RESEARCH ARTICLE

ADHYAYAN Volume 15, Issue 2, 2025 Print ISSN: 2249-1066 Online ISSN: 2455-8656

Adoption of India's E-Rupee: What Really Matters

Anumol M.V[1] Guru Karthika K[2]

[1]Assistant Professor Finance -Amity Global Business School-Kochi, Skyline Platinum, Rajaji Rd, Shenoys, Ernakulam, Kerala 682035

[2]MBA Student Amity Global Business School, Kochi, Kerala, INDIA

Abstract

The rapid evolution of financial technologies and digital payment systems has accelerated the introduction of Central Bank Digital Currencies (CBDCs) worldwide. India's E-Rupee initiative seeks to enhance financial inclusion, reduce dependency on cash, and promote digital efficiency. This study examines the factors influencing the adoption of the E-Rupee, focusing on perceived usefulness, perceived ease of use, value barriers, risk barriers, security risk, financial capability, and subjective norms. Using data from 164 respondents across India, the study employed statistical analysis to explore the relationships between user attitudes, resistance, and adoption intention. Results reveal that perceived usefulness, ease of use, and subjective norms significantly influence adoption intention, while resistance—shaped by risk and security concerns—acts as a barrier. Financial capability moderates both attitude to adoption as well as resistance to adoption. The findings offer practical insights for policymakers and financial institutions to enhance awareness, security, and accessibility in promoting E-Rupee adoption.

Keywords: E-Rupee adoption, Financial Capability, Subjective Norms, Technology Acceptance Model (TAM), Barriers to Adoption

Adhyayan: A Journal of Management Sciences (2025); DOI: 10.21567/adhyayan.v15i2.02

Introduction

Digital currencies, especially Central Bank Digital Currencies (CBDCs), are gaining attention from governments and banks around the world (Govind & Nayan, 2024; Mahesh et al., 2024; Bhatnagar et al., 2024). Unlike cryptocurrencies, CBDCs such as India's E-Rupee are controlled by the government and are designed to make the financial system work more efficiently and reduce the use of cash (Kumar 2025). The E-Rupee also aims to solve problems like limited access to banks and the growing need for safe online payments (Bhavsar, 2024). But just having the technology isn't enough. Many other factors—like people's income, education, and attitudes—play a role in whether digital money is widely used (Boar & Wehrli, 2021). A person's ability to use digital tools and manage money, known as financial capability, is especially important (OECD, 2021). Social pressure, trust in digital systems, and worries about safety also influence whether people choose to use the E-Rupee. This study looks at five key areas: financial skills, personal views, social influences, and the challenges people face when trying to use digital currency. Together, these factors show both the opportunities and the difficulties in building a fair digital economy.

Corresponding Author: Anumol M.V, Assistant Professor Finance -Amity Global Business School-Kochi, Skyline Platinum, Rajaji Rd, Shenoys, Ernakulam, Kerala 682035, e-mail: anumolmv2021@gmail.com

How to cite this article: M,V. M., G.K. (2025). Adoption of India's E-Rupee: What Really Matters? Adhyayan: A Journal of Management Sciences, 15(2):7-14.

Source of support: Nil

Conflict of interest: None

Research Gap

While digital payment platforms have been widely studied, especially in India, specific research on what influences people to adopt the E-Rupee remains limited. Most studies tend to focus on technological factors like usefulness or ease of use (Ogunmola & Das, 2024; Balasubramanian & Thirumaran, 2024). However, adoption of central bank digital currencies also depends on human and social elements, which are often overlooked.

Subjective norms—how people are influenced by those around them—can have a major impact on behavior, especially in financial decisions (Wang *et al.*, 2016). Similarly, a person's financial capability—

such as their comfort with digital tools and financial knowledge—can affect their willingness to use digital money (OECD, 2021; Abdallah, Tfaily, & Harraf, 2025). Global findings also show that public awareness, education, and trust in government play a major role in CBDC adoption (Boar & Wehrli, 2021).

This study addresses these underexplored areas by examining how attitudes, social influence, and financial skills impact people's willingness to adopt the E-Rupee. The goal is to better understand the real-world factors shaping adoption and provide insights for building an inclusive digital economy in India.

Objectives Of The Study

- To assess how attitudes toward implementing E-Rupee are influenced by perceived usefulness and perceived ease of use.
- To Determine the impact of value, risk, and security barriers on resistance to E-Rupee adoption.
- To assess how resistance and attitude affect one's willingness to adopt E-Rupee.
- To investigate how financial competence moderates attitudes, resistance, and intention to adopt E-Rupee.
- The study aims to examine how subjective norms mediate attitudes, resistance, and intention to adopt E-Rupee.

Literature Review

The introduction of India's Central Bank Digital Currency (CBDC), known as the E-Rupee, represents a significant step in modernizing the country's financial system. It aims to support financial inclusion, simplify digital transactions, and boost the formal economy. However, for the E-Rupee to succeed, understanding the behavioral and structural factors that influence its adoption is essential. This literature review explores five key areas: financial capability, social norms, attitudes, perceived usefulness and ease of use, and adoption barriers, based on recent research findings.

Financial Capability and E-Rupee Adoption

Financial capability refers to a person's ability to understand and manage financial services effectively. It plays a critical role in determining whether someone is ready to adopt a digital currency like the E-Rupee. Studies suggest that people with higher levels of financial literacy, better access to digital tools, and stable incomes are more likely to use emerging financial innovations (Balasubramanian & Thirumaran, 2024; Venugopal, 2024). These individuals not only understand the benefits of digital currency but also feel more confident using it. In contrast, low-income or rural populations may face difficulties due to limited resources or digital exposure.

Social Norms and Subjective Influence

Social norms, or the shared beliefs and behaviors in a community, have a strong influence on the adoption of financial technologies. Subjective norms, in particular—the perceived pressure from friends, family, or society—can shape whether someone chooses to adopt a new tool like the E-Rupee. Research has shown that people are more likely to adopt digital currency when those around them support or already use it (Ogunmola & Das, 2024; Wang et al., 2016). Community leaders, influencers, and peer behavior can make a big difference. Public trust in institutions like the Reserve Bank of India and clear communication from the government can also reinforce positive norms (Saleem & Sanskriti, 2024).

Attitudes Toward the E-Rupee

A user's attitude—whether positive or negative—toward the E-Rupee greatly affects their likelihood of adopting it. According to the Technology Acceptance Model (TAM), attitude is shaped primarily by two factors: perceived usefulness and perceived ease of use. These elements form a user's belief about whether a technology is beneficial and simple enough to integrate into daily life (Balasubramanian & Thirumaran, 2024; Ogunmola & Das, 2024).

Perceived Usefulness and Ease of Use

Perceived usefulness refers to how much a person believes that using the E-Rupee will benefit them—for example, by making payments faster, cheaper, or more secure. People are more open to adoption when they see clear advantages, such as 24/7 access to financial services or the ability to make international transactions more easily (Balasubramanian & Thirumaran, 2024).

Perceived ease of use is equally important. If users find the E-Rupee interface intuitive and accessible—even for those who are not tech-savvy—they are more likely to try it. Providing tutorials, multilingual support, and simplified mobile apps can encourage broader adoption (Krishnamoorthy & Aggarwal, 2024).

Barriers to Adoption

Despite the many potential benefits of the E-Rupee, several barriers continue to limit its widespread adoption. A major challenge is the lack of awareness or

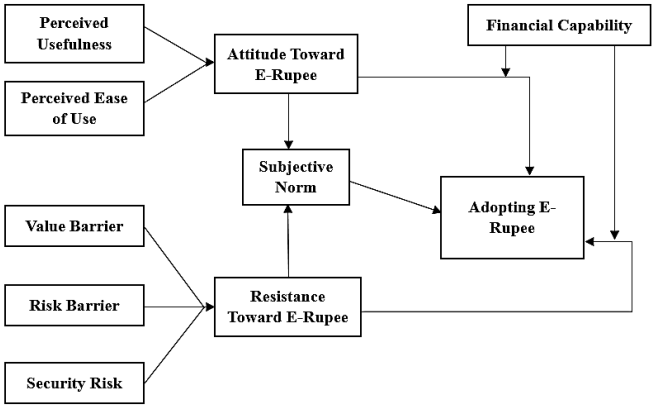

Figure 1: Research Model

understanding among the general public, particularly in rural areas where digital and financial literacy is often low (Balasubramanian & Thirumaran, 2024; Venugopal, 2024). Many individuals are unfamiliar with how digital currency works or are unsure of its advantages over existing payment methods. Additionally, when people around them are not using the E-Rupee, the social pressure to adopt remains weak, which lowers the impact of subjective norms. Another barrier is the perceived lack of value—some users do not see clear financial benefits in switching from widely accepted digital payment platforms like UPI or mobile wallets to a government-issued digital currency (Boakye-Adjei et al., 2023; Kasana & Singh, 2024). Moreover, concerns around security and privacy are significant. Users may worry about the safety of their data, the risk of cyberattacks, or possible fraud, all of which contribute to resistance (Saleem & Sanskriti, 2024; Sehgal et al., 2024). Unless these concerns are addressed through better communication, education, and system design, these adoption barriers could significantly hinder the growth of the E-Rupee.

The past literature throes light to the fact that , while digital infrastructure is improving, user behaviour is shaped by a combination of social norms, financial literacy, and risk perception. A multidimensional approach is thus essential to understand E-Rupee adoption in the Indian context.

Hypotheses Of The Study

Figure 1 shows the research model developed for this study. The following hypotheses were formulated based on the proposed framework.

H_1

Perceived Usefulness positively affects Attitude towards E-Rupee.

H_2

Perceived Ease of Use positively affects Attitude towards E-Rupee.

H_3

Value Barriers positively affect Resistance towards E-Rupee.

H_4

Risk Barriers positively affect Resistance towards E-Rupee.

H_5

Security Risk positively affects Resistance towards E-Rupee.

H_6

Attitude towards E-Rupee positively affects Intention to Adopt E-Rupee.

H_7

Resistance towards the E-Rupee negatively affects the

Table 1: Measurement Scale

Variable	*Source*	*No. of Questions*
Perceived Usefulness (PU)	Ogunmola and Das (2024)	3
Perceived Ease of Use (PEU)	Ogunmola and Das (2024)	4
Value Barrier (VB)	Santos and Ponchio (2021)	3
Risk Barrier (RB)	Santos and Ponchio (2021)	3
Security Risk (SR)	Ryu (2018)	3
Financial Capability (FC)	Abdallah, Tfaily, and Harraf (2025)	6
Subjective Norm (SN)	Wang et al. (2016)	3

Table 2: Demographic Profile of Respondents

Demographic Profile		*Percentage (%)*
Age	Under 18	1.20%
	18-24	17.10%
	25-34	37.80%
	35-44	28.70%
	45-54	13.40%
	55 and above	1.80%
Gender	Male	50.60%
	Female	49.40%
Educational Qualification	High School or equivalent	12.80%
	Diploma/Associate's Degree	27.40%
	Bachelor's Degree	47.60%
	Master's Degree	11.00%
	Ph.D. or higher	1.20%
Occupation	Student	20.70%
	Employed (Full-time)	29.90%
	Employed (Part-time)	22.60%
	Self-employed	19.50%
	Unemployed	5.50%
	Retired	1.80%
Income Level	Below Rs.2,00,000	48.80%
	Rs.2,00,000 - Rs.5,00,000	32.90%
	Rs.5,00,001 - Rs.10,00,000	12.80%
	Rs.10,00,001 - Rs.20,00,000	4.90%
	Above Rs.20,00,000	0.60%

Intention to Adopt the E-Rupee.

H_8

Subjective Norms positively affect Intention to Adopt E-Rupee.

H_9

Financial Capability moderates the relationship between Attitude and Intention.

H_{10}

Financial Capability moderates the relationship between Resistance and Intention.

H_{11}

Subjective Norms positively mediate the relationship between Attitude towards E-Rupee and Intention to Adopt E-Rupee.

H_{12}

Subjective Norms positively mediate the relationship between Resistance towards the E-Rupee and Intention to Adopt the E-Rupee.

Data And Methodology

Table 1 presents the measurement scales and sources used for each construct included in the study This study employs an empirical research design to examine the factors influencing the adoption of the e-Rupee in India. A structured questionnaire of 25 measuring items that includes seven constructs—including perceived usefulness, perceived ease of use, value barriers, risk barriers, security risk, subjective norms, and financial capability—as well as nine demographic factors make up the research instruments. With the use of statistical techniques and real-world observations, this approach allows for a data-driven study to determine how these aspects influence user attitudes, resistance, and adoption intentions in general. In order to gather a wide variety of viewpoints, the population of interest in India consists of people who have access to digital payment systems, both in urban and rural regions. The sample frame includes users who are familiar with digital financial services including online banking, UPI, and other cashless payment methods. A convenience sample strategy was utilized, with the survey distributed using Google Forms and WhatsApp. A representative sample from a range of socioeconomic classes was ensured by the participation of 164 respondents. With a Cronbach Alpha value greater than 0.851, every scale demonstrated reliability.

Results And Discussion

Descriptive Statistics

Table 2 provides the demographic profile of the respondents who participated in the survey. The majority of respondents fall within the 25–34 age group (37.8%), followed by those aged 35–44 (28.7%). Gender distribution is nearly even, with 50.6% male and 49.4% female participants. In terms of educational qualifications, most respondents hold a Bachelor's degree (47.6%), while 27.4% have a diploma or associate degree. Employment-wise, 29.9% are employed full-

time and 22.6% part-time, with 20.7% being students. Notably, a large portion of respondents (48.8%) report an annual income below ₹2,00,000, and 32.9% fall within the ₹2,00,000–₹5,00,000 bracket. These figures suggest a youthful, moderately educated, and economically diverse sample, reflective of India's emerging digital user base.

Factor Analysis

Factor analysis was conducted to validate the constructs of Perceived Usefulness (PU), Perceived Ease of Use (PEU), Subjective Norms (SN), and Financial Capability (FC). All constructs were clearly defined and tested through multiple indicator items (e.g., PU1, PEU2). Table 3 shows the rotated component matrix with loadings above 0.70. PU1 and PEU3 loaded strongly on their respective constructs. The matrix confirms construct validity with minimal cross-loading.

Regression Analysis

All hypotheses, with the exception of H3, are significant, according to the findings of the regression analysis (Table 4) All hypotheses, with the exception of H3, are significant, according to the findings of the regression analysis. The findings suggest that the value barrier has no substantial influence on e-rupee resistance. The results confirm H_1, indicating that perceived usefulness has a considerable positive effect on attitude toward E-Rupee ($\beta = 0.870$, $R^2 = 0.758$, $p = 0.000$). This shows that those who value the E-Rupee for its ease and efficiency are more inclined to support its adoption. Given that attitude is strongly impacted by perceived ease of use ($\beta = 0.623$, R2 = 0.388, $p = 0.000$), H_2 is also supported. This suggests that people's attitudes regarding adoption improve when they discover the E-Rupee to be simple to use and understand.

H_3 is not supported since value barriers have no statistically significant influence on resistance to E-Rupee ($\beta = 0.147$, $R^2 = 0.022$, $p = 0.060$). This shows that customers' perceptions of financial benefits over existing digital payment systems have no meaningful impact on their reluctance to adoption. H_4 and H_5, on the other hand, are supported, suggesting that security risks ($\beta = 0.552$, $R^2 = 0.305$, $p = 0.000$) and risk barriers ($\beta = 0.592$, $R^2 = 0.350$, $p = 0.000$) are both important markers of resistance. These results show how hesitancy to embrace the E-Rupee is influenced by worries about security and dependability.

The relationship between attitude toward E-Rupee Figure 2 presents the model summary that illustrates the relationship among key constructs identified through regression analysis and the intention to adopt is confirmed through H_6, which is supported ($\beta = 0.595$, $R^2 = 0.354$, $p = 0.000$). This suggests that individuals with a positive attitude toward E-Rupee are more inclined to consider adopting it. H_7 is also supported, indicating that resistance negatively influences adoption intention

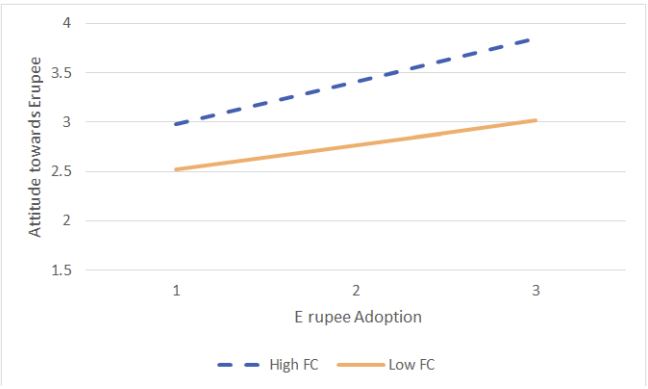

Figure 3 : Financial Capability moderates Attitude → Intention (H_9)

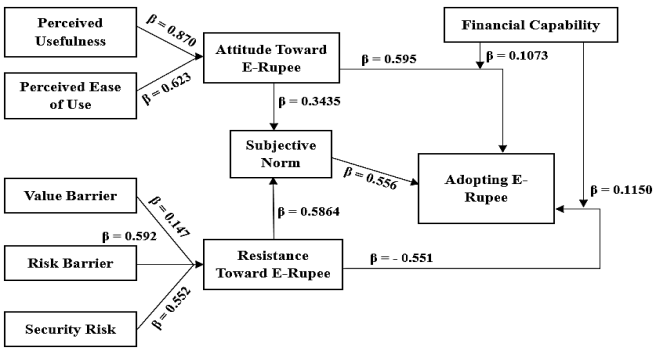

Figure 2 : Model Summary-Authors Own work

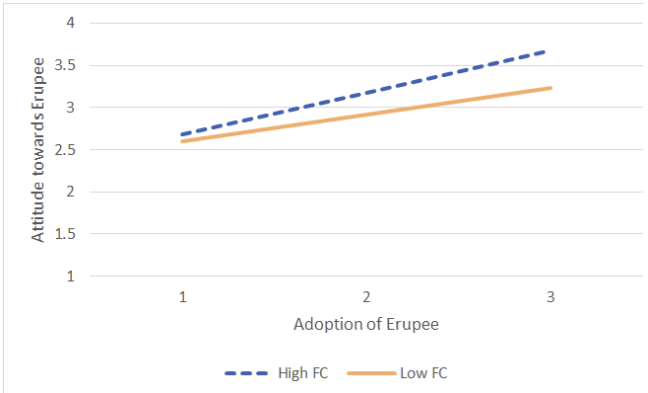

Figure 4: Financial Capability moderates Resistance → Intention

Table 3: Factor Loadings of Key Constructs (Rotated Component Matrix)

	Component						
	FC	*PU*	*VB*	*SR*	*RB*	*PEU*	*SN*
PU1		.940					
PU2		.952					
PU3		.945					
PEU1						.665	
PEU2						.774	
PEU3						.796	
PEU4						.566	
FC1	.565						
FC2	.780						
FC3	.792						
FC4	.817						
FC5	.827						
FC6	.824						
VB1			.821				
VB2			.826				
VB3			.814				
RB1					.829		
RB2					.780		
RB3					.873		
SR1				.821			
SR2				.699			
SR3				.833			
SN1							.644
SN2							.808
SN3							.864

NB:PU = Perceived Usefulness, PEU = Perceived Ease of Use, SN = Subjective Norms, FC = Financial Capability.VB-Value Barrier RB-Risl Barrier, SR-Security Barrier

Table 4: Regression Analysis

Hyp.	*Relationship*	*β*	*R^2*	*Sig.*	*Result*
H_1	Perceived Usefulness → Attitude towards E-Rupee	0.870	0.758	0.000	Accepted
H_2	Perceived Ease of Use → Attitude towards E-Rupee	0.623	0.388	0.000	Accepted
H_3	Value Barriers → Resistance towards E-Rupee	0.147	0.022	0.060	Rejected
H_4	Risk Barriers → Resistance towards E-Rupee	0.592	0.350	0.000	Accepted
H_5	Security Risk → Resistance towards E-Rupee	0.552	0.305	0.000	Accepted
H_6	Attitude towards E-Rupee → Intention to Adopt E-Rupee	0.595	0.354	0.000	Accepted
H_7	Resistance towards E-Rupee → Intention to Adopt E-Rupee	-0.551	0.303	0.000	Accepted
H_8	Subjective Norms → Intention to Adopt E-Rupee	0.566	0.321	0.000	Accepted

(β = -0.551, R^2 = 0.303, p = 0.000). This confirms that skepticism and concerns act as deterrents to adoption. Additionally, H_8 is supported, demonstrating that subjective norms significantly impact the intention to adopt (β = 0.566, R^2 = 0.321, p = 0.000). This suggests that social influence, including the opinions of peers and significant others, plays a crucial role in shaping individuals' decisions to adopt E-Rupee.

Moderation Analysis

Resistance to intention and attitude both reflect the moderating influence of financial capability. H9 is supported (Figure 3) since the association between attitude and adoption intention is strengthened by financial capability (β = 0.1073, R2 = 0.7097, p = 0.0006). This suggests that if they already have a positive mindset, those with more financial capability and planning abilities are more likely to use E-Rupee. H10 is also supported (Figure 4), indicating that the link between resistance to adoption intention is moderated by financial capability (β = 0.1150, R2 = 0.7849, p = 0.0001). This shows that those who are more financially capable are less likely to be discouraged from using the E-Rupee by worries about risks and obstacles.

Mediation Analysis

The results of the investigation supported the existence of mediation by confirming a large indirect impact in both situations (Table 5) Using SPSS PROCESS MACRO, a bootstrapping approach was used to investigate the mediating function of subjective norms in the link between adoption and attitude toward E-Rupee and resistance to E-Rupee. The results of the investigation supported the existence of mediation by confirming a large indirect impact in both situations.

With an indirect impact of 0.0831 (95% CI: 0.0423 to 0.1274), the overall effect of resistance on adoption was 0.5864 (p < 0.001). The direct impact was still significant at 0.5864 (p < 0.001), suggesting that subjective norms partially mediated the effect. Similarly, the indirect impact for the attitude-adoption link was 0.0662 (95% CI: 0.0141 to 0.1269), and the overall effect was 0.3435 (p < 0.001). Subjective norms may somewhat mediate the direct impact, which remained significant at 0.3435 (p < 0.001).

These moderation and mediation results show the importance of targeted financial education and peer influence in adoption strategies

Table 5 : Results of Mediation Analysis

Relationship	*Total Effect*	*Direct Effect*	*Indirect*	*95% Confidence Interval*	*t-Statistics*	*Conclusion*
Resistance → Subjective Norm → Adoption	0.5864 (0.000)	0.5864 (0.000)	0.0831	0.0423 to 0.1274	20.3910	Partial Mediation
Attitude → Subjective Norm → Adoption	0.3435 (0.000)	0.3435 (0.000)	0.0662	0.0141 to 0.1269	9.3297	Partial Mediation

Practical Implications

This study explores the adoption and resistance factors influencing e rupee adoption in India. The results shows that people are more likely to adopt the E-Rupee if they find it useful and easy to use. Policymakers, financial institutions and government should focus on spreading awareness, improving digital security, and offering financial education in order to overcome the resistance barriers accelerate the speed of its adoption.

Limitations and Scope for Future Research

While this study provides valuable insights into the behaviour and structural factors that affect E-Rupee adoption, a few limitations needs to be mentioned. First, the sample was primarily from urban and semi-urban respondents which may not fully entire population. Second, the cross-sectional design is not able to track how attitudes and usage patterns evolve over time

For future research can do a longitudinal study to observe behavioural shifts as awareness and access to the E-Rupee expand. Further study can be extended to rural sectors as well. Experimental studies can also be useful to assess how different incentive strategies influence adoption behaviour. The model can also be extended with macroeconomic factors like inflation perception, policy interventions, tax behaviours etc. to get a wider understanding of digital currency adoption in India.

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