBLEM**

The effective and successful deployment of the digital rupee is influenced by a number of factors. Among them the awareness level of the stakeholders, mainly the bank employees seem vital. Because, only with a proper understanding of the CBDC, they can act as a channel in between the central bank and the general public. It will contribute positively for its implementation. So, the present study aims at exploring the magnitude of the awareness among the bank employees in Kerala regarding the CBDCs.

### **SIGNIFICANCE OF THE STUDY**

This study focuses on analysing the awareness level of bank employees in Kerala regarding CBDC, one of the recent digital initiatives by the central bank of our country. Bank employees play a crucial role in the financial system and they also influence the relevant decisions and adoption of such initiatives by the public. Because they are in close contact with them. So, the current study unveils the awareness level of the bank employees in various spheres like conceptual, regulatory, technological and their sources of information about the term. Thus, the findings of the study are of greater



importance to the financial institutions along with the policy makers to understand the level of understanding, knowledge gap etc. and can take necessary steps accordingly in order to ensure successful and smooth implementation of CBDCs.

### **SCOPE OF THE STUDY**

The present study deals with exploring the awareness level of bank employees towards CBDCs in the state of Kerala. It covers the conceptual level understanding on the same, their knowledge on the policy and regulatory framework, familiarity from a technological perspective as well as their primary source of information regarding CBDCs. Since bank employees contribute much to the digital and financial revolutions of the financial system of the nation, their level of understanding on this digital currency and their perspectives seems sound. Their knowledge will directly influence the general public and their attitudes and intention to adopt CBDC. The geographical scope of the study is confined to the state of Kerala covering a number of public private and other types of banks.

### **OBJECTIVES OF THE STUDY**

The major objectives of the study are as follows.

- To unveil the conceptual level understanding on CBDC among bank employees in Kerala
- To know the policy and regulatory awareness with regard to CBDC
- To study the awareness on CBDC from a technological perspective
- To find out the sources of information regarding CBDC

### **REVIEW OF LITERATURE**

(Vanajakshi & T, 2025) examined the bank employee's perceptions and attitudes towards CBDCs, and found a moderate to high level of understanding. Since they are aware about CBDC, lack a thorough knowledge.

(Modha & Trivedi, 2025) found that perceived usefulness emerges as the strongest predictor of behavioural intention followed by trust and security perceptions and perceived ease of use. The study identifies significant demographic variations, with younger, more educated, and higher-income groups showing greater adoption readiness. Institutional trust in the RBI remains remarkably high providing a solid foundation for CBDC implementation.

(Jagdishprasad Varma, 2023) examined the potential determinants for the prospective successful implementation of CBDC in India, aiming to study the impact of various factors such as Technology, Satisfaction, Fear, Trust, Security and Challenges, and was revealed that the respondents would accept the concept of CBDCs, with a majority of respondents being comfortable in handling the same and being familiar with the associated procedures, but concerned about the challenges related to managing



and operation, security and trust.

(G and AS,2024) studied the public attitude towards CBDC and uncovered a significant level of awareness and growing interest in the same. Trust in central banks is highlighted as crucial for successful CBDC implementation. Positive attitudes towards adoption are noted, with perceived benefits including faster transactions and enhanced security.

(Sidheakkya, 2023) studied the level of readiness and perception of public sector bank employees regarding the CBDC. Factors such as Power, network governance, economic stability, convenience and acceptability, security and safety, and technology were examined and showed a high level of favourability among the respondents. They expressed a desire for technological advancements that would enhance transparency in all transactions, and they favour the seamless integration of CBDC with existing systems, and opined that it has the ability to enhance operational efficiency, lower expenses, and stimulate innovation.

**RESEARCH METHODOLOGY**

The study adopts a quantitative research design. The sample constitutes the bank employees in Kerala and the same was selected with the help of purposive sampling technique. Primary data were used for the study which was collected through a structured questionnaire. The questionnaire has been designed in such a way as to fetch the details on the demographic profile of the respondents, conceptual level understanding on CBDC, policy and regulatory awareness, technological awareness and sources of information regarding CBDCs. And the collected data were analysed using frequency analysis, percentage, mean, median, standard deviation, Mann Whitney U Test, Kruskal Wallis H Test and Dunn’s Post Hoc Test.

**RESULTS AND DISCUSSION**

**Table.1 Demographic Profile of the Respondents**

Frequencies of Gender			
Gender	Counts	% of Total	Cumulative %
Male	284	71.90%	71.90%
Female	111	28.10%	100.00%
Frequencies of Age			
Age	Counts	% of Total	Cumulative %
25-34	205	51.90%	51.90%

35-44	179	45.30%	97.20%
Above 44	11	2.80%	100.00%

**Frequencies of Educational Qualification**

Educational Qualification	Counts	% of Total	Cumulative %
Graduate	123	31.10%	31.10%
Post-Graduate	204	51.60%	82.80%
Technical	68	17.20%	100.00%

**Frequencies of Designation**

Designation	Counts	% of Total	Cumulative %
Clerk	69	17.50%	17.50%
Officer	109	27.60%	45.10%
Manager	132	33.40%	78.50%
Senior Manager	85	21.50%	100.00%

**Frequencies of Type of Bank**

Type of Bank	Counts	% of Total	Cumulative %
Public	154	39.00%	39.00%
Private	172	43.50%	82.50%
Others	69	17.50%	100.00%

**Frequencies of Years of Experience in Banking**

Years of Experience in Banking	Counts	% of Total	Cumulative %
0-5 years	78	19.70%	19.70%
6-15 years	137	34.70%	54.40%
More than 16	180	45.60%	100.00%

Source: Compiled from primary data

The demographic profile of the respondents shows that out of the total 395 respondents, a majority were male (71.9%), while females constituted 28.1% of the sample, indicating a male-dominated representation in the banking workforce. With respect to age distribution, most respondents belonged to the 25–34 years age group (51.9%), followed by those aged 35–44 years (45.3%), while only 2.8% were above 44 years of age. This reflects that the majority of the participants are relatively young professionals, suggesting a workforce inclined towards technological adaptability and digital transformation.

In terms of educational qualification, over half of the respondents were postgraduates (51.6%), followed by graduates (31.1%) and those with technical or professional qualifications (17.2%). This composition indicates that the sample is academically well-qualified, which may positively influence awareness and understanding of digital innovations like CBDC. Regarding designation, managers formed the largest group (33.4%), followed by officers (27.6%), senior managers (21.5%), and clerks (17.5%), demonstrating that the study captured opinions from various hierarchical levels within the banking system.

When categorized by the type of bank, 43.5% of the respondents were employed in private sector banks, 39% in public sector banks, and 17.5% in other banking institutions such as cooperative or regional banks. This balanced distribution ensures that the findings represent diverse institutional settings. Concerning work experience, 45.6% of respondents had more than 16 years of experience, 34.7% had between 6 and 15 years, and 19.7% had less than 5 years of experience. This indicates that a large portion of the sample comprises experienced banking professionals with extensive exposure to financial systems and regulatory developments. Overall, the demographic profile suggests that the study includes a well-diversified and experienced sample, providing a reliable basis for analyzing the awareness of CBDC among bank employees.

**Table.2 Descriptive Statistics on Awareness Level of Bank Employees**

<b>Q Code</b>		<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>
<b>Conceptual Understanding</b>					
CU1	I know that CBDC is different from cryptocurrencies like Bitcoin.	395	3.67	4	1.114
CU2	I understand that CBDC is legal tender issued by the Reserve Bank of India.	395	3.81	4	1.141
CU3	I am aware of the difference between wholesale CBDC and retail CBDC.	395	2.94	3	0.752
CU4	I understand that one of the goals of CBDC is to reduce cash dependency.	395	3.62	4	1.039
CU5	I can explain how CBDC differs from UPI, NEFT, and IMPS.	395	3.46	3	1.005
<b>Regulatory or Policy Awareness</b>					
RA1	I am aware of RBI’s phased approach for implementing CBDC.	395	3.43	3	1.098
RA2	I have read RBI guidelines or official lations on	395	2.95	3	1.012

CBDC.					
RA3	I understand how CBDC regulations differ from those for other digital payments.	395	3.17	3	1.026
RA4	I am aware of legal or compliance norms related to CBDC usage.	395	2.88	3	0.879
Technology					
TA1	I am aware that CBDC can be implemented using blockchain or DLT.	395	2.77	3	0.828
TA2	I understand the difference between token-based and account-based CBDC.	395	2.79	3	0.929
TA3	I understand the importance of interoperability between CBDC and existing systems.	395	2.91	3	0.968
Sources					
SA1	I first heard about CBDC through media or news outlets.	395	3.22	3	1.266
SA2	My bank has conducted training or workshops related to CBDC.	395	3.05	3	1.07
SA3	Discussions with colleagues or in professional groups have improved my CBDC awareness.	395	3.39	3	1.028

Source: Compiled from Primary Data

Descriptive statistics were computed to measure the awareness level of bank employees towards CBDC across four major constructs: conceptual understanding, regulatory or policy awareness, technology awareness, and sources of information.

Under the construct of conceptual understanding, the highest mean score was recorded for the statement “I understand that CBDC is legal tender issued by the Reserve Bank of India” ( $\bar{x} = 3.81$ ), indicating that employees have a relatively good understanding of the basic nature of CBDC as a legitimate form of digital currency. Conversely, the lowest mean score within this construct was found for “I am aware of the difference between wholesale CBDC and retail CBDC” ( $\bar{x} = 2.94$ ), suggesting limited knowledge of the structural distinctions between CBDC types.

In the regulatory or policy awareness construct, the statement “I am aware of RBI’s phased approach for implementing CBDC” showed the highest mean value ( $\bar{x} = 3.43$ ), implying moderate familiarity with the central bank’s implementation strategy. The lowest mean ( $\bar{x} = 2.88$ ) was observed for “I am aware of legal or compliance norms related to CBDC usage,” reflecting insufficient understanding of regulatory and compliance frameworks among employees.

Within the technology awareness construct, the highest mean score was noted for “I understand the importance of interoperability between CBDC and existing systems” ( $\bar{x} = 2.91$ ), indicating a fair level of technological understanding. However, the lowest mean ( $\bar{x} = 2.77$ ) for “I am aware that CBDC can be implemented using blockchain or DLT” reveals a limited grasp of the underlying technological infrastructure supporting CBDC.

For the sources of information construct, “I first heard about CBDC through media or news outlets” had the highest mean ( $\bar{x} = 3.22$ ), showing that mass media serves as the primary channel of information dissemination. On the other hand, the lowest mean ( $\bar{x} = 3.05$ ) was observed for “My bank has conducted training or workshops related to CBDC,” which highlights the lack of formal institutional efforts to educate employees on the subject.

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*H<sub>0</sub>: There is no significant difference in the awareness level of bank employees towards CBDC based on their gender.*

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**Table.3 Descriptive Statistics on Gender**

	Group	N	Mean	Median	SD	SE
<b>Conceptual Understanding</b>	Male	284	4.02	4.00	1.120	0.0664
	Female	111	3.26	4.00	1.006	0.0955
<b>Regulatory and Policy Awareness</b>	Male	284	3.65	4.00	1.067	0.0633
	Female	111	2.87	3.00	0.973	0.0924
<b>Technology Awareness</b>	Male	284	2.84	3.00	0.794	0.0471
	Female	111	2.59	3.00	0.888	0.0843
<b>Sources of Awareness and Learning</b>	Male	284	3.02	3.00	0.971	0.0576
	Female	111	2.65	3.00	0.911	0.0865

Source: Compiled from primary data

From the table 3 it is clear that in terms of conceptual understanding, male employees recorded a higher mean score ( $\bar{x} = 4.02$ ) compared to female employees ( $\bar{x} = 3.26$ ), indicating that men possessed relatively better knowledge about the basic concepts and objectives of CBDC. Similarly, for regulatory

and policy awareness, males again showed a higher average score ( $\bar{x} = 3.65$ ) than females ( $\bar{x} = 2.87$ ), suggesting that male employees were more familiar with the RBI's policy framework and implementation strategies related to CBDC. Regarding technology awareness, the mean value for males ( $\bar{x} = 2.84$ ) exceeded that of females ( $\bar{x} = 2.59$ ), which implies that men had slightly greater understanding of the technological aspects such as blockchain and interoperability. In the case of sources of awareness and learning, male employees also reported a higher mean ( $\bar{x} = 3.02$ ) than their female counterparts ( $\bar{x} = 2.65$ ), showing that they were more exposed to information through media, training programs, and professional discussions. Across all four constructs, male employees demonstrated consistently higher mean scores than female employees. This indicates a relatively stronger level of awareness among males regarding various dimensions of CBDC, warranting a formal hypothesis test to determine whether these observed differences are statistically significant.

**Table.4 Mann Whitney U Test on Awareness Level**

	<b>H Statistic</b>	<b>p</b>	<b>Effect Size</b>
<b>Conceptual Understanding</b>	8836	<.001	-0.439
<b>Regulatory and Policy Awareness</b>	9448	<.001	-0.401
<b>Technology Awareness</b>	13688	0.023	-0.132
<b>Sources of Awareness and Learning</b>	13233	0.009	-0.160

Source: Compiled from primary data

The Mann–Whitney U test was performed to examine whether there exists a significant difference in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) based on gender. The results presented in the table indicate statistically significant differences across all four constructs, with varying degrees of effect size.

For conceptual understanding, the test yielded a U statistic of 8836 ( $p < .001$ ) with an effect size of  $-0.439$ , indicating a moderate to strong difference between male and female employees. Male respondents demonstrated higher awareness levels than female respondents in understanding the basic concepts of CBDC. Similarly, for regulatory and policy awareness, the U statistic was 9448 ( $p < .001$ ) with an effect size of  $-0.401$ , again signifying a significant and moderate difference favoring male employees.

In the case of technology awareness, the difference was statistically significant ( $U = 13688$ ,  $p = 0.023$ ), though the effect size ( $-0.132$ ) was relatively small, indicating only a mild gender-based variation in technological understanding related to CBDC. For sources of awareness and learning, the U statistic of 13233 ( $p = 0.009$ ) with an effect size of  $-0.160$  also suggests a small but statistically significant difference, with male employees reporting slightly more exposure to information sources such as media and professional discussions.

**H<sub>0</sub>:** There is no significant difference in the awareness level of bank employees towards CBDC based on their educational qualification.

**Table.5 Kruskal Wallis H Test on Awareness Level of Bank Employees Based on their Educational Qualification**

	$\chi^2$	df	p	$\epsilon^2$
<b>Conceptual Understanding</b>	12.3	2	0.002	0.0311
<b>Regulatory and Policy Awareness</b>	27.1	2	<.001	0.0688
<b>Technology Awareness</b>	62.8	2	<.001	0.1594
<b>Sources of Awareness and Learning</b>	64.2	2	<.001	0.1629

Source: Compiled from primary data

The Kruskal–Wallis H test was conducted to examine whether there is a significant difference in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) based on their educational qualification. The results presented in the table indicate statistically significant differences across all four awareness constructs.

For **conceptual understanding**, the test produced a chi-square value ( $\chi^2$ ) of 12.3 with 2 degrees of freedom and a p-value of 0.002, indicating a significant difference among employees with different educational qualifications. The effect size ( $\epsilon^2 = 0.0311$ ) suggests a small to moderate practical significance. This implies that employees with higher educational qualifications tend to have better conceptual clarity about CBDC compared to those with lower qualifications. In the case of **regulatory and policy awareness**, the chi-square statistic was 27.1 ( $p < .001$ ) with an effect size of 0.0688, showing a significant and moderately strong difference. This suggests that better-qualified employees possess greater familiarity with the Reserve Bank of India’s (RBI) regulatory framework and policy measures related to CBDC. For **technology awareness**, a substantial difference was observed ( $\chi^2 =$

62.8,  $p < .001$ ) with a relatively high effect size ( $\epsilon^2 = 0.1594$ ), indicating that education plays a major role in shaping employees' understanding of the technological infrastructure supporting CBDC, such as blockchain, DLT, and interoperability systems. Similarly, for **sources of awareness and learning**, the chi-square statistic ( $\chi^2 = 64.2$ ,  $p < .001$ ) and the largest effect size ( $\epsilon^2 = 0.1629$ ) indicate a significant and strong influence of educational qualification on how employees' access and utilize information about CBDC through media, workshops, and professional discussions. Overall, the Kruskal–Wallis results confirm that educational qualification significantly affects the awareness level of bank employees across all four constructs, with higher-educated employees demonstrating greater awareness and understanding of CBDC concepts, regulations, technology, and information sources.

In all the cases, the p-values obtained from the Kruskal–Wallis H test are less than 0.05, leading to the rejection of the null hypothesis. This indicates that there exists a statistically significant difference in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) among one or more educational qualification groups. However, the Kruskal–Wallis test alone does not specify which specific groups differ from each other.

To identify the exact pairwise differences between educational categories, **Dunn's post hoc test** was conducted with Bonferroni adjustment for multiple comparisons. The results of the Dunn's test provide deeper insight into which groups such as graduates, postgraduates, and those with professional qualifications differ significantly in their levels of conceptual, regulatory, technological, and source-based awareness regarding CBDC.

**Table.6** *Dunn's Post hoc Test*

Conceptual Understanding					Regulatory and Policy Awareness				
		Z	P(unadj)	P(Bonferroni)			z	P(unadj)	P(Bonferroni)
Graduate	Post-Graduate	3.5	<.001	0.001	Graduate	Post-Graduate	1.46	0.145	0.434
Graduate	Technical	1.65	0.099	0.296	Graduate	Technical	5.1	<.001	<.001
Post-Graduate	Technical	-1.07	0.283	0.85	Post-Graduate	Technical	4.31	<.001	<.001

Technology Awareness					Sources of Awareness and Learnings				
		Z	P(unadj )	P(Bonferroni)			z	P(unadj )	P(Bonferroni)
Graduate	Post-Graduate	-0.505	0.613	1	Graduate	Post-Graduate	-4.29	<.001	<.001
Graduate	Technical	6.737	<.001	<.001	Graduate	Technical	-7.99	<.001	<.001
Post-Graduate	Technical	7.682	<.001	<.001	Post-Graduate	Technical	-5.12	<.001	<.001

Source: Compiled from primary data

The results of Dunn’s post hoc test were employed to identify the specific differences in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) based on their educational qualifications, namely graduate, postgraduate, and technical or professional. The findings revealed that for conceptual understanding, a significant difference existed between graduates and postgraduates ( $z = 3.5, p = 0.001$ ), suggesting that postgraduates have better conceptual clarity about CBDC, while no significant differences were observed between graduates and technical professionals or between postgraduates and technical professionals. In the case of regulatory and policy awareness, significant differences were noted between graduates and technical professionals ( $z = 5.1, p < .001$ ) and between postgraduates and technical professionals ( $z = 4.31, p < .001$ ), indicating that technically qualified employees possess higher regulatory awareness. Regarding technology awareness, technical professionals again showed significantly higher awareness than both graduates ( $z = 6.737, p < .001$ ) and postgraduates ( $z = 7.682, p < .001$ ), whereas no difference was observed between graduates and postgraduates. For sources of awareness and learning, significant differences were observed among all groups—graduates versus postgraduates ( $z = -4.29, p < .001$ ), graduates versus technical professionals ( $z = -7.99, p < .001$ ), and postgraduates versus technical professionals ( $z = -5.12, p < .001$ )—indicating that educational qualification plays a major role in determining how employees access information and learning opportunities related to CBDC. Overall, the results show that employees with higher or technical qualifications demonstrate greater levels of awareness across most constructs, particularly in regulatory, technological, and learning dimensions.

**H<sub>0</sub>:** There is no significant difference in the awareness level of bank employees towards CBDC based on the type of banks.

**Table.7 Kruskal Wallis H Test on Awareness Level of Bank Employees Based on Type of Banks**

	$\chi^2$	df	p	$\epsilon^2$
<b>Conceptual Understanding</b>	15.9	2	<.001	0.0405
<b>Regulatory and Policy Awareness</b>	26.0	2	<.001	0.0661
<b>Technology Awareness</b>	12.7	2	0.002	0.0323
<b>Sources of Awareness and Learning</b>	54.2	2	<.001	0.1376

Source: Compiled from primary data

The Kruskal–Wallis H test was conducted to determine whether there is a significant difference in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) based on the type of bank they are employed in. The results show that for all four constructs—conceptual understanding, regulatory and policy awareness, technology awareness, and sources of awareness and learning—the p-values are less than 0.05, indicating statistically significant differences among employees of different bank types. For conceptual understanding, the chi-square value ( $\chi^2 = 15.9, p < .001, \epsilon^2 = 0.0405$ ) suggests a moderate difference in basic CBDC awareness across bank categories. Regulatory and policy awareness recorded a chi-square value of 26.0 ( $p < .001, \epsilon^2 = 0.0661$ ), indicating that the type of bank substantially influences employees’ familiarity with the Reserve Bank of India’s CBDC guidelines and regulatory framework. Technology awareness also showed a significant difference ( $\chi^2 = 12.7, p = 0.002, \epsilon^2 = 0.0323$ ), reflecting that employees in some bank types have greater exposure to the technological aspects of CBDC such as blockchain and interoperability. The largest difference was observed in sources of awareness and learning ( $\chi^2 = 54.2, p < .001, \epsilon^2 = 0.1376$ ), highlighting that the type of bank significantly affects how employees receive information and training about CBDC. Overall, the results confirm that the awareness level of bank employees towards CBDC varies meaningfully with the type of bank, possibly due to differences in institutional readiness, technological integration, and training initiatives.

**Table.8 Dunn’s Post hoc Test**

<b>Conceptual Understanding</b>					<b>Regulatory and Policy Awareness</b>				
		Z	P(unadj)	P(Bonferroni)			Z	P(unadj)	P(Bonferroni)
<b>Public</b>	<b>Private</b>	-3.12	0.002	0.005	<b>Public</b>	<b>Private</b>	0.849	0.396	1
<b>Public</b>	<b>Others</b>	1.01	0.311	0.934	<b>Public</b>	<b>Others</b>	4.945	<.001	<.001



<b>Private</b>	<b>Others</b>	3.46	<.001	0.002	<b>Private</b>	<b>Others</b>	4.366	<.001	<.001
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Technology Awareness				Sources of Awareness and Learnings					
		Z	P(unadj)	P(Bonferroni)			Z	P(unadj)	P(Bonferroni)
<b>Public</b>	<b>Private</b>	-	0.981	1	<b>Public</b>	<b>Private</b>	-7.2	<.001	<.001
		0.0244							
<b>Public</b>	<b>Others</b>	3.252	0.001	0.003	<b>Public</b>	<b>Others</b>	-4.32	<.001	<.001
<b>Private</b>	<b>Others</b>	3.325	<.001	0.003	<b>Private</b>	<b>Others</b>	1.21	0.225	0.676

Source: Compiled from primary data

The results of Dunn’s post hoc test revealed significant differences in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) across different types of banks—public sector, private sector, and others. For conceptual understanding, significant differences were observed between public and private sector employees ( $z = -3.12, p = 0.005$ ) and between private and other bank employees ( $z = 3.46, p = 0.002$ ), indicating that private sector employees possess higher conceptual awareness of CBDC. No significant difference was found between public sector and other bank employees. In the case of regulatory and policy awareness, significant differences were noted between public and other banks ( $z = 4.945, p < .001$ ) and between private and other banks ( $z = 4.366, p < .001$ ), suggesting that employees in other banks, possibly cooperative or specialized institutions, exhibit greater familiarity with RBI regulations and policies related to CBDC. For technology awareness, significant differences existed between public and other banks ( $z = 3.252, p = 0.003$ ) and between private and other banks ( $z = 3.325, p = 0.003$ ), indicating that employees from other banks have better technological knowledge of CBDC operations, whereas no difference was observed between public and private banks. Regarding sources of awareness and learning, public and private banks ( $z = -7.2, p < .001$ ) and public and other banks ( $z = -4.32, p < .001$ ) differed significantly, implying that employees in private and other banks have greater exposure to CBDC-related information and training opportunities, while no significant difference was found between private and other banks. Overall, the results confirm that employees from private and other banks demonstrate higher awareness levels across most dimensions of CBDC compared to their counterparts in public sector banks.

**H<sub>0</sub>:** There is no significant difference in the awareness level of bank employees towards CBDC based on their experience.

**Table.9 Kruskal Wallis H Test on Awareness Level of Bank Employees Based on Their Experience**

	$\chi^2$	df	p	$\epsilon^2$
<b>Conceptual Understanding</b>	0.648	2	0.723	0.00164
<b>Regulatory and Policy Awareness</b>	23.763	2	<.001	0.06031
<b>Technology Awareness</b>	53.474	2	<.001	0.13572
<b>Sources of Awareness and Learning</b>	104.811	2	<.001	0.26602

Source: Compiled from primary data

The Kruskal–Wallis H test was conducted to examine whether there exists a significant difference in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) based on their work experience. The results indicate that for conceptual understanding, the chi-square value ( $\chi^2 = 0.648, p = 0.723, \epsilon^2 = 0.00164$ ) is not significant, implying that employees, regardless of their years of service, share a similar level of conceptual knowledge about CBDC. However, significant differences were found in the other three constructs. For regulatory and policy awareness, the chi-square value ( $\chi^2 = 23.763, p < .001, \epsilon^2 = 0.06031$ ) suggests a moderate difference, indicating that employees with greater experience tend to have a better understanding of the regulatory and policy framework of CBDC introduced by the Reserve Bank of India. A stronger difference was observed in technology awareness ( $\chi^2 = 53.474, p < .001, \epsilon^2 = 0.13572$ ), showing that experience significantly affects employees’ familiarity with the technological aspects of CBDC such as blockchain and interoperability. The most substantial difference was noted in sources of awareness and learning ( $\chi^2 = 104.811, p < .001, \epsilon^2 = 0.26602$ ), highlighting that work experience considerably influences how employees’ access and engage with CBDC-related information, training programs, and professional discussions. Overall, the findings reveal that while conceptual understanding remains uniform across experience groups, significant variations exist in regulatory, technological, and informational awareness, emphasizing the role of professional exposure and tenure in shaping CBDC awareness levels among bank employees.

**Table.10 Dunn’s Post hoc Test**

Conceptual Understanding					Regulatory and Policy Awareness				
		Z	P(unadj)	P(Bonferroni)			Z	P(unadj)	P(Bonferroni)
<b>0-5 years</b>	<b>6-15 years</b>	0.172	0.863	1	<b>0-5 years</b>	<b>6-15 years</b>	0.778	0.437	1
<b>0-5 years</b>	<b>More than 16 years</b>	-	0.638	1	<b>0-5 years</b>	<b>More than 16 years</b>	4.105	<.001	<.001
<b>6-15 years</b>	<b>More than 16 years</b>	0.471	-	1	<b>6-15 years</b>	<b>More than 16 years</b>	3.935	<.001	<.001
		0.779	0.436						

  

Technology Awareness					Sources of Awareness and Learnings				
		Z	P(unadj)	P(Bonferroni)			Z	P(unadj)	P(Bonferroni)
<b>0-5 years</b>	<b>6-15 years</b>	1.14	0.255	0.766	<b>0-5 years</b>	<b>6-15 years</b>	9.66	<.001	<.001
<b>0-5 years</b>	<b>More than 16 years</b>	6.14	<.001	<.001	<b>0-5 years</b>	<b>More than 16 years</b>	3.91	<.001	<.001
<b>6-15 years</b>	<b>More than 16 years</b>	5.92	<.001	<.001	<b>6-15 years</b>	<b>More than 16 years</b>	-7.41	<.001	<.001

Source: Compiled from primary data

The results of Dunn’s post hoc test were used to identify the specific group-wise differences in the awareness level of bank employees towards the Central Bank Digital Currency (CBDC) based on their work experience (0–5 years, 6–15 years, and more than 16 years). For conceptual understanding, all pairwise comparisons showed non-significant results, confirming that employees across different experience levels possess similar basic conceptual knowledge of CBDC. However, significant differences emerged in other constructs. For regulatory and policy awareness, employees with more than 16 years of experience significantly differed from both the 0–5 years group ( $z = 4.105, p < .001$ ) and the 6–15 years group ( $z = 3.935, p < .001$ ), indicating that senior employees have a stronger grasp of CBDC-related policies and regulations, likely due to prolonged exposure to central banking communications and regulatory processes. In terms of technology awareness, employees with more than 16 years of experience again differed significantly from both the 0–5 years group ( $z = 6.14, p < .001$ ) and the 6–15 years group ( $z = 5.92, p < .001$ ), revealing that more experienced employees possess higher technological familiarity, possibly as a result of training and long-term professional adaptation to digital banking advancements. For sources of awareness and learning, all comparisons were significant—between 0–5 years and 6–15 years ( $z = 9.66, p < .001$ ), 0–5 years and more than 16



years ( $z = 3.91, p < .001$ ), and 6–15 years and more than 16 years ( $z = -7.41, p < .001$ )—indicating that experience substantially affects how employees access and utilize learning resources related to CBDC. Overall, the results suggest that while conceptual awareness remains constant across experience levels, employees with longer service exhibit significantly higher awareness in regulatory, technological, and informational aspects of CBDC, underscoring the role of tenure and professional exposure in shaping awareness.

### SUGGESTIONS

- Providing proper education to the users through awareness campaigns etc. will help to clear out their doubts and enhance confidence by tackling the knowledge gaps
- Proper and timely communication from the central bank regarding technology and policy related matters
- Conduct training programs to the users especially the bank employees regarding CBDCs, usages, pros and cons etc.

### CONCLUSION

The analysis of awareness levels among bank employees towards the CBDC reveals that overall, employees possess a moderate level of understanding regarding the concept, regulatory aspects, technological framework, and sources of learning related to CBDC. The results demonstrated significant differences in awareness based on gender, educational qualification, type of bank, and work experience. Further identified specific pairwise differences among categories, confirming that institutional exposure, educational background, and professional tenure play a decisive role in shaping CBDC-related awareness. Overall, the findings suggest that while the foundational understanding of CBDC is emerging among bank employees, gaps remain in technological and policy-related awareness. These insights highlight the need for targeted capacity-building initiatives, structured training programs, and awareness campaigns by the Reserve Bank of India and individual banks to ensure that all employees, irrespective of gender, qualification, experience, or bank type, are well-prepared for the operational integration and customer guidance associated with CBDC implementation.

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