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MODELLING THE EFFECTIVENESS OF TECHNOLOGY ADOPTION IN NBFCS FOR THE ACHIEVEMENT OF DIGITAL TRANSFORMATION: A STRUCTURAL EQUATION MODELLING APPROACH

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ABSTRACT

Digital technologies are reshaping financial services, but Non-Banking Financial Companies (NBFCs), key drivers of financial inclusion in India, are under-examined in the digital transformation strategy. This study investigates the determinants of technology adoption by NBFC customers, bridging a significant gap in the literature. A structured quantitative research design was adopted, with data collected from 302 participants using a standardised questionnaire. Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modelling (SEM) were employed to test hypothesised relationships and validate measurement constructs. The results indicate that digital adoption is multi-dimensional and context-specific. Ease of use, security and trust, and customer awareness were identified as key determinants of adoption behaviour. In contrast, digital literacy gaps and infrastructural challenges, particularly in rural and semi-urban areas, emerged as major barriers. By applying the Unified Theory of Acceptance and Use of Technology (UTAUT) in the NBFC sector, this study makes a theoretical contribution by contextualising digital adoption

within non-traditional financial institutions and uncovering sector-specific dynamics. Practically, the findings offer actionable suggestions to NBFCs and policymakers to increase customer engagement, improve digital service delivery, and deepen financial inclusion through digital transformation.

KEYWORDS: Non-Banking Financial Companies (NBFCs); Digital Transformation; Structural Equation Modelling (SEM); Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA).

1. INTRODUCTION

A Non-Banking Financial Company (NBFC) is a corporate entity registered under the Companies Act that engages in a wide array of financial activities, including lending, advances, investment in government and marketable securities, leasing, hire-purchase, insurance, and chit fund operations (Khowaja et al., 2021). NBFCs are particularly significant in developing economies, where they fill critical gaps left by traditional banks by extending financial services to underserved and unbanked populations (Krishnamoorthy et al., 2025). Their societal relevance lies in enabling access to credit for financially weaker sections, micro-enterprises, and informal sector businesses. Although NBFCs operate as well in developed and developing nations, their intrinsic role in the financial system is especially important in the emerging economies (Dutta et al., 2020; Ghosh et al., 2018).

In India, NBFCs have become significant drivers in fulfilling the credit requirements of individuals and businesses that have traditionally been out of reach for formal banking (Jerene & Sharma, 2020). The industry is, however, confronted with new challenges, such as increased regulatory scrutiny and higher cost of borrowing. To counter this, NBFCs are turning increasingly to niche segments, product innovation, and technology-enabled service delivery patterns of low-income and urban unorganised segments (Ngo & Nguyen, 2024). To remain competitive and expand customer reach, NBFCs are investing in digital transformation (DT) by strategic collaborations with FinTechs and technological integration. Such technologies are alternative credit scoring, AI-based underwriting, fraud detection, and enterprise automation (Ly & Ly, 2022). Advanced analytics and big data processing allow NBFCs to evaluate non-traditional credit profiles, improve risk management, and increase operational efficiency (Chan et al., 2022; Hentzen et al., 2021; Shaikh & Amin, 2024).

1.1. Motivation behind This Research

The inspiration for this study arises due to an extensive literature review and increased importance of technology in redefining the operating and service capability of NBFCs. Financial value chains can utilize technology to make resources more efficient, minimize turnaround time, automate decision-making, and design financial products based on customers' socioeconomic status (Krishnamoorthy et al., 2025). In contrast to conventional banks, NBFCs—via DT—can provide credit more pervasively and cost-effectively, and thus increase their competitive edge in competitive markets (Ghosh et al., 2018).

Digitalisation allows NBFCs to deliver smooth customer experiences, enhance operational efficiency, and reduce cost of service delivery. It also assists in the expansion of the customer base and client retention through technology-enabled, customer-specific services (Ngo & Nguyen, 2024). During an era of disruption and changing customer behavior, NBFCs are actively adopting digital strategies to innovate and differentiate themselves on the basis of innovation, newness of the product, and speed. Furthermore, DT allows the creation of user-friendly platforms and automated tools to cater to the financially excluded, especially in rural and semi-urban India. Technologies like AI, big data analytics, and mobile apps are revolutionizing the way NBFCs evaluate creditworthiness and risk management (Shaikh & Amin, 2024). With the double challenge of increasing competition and regulatory pressures, NBFCs have to adopt DT not just to survive but to facilitate industry-wide innovation. The study is hence motivated by the need to identify the level at which NBFCs are accepting technology and how it affects their overall DT direction.

1.2. Research Gap and Research Question

The rapid digitisation of financial services has reshaped how institutions deliver value, yet most scholarly attention has focused on traditional banks, overlooking the unique dynamics of NBFCs in emerging economies. While banks have been extensively studied in the context of ICT tools, digital diversification risks (Virdi & Mer, 2023), and fintech integration (Kowalewski & Pisany, 2023) NBFCs remain under-researched despite their critical role in enhancing financial inclusion for underserved populations (Milian et al., 2019).

Although some studies have addressed mobile banking adoption (Alalwan et al., 2017; Baabdullah et al., 2019; Sharma & Khurana, 2023) and emerging technologies like AI, cloud computing, and DLT (Ashta & Herrmann, 2021; Gupta et al., 2023), it focuses largely on organisational-level adoption or specific banking segments. These studies rarely investigate the customer-centric factors influencing technology uptake in NBFCs. Moreover, most existing research treats technology adoption and DT as separate phenomena, without exploring the link between customer adoption of digital services and the broader DT outcomes of financial institutions.

In the Indian context, where NBFCs serve large segments of semi-urban and rural populations, this gap becomes more critical. As (Khanna & Haldar, 2023; Shehadeh et al., 2024) noted, challenges such as

infrastructural constraints, digital illiteracy, and the need for ethical integration of new technologies remain unresolved. Furthermore, while disruptive technologies like AI and ML are being deployed (Heß & Damásio, 2025; Lee & Chen, 2022; Shaikh & Amin, 2024), their impact on customer behaviour and institutional transformation in NBFCs remains inadequately explored. To address these gaps, this study seeks to answer the following research questions:

RQ1: What are the factors that lead to technology adoption among customers in NBFCs?

RQ2: Does technology adoption lead to the achievement of DT in NBFCs?

1.3. Contribution Of The Research

This study makes important theoretical, empirical, and practical contributions by focusing on the digitalisation process in India's NBFC sector, hereinafter referred to as ground that has been relatively sparsely academically covered compared to commercial banking companies or NBFCs in advanced economies. This study extends the UTAUT model to the Indian NBFC customer context, thus examining the technology adoption complexity in the developing country context. Sector-specific or geography-related factors are often overlooked in traditional models; however, the current study includes constructs such as social influence and customer-perceived value to explain behavioural intentions and outcomes of DT. The findings show that social influence is the primary driver of technology adoption, and accepting technology is a strong predictor of successful DT, hence explaining the mediating role of adoption to drive larger organisational outcomes. The research adds by constructing primary data from a representative sample of 302 Indian NBFC consumers. Using strict analysis techniques, such as EFA, CFA, and SEM, guarantees findings credibility. Disconfirmation of some paths (such as facilitating conditions and effort expectancy not having significant effects on adoption) indicates re-evaluating widely accepted presumptions in UTAUT upon application in the Indian NBFC scenario. The results present statistically confirmed data on which constructs affect customer actions in semi-urban and rural financial services.

The research provides actionable recommendations for NBFCs that want to optimise DT benefits. As technology adoption was found to be the driver of DT, the research suggests that NBFCs focus interventions on customer activation through socially oriented promotions and rewards. Moreover, the low contribution of facilitating conditions and effort expectancy suggests that customers might already have the digital competence needed, and hence, efforts need to be focused on trust-building campaigns, better service responsiveness, and customised digital experiences. These findings can potentially guide NBFCs on how to optimise user interfaces, support systems, and communication strategies for various customer segments based on their digital behaviour and willingness to adopt. At the industry and policy levels, the conclusions reiterate the imperative of inclusive digital finance systems. These conclusions can be used by policymakers and regulators to develop evidence-based digital literacy initiatives and incentives for NBFCs to invest in customer-focused technology infrastructure. By identifying the real drivers and impediments in the Indian scenario, the study provides the foundation for more inclusive, efficient, and competitive NBFC operations that align with higher national objectives of digital empowerment and financial inclusion.

2. LITERATURE REVIEW

2.1. Theoretical Underpinning

The Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003) is a master model to describe individual-level technology adoption behavior. It integrates concepts of eight of the leading theories, i.e., the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and Theory of Planned Behaviour (TPB), thus providing a comprehensive and exhaustive framework for the prediction of user intention and resultant use behavior. UTAUT defines four core constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions, which directly predict user behavioral intention and technology use, the impact of these dynamics moderated by factors such as gender, age, experience, and voluntariness of use.

Performance expectancy refers to the perceived usefulness of the technology and the effect on enhancing user performance. It is the accepted key determinant of behavioral intention, that is, in organizational settings. Effort expectancy refers to the perceived ease of use of the technology and is of special interest in the early stage of adoption (Venkatesh et al., 2012). Facilitating conditions measure the degree to which individuals perceive that adequate infrastructure, technical support, and organizational resources are available. Social influence measures the degree to which individuals perceive that significant others (e.g., colleagues,

supervisors, or opinion leaders) expect them to use the technology.

Over the years, scholars have enriched the Unified Theory of Acceptance and Use of Technology (UTAUT) with more constructs like trust, technology readiness, and affinity to enhance its scope in rapidly evolving technological contexts (Maruping et al., 2017). For example, (Raja Yusof et al., 2017) employed UTAUT to analyze the adoption of RFID, while (Mensah, 2019) employed it to analyze e-government services. More research by (Wong et al., 2020) on blockchain, (Cabrera-Sánchez & Villarejo-Ramos, 2020) on big data, and (Roy et al., 2022) artificial intelligence is evidence of the scope of the framework. In the context of mobile payments, (Patil et al., 2020; Widyanto et al., 2021) identified effort expectancy, facilitating conditions, and trust as determinants. With its proven scope, UTAUT is still in the forefront of analyzing the interface between technological innovation and human conduct, hence very relevant to the adoption of non-banking financial company (NBFC) technologies in the Indian perspective.

2.2. Technology Adoption And Digital Transformation In Nbfcs

The development of artificial intelligence (AI), machine learning (ML), blockchain, and other emerging technologies is driving revolutionary changes in the global banking and financial services (BFS) industry, with India's non-banking financial companies (NBFCs) increasingly leveraging these innovations to enhance operational efficiency, service quality, and customer interaction. NBFCs are employing AI in five key uses: customer interactions (e.g., chatbots), robo-advisory services, predictive analytics, cybersecurity, and credit scoring (Manda & Nihar, 2024). From being relegated to ancillary functions, AI has now become a seminal driver of strategic decision-making, allowing NBFCs to simplify loan underwriting processes, personalize financial services to individual requirements, and streamline operations. Indian fintech startups have demonstrated the potential of AI in personalizing financial services to underpenetrated demographic segments. Regulatory bodies, through sandboxes, are promoting the use of AI on an ethical platform, thus ensuring a secure and innovative digital finance ecosystem (Maity & Majumder, 2024). Singhania et al. (2024) also highlighted the pivotal role played by AI in accelerating digital financial inclusion by facilitating improved risk assessment, reducing information asymmetry, and enabling real-time customer support—functions of specific relevance to NBFCs serving semi-urban and rural regions.

NBFCs are also venturing into blockchain for secure and transparent operations. (Agarwal et al., 2020) and (Gan et al., 2025) reflect the technology's capability to provide traceable financial transactions as well as decentralisation of data management. Adoption of blockchain relies on organisational preparedness, technology infrastructure, and regulatory harmonisation (Kajla et al., 2024). Additionally, Lu et al. (2024) established that organisational drivers and technology heavily influence blockchain adoption in financial institutions. AI's transformative impact also extends to peer-to-peer (P2P) lending platforms. Anil & Misra (2022) recorded how NBFC-P2P platforms are using AI to transform credit assessment and operating models. Deepthi and Bansal (2024) stated that Indian banks and NBFCs are increasingly embracing AI/ML-based solutions for frontend operations, enhancing customer experience and service delivery.

From a behavioural perspective, technology adoption in financial services is characterized by models like the Technology Acceptance Model (TAM) and UTAUT. Abdullah & Almaqtari (2024) empirically tested the influence of perceived usefulness, risk, and trust on AI adoption, while Mansoor et al. (2024) expanded UTAUT by incorporating trust and transparency in its study of adoption of blockchain in banking. In India's NBFCs, DT is motivated not just by innovation but also by the need to bring the financially excluded into the fold. AI, blockchain, and mobile technologies enable NBFCs to increase credit access, lower customer acquisition costs, and neutralize increasing competition from formal banks and fintechs (Garg et al., 2021; Mohsen et al., 2024). Adoption, however, depends on infrastructure, digital literacy, and regulatory support. Overall, the literature emphasizes that effective DT in NBFCs is founded on sound technology adoption strategies rooted in user trust, organisational readiness, infrastructural robustness, and facilitatory policy frameworks. These drivers collectively allow NBFCs to access low-income, semi-urban, and rural customers while increasing their operational agility, customer retention, and market competitiveness.

2.3. Hypothesis Development

This research supports the UTAUT model for technology adoption in NBFCs in India. Figure 1 shows the theoretical framework for the study.

2.3.1. Effort expectancy (EE)

EE, being the level of ease concerning the use of

technology (Fosso Wamba et al., 2020), is a key driver of user intention, particularly in digitally transforming industries such as NBFCs. EE summarises the constructs of TAM/TAM2, MPCU, and IDT, and encompasses psychological, physical, and mental effort perceived in the use of new technology. For Indian NBFCs, where there is non-standard digital literacy, particularly in rural and semi-urban regions, EE is a driver for user acceptance. Technologies that are easy to use lower cognitive burden, enhance trust, and enable habitual use (Upadhyay & Chattopadhyay, 2015). Fintech platforms that are easy to use, with simple-to-understand interfaces and local language support, encourage customers to use them. New users of digital financial services are particularly motivated to use them by ease of use, or else they resist using them due to perceived complexity (Chatterjee & Bhattacharjee, 2020). Empirical research also indicates that greater EE results in better user attitudes and performance, and low EE increases resistance and technology abandonment (Vitezić & Perić, 2021). EE thus strongly impacts technology adoption by NBFC customers. EE also enables overall DT of NBFCs, since greater usability results in greater customer engagement, operational efficiency, and innovation in services. Paradox reduction and increasing ease of use are therefore essential to enable adoption and aid DT initiatives in India's NBFC industry.

H1a: EE will significantly impact the technology uptake among the Customers of NBFCs.

H1b: EE will have a considerable effect on DTs' achievement.

2.3.2. Social Influence (SI)

SI refers to the extent to which individuals perceive others close to them, like family, friends, or peers, expect them to adopt a given technology (Gunasinghe et al., 2019; Palau-Saumell et al., 2019). For mobile and digital banking, SI is one of the main drivers of user behaviour, mostly through mechanisms like peer recommendations, social comparison, and feedback transmitted through tangible and intangible networks (Gansser & Reich, 2021). In Indian NBFCs, where financial decisions tend to emerge in the context of social and family relations, SI can be a primary driver of customers' intention to adopt digital financial services. Adoption of mobile loan applications, digital wallets, or payment systems is directly affected by word-of-mouth and the genuineness of opinions from immediate social networks, particularly in rural and semi-urban areas where digital literacy is patchy. The spurt in mobile and internet penetration underscores the effect, and digital peer networks become pivotal in shaping technology attitudes (Ndayizigamiye & Maharaj, 2016). While Glavee-Geo et al. (2017) note that the impact of SI could be context-dependent, in collectivist societies like India, intense social relations and influential community leaders strengthen its influence (Jain et al., 2022). SI thus has a significant role to play in technology adoption among NBFC customers. Further, social influence not only triggers adoption but also sustains continued adoption, which is vital to the realisation of increased digital transformation (DT). Strategic leveraging of influencers, community engagement, and peer anecdotes could thus potentially catalyse digital maturity and inclusion in the NBFC sector.

H2a: SI will exert a significant impact on technological adoption by NBFC customers.

H2b: SI will play a major role in DTs' success.

2.3.3. Facilitating Conditions (FC)

FC is the extent to which individuals perceive organisational and technical infrastructures are in place to facilitate the use of a system (Amron et al., 2019). Based on models like TPB, DTPB, and IDT, FC is the availability of support systems, training, and resources for the adoption of technology. For Indian NBFCs, FC is central to enabling digital engagement, especially from rural and semi-urban customers. Such conditions are stable internet connectivity, smartphone penetration, user-friendly apps, and local language support—factors alleviating technical barriers and enhancing user confidence. Institutional initiatives like digital literacy programs, help centres, and supportive policies also enable successful adoption by enabling user preparedness and trust (Al-Saedi et al., 2019). Academic literature also supports the significance of FC across fields. Institutional infrastructure was central to technology adoption in education (Al-Adwan & Al-Debei, 2023), while FC speeds perceived usefulness and trust towards e-government services (Jain et al., 2022). In the same vein, Ransbotham et al. (2017) contend that formal training and support enable seamless AI integration in organisations. FCs hence play a critical role in the adoption of technology by NBFC customers. Moreover, continued DT is not only dependent on technological infrastructure but also on ongoing user support. Strengthening FC is hence essential for trust generation, elimination of access barriers, and continued adoption of digital financial services across India's complex socio-economic terrain.

H3a: FC will play an important role in technology

adoption among NBFC customers.

H3b: FC will have a strong impact on DT achievement.

2.3.4. Technology Adoption And Digital Transformation

Customer technology adoption is a driving force behind DT among the financial services industry, especially among NBFCs. Digital transformation involves infusing digital technologies into all organisational functions to enhance customer experience, enhance operational efficiency, and enhance responsiveness to market forces (Tronvoll et al., 2020). For NBFCs serving the various usually marginalised groups in India, customer adoption of digital technologies via mobile apps, digital wallets, and artificial intelligence-driven service platforms is at the centre of the transformation agenda. With digitally active customers, NBFCs can enhance service delivery, reduce operating costs, and accrue valuable insights driving strategic decisions (Saif et al., 2024). Empirical data substantiates this relationship. The Indian NBFC industry, characterised by a digital divide and infrastructural inequalities, illustrates that the speed and scope of DT are subject to the successful adoption of technology by customers, especially in rural and semi-urban areas. The technology engagement of NBFC customers thus directly reflects the success of DT agenda. By facilitating generalized digital engagement through a people-centric design strategy, education drives, and infrastructure development, NBFCs can accelerate their transformation agenda while enhancing financial inclusion.

H4: Adoption of technology by NBFC customers will impact the realisation of DT.

Theoretical Framework for the Study.

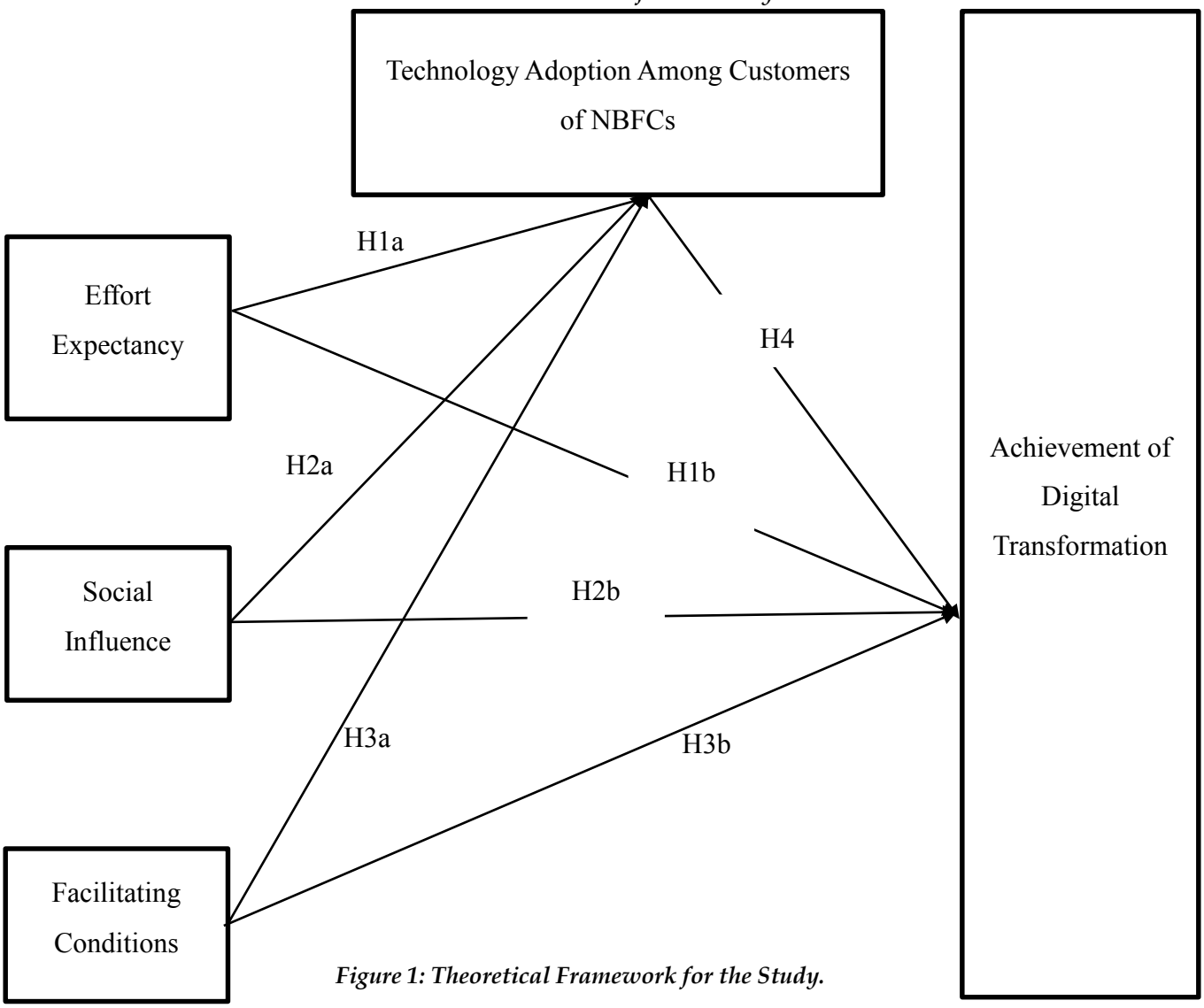

Figure 1: Theoretical Framework for the Study.

3. RESEARCH METHODOLOGY

It uses a confirmatory quantitative strategy, drawing upon the UTAUT theory, to examine technology adoption among Indian NBFC customers. Drawing upon established constructs such as effort expectancy, social influence, and facilitating conditions, the study examines pre-specified hypotheses using a structured questionnaire. Data were collected from a seven-point Likert scale survey of rural and semi-urban NBFC customers. This ensures methodological rigour and contextual salience, as per the directives outlined by Malhotra and Dash (2015) and Yin (1994).

3.1. Questionnaire Design And Scaling Technique

A stringent first phase was conducted to cross-validate and establish the reliability of the questionnaire used to identify technology adoption in NBFC customers in India. The questionnaire was initially constructed from literature and theoretical frameworks, with specific reference to the UTAUT. The process of instrument validation involved subjecting the questionnaire to scrutiny by a panel of ten experts—six academic researchers with specialisations in financial technology and digital adoption, and four industry experts with on-ground experience in customer-facing positions in the NBFC industry. The academic experts were chosen on the basis of their recent research work in technology adoption and customer behaviour in the financial sector, while industry experts were chosen on the basis of their on-ground experience in digitally driving customer interactions. Five academics and three industry experts among ten approached provided detailed feedback. Minor adjustments were made on their suggestions for better clarity, and two redundant items were removed. The above expert validation process enhanced the content validity and ensured the questionnaire was relevant and accurate for the target setting.

In this research, the seven-point Likert scale was applied to quantify responses regarding the effectiveness of technology adoption by customers of NBFC in India. This methodological approach, as explained by Malhotra and Dash (2015), assigns numerical values to responses before measurement, rendering it highly appropriate to measure perceptions and conduct. The use of the seven-point scale was attributed to its convenience and simplicity in both offline and online environments. Its simplicity enables it to be easily developed, administered, and comprehended, thus appropriate for various data collection modalities such as email, telephone, and face-to-face interviews. It further enhances readability, increases response rates, and improves the overall quality of responses.

3.2. Sampling Design

Research sampling methods are typically classified into probabilistic and non-probabilistic methods. Probabilistic sampling ensures each member within the population an equal chance of selection, while non-probabilistic methods have varied probabilities of selection (Malhotra & Dash, 2015). The current study utilized a probabilistic sampling technique, simple random sampling, to ensure unbiased collection of data and enhance the generalizability of the findings (Hair et al., 2019). The same approach has been utilized in previous studies (Abou-Shouk & Soliman, 2021; Makate et al., 2019). The target population included NBFC clients of various firms in India. According to Malhotra and Dash's (2015) guidelines, the sampling design included defining the target population, developing a sampling frame, specifying the sampling technique, estimating the sample size, and implementing the sampling process. A pilot survey of 65 participants was initially conducted to ensure the reliability and consistency of the questionnaire. The main data collection was conducted between July 2024 and March 2025 and produced a final sample size of 302 respondents. The sample size is adequate to meet the minimum requirement specified for structural equation modeling and allows room for advanced statistical analysis. The collected responses provide useful information on customers' perceptions regarding technology adoption in the case of NBFCs. Table 1 shows the demographic profile of the respondents.

3.3. Data Collection Procedure

The study was conducted across multiple geographies in India to identify customer adoption of technology by customers of NBFCs using a completely online data collection method to ensure maximum geographic coverage and efficiency in operations. A highly developed questionnaire was posted online to 1,109 customers, selected based on their active use of NBFC financial products and services. The participants were contacted through email and mobile-based communication channels, and they were provided with clear information on the purpose of the study and the significance of their inputs to understanding DT in financial services. Of the 1,109 customers who were approached, 631 questionnaires were completed and returned by the

respondents. Participants' personal information was guaranteed confidentiality, with a specific statement that the answers would be utilised only for academic research. Intensive follow-up contacts were distributed to promote the response rate and participant participation. Following data collection, a comprehensive data cleaning process was executed to ensure accuracy and consistency. The responses were examined for completeness, and this resulted in the removal of questionnaires with high missing values, inconsistencies, or patterned responses. For small instances of missing values, mean imputation was used. Overall, 302 responses were deemed valid and finalised in creating the usable dataset for further statistical analysis.

Table 1: Demographics Of The Respondents.

		N	Percentage
Gender	Male	160	52.98
	Female	142	47.02
Age	Below 20	34	11.26
	21-35	79	26.16
	36-50	95	31.46
	51-65	61	20.20
	65 and above	33	10.93
EDUCATIONAL QUALIFICATION	Illiterate	11	3.64
	Up to Primary	13	4.30
	High School Pass	21	6.95
	Higher Secondary	28	9.27
	Graduate	97	32.12
	Post Graduate	87	28.81
	Professional diploma/ degree	45	14.90
Current average individual monthly Income	No income	31	10.26
	Rs. below 500000	58	19.21
	Rs. Below 10,00000	112	37.09
	Rs. more than 10,00000	101	33.44
Amount of interest being paid per year	1 to Rs 10000	75	24.83
	Rs 10001 to Rs 20000	89	29.47
	Rs 20001 to Rs 50000	77	25.50
	Above Rs 50001	61	20.20

4. DATA ANALYSIS

To attain internal consistency, Cronbach's alpha was calculated for all the constructs, values greater than the standard cut-off of 0.70, thus indicating high reliability (Kline, 2000) as shown in table 2. EFA was conducted utilizing principal axis factoring with promax rotation, as both sample size and inter-item correlations are the necessary prerequisites for factor analysis (Kaplan, 2001). Data appropriateness for EFA was determined by Bartlett's Test of Sphericity (Lefever et al., 2007), with $p < 0.05$ significance (Wu & Little, 2011). Construct validity was verified using factor loadings, composite reliability (CR), and average variance extracted (AVE). All observed factor loadings were higher than 0.60, CR values were higher than 0.70, and AVE values were higher than 0.50, thereby ensuring convergent validity (Fornell & Larcker, 1981). Discriminant validity (DV) was also confirmed, where the square root of each construct's AVE was higher than the corresponding inter-construct correlations, and all correlations were lower than 0.90 (DeVellis, 2003; Moerdyk, 2009).

Table 2: Cronbach Alpha, CR, AVE, Loadings.

Construct	Items	Measurement items	Cronbach's alpha	CR	AVE	Loadings
Facilitating Conditions (FC)	FC 1	The technology I use is compatible with my mobile apps and online payment.	0.88	0.883	0.655	.755
	FC 2	I am acquainted enough with the knowledge to use mobile apps or online payment.				.847
	FC 3	I have the resources to access the company's insurance features.				.863
	FC 4	I save time by using technology for insurance payments.				.645
Effort Expectancy (EE)	EE 1	My experience using mobile apps or online payment is simple and easy to follow.	0.917	0.917	0.735	.837
	EE 2	It was simple for me to learn how to use mobile apps or online payment.				.825
	EE 3	I can clearly understand the functions				.811

		of mobile apps or online payment.				
	EE 4	I feel that the technology used by the company is built with robust security.				.777
Social Influence (SI)	SI 1	The company encourages customers to use mobile apps or pay online.	0.853	0.860	0.612	.746
	SI 2	The use of mobile apps or online payment is a status symbol in my community.				.883
	SI 3	My friends/ classmates/ seniors/ juniors recommended that I use a mobile app or online payment.				.874
	SI 4	I am updated with emerging technologies by using mobile apps or online payment.				.550
Technology Adoption Among Customers (TAAC)	TAAC 1	Money management is made easier with mobile apps or online payment.	0.948	0.948	0.822	.886
	TAAC 2	Mobile apps or online payment assist me in achieving my financial goals while reducing my creativity.				.876
	TAAC 3	If the mobile apps or online payment were more entertaining, I would most likely use them more frequently.				.907
	TAAC 4	I would use mobile apps or online payment more frequently if it gave me points, incentives, and prizes.				.893
Achievement of Digital Transformation (DT)	DT 1	The company has successfully integrated electronic technologies into its core business processes.	0.862	0.864	0.615	.723
	DT 2	Digital platforms have greatly enhanced the effectiveness and responsiveness of customer services to clients.				.801
	DT 3	The variety of financial services and products has significantly enhanced due to digital initiatives.				.852
	DT 4	Our digital systems and tools have improved our overall customer satisfaction and experience.				.710

Sources: Authors

Table 3: Divergent Validity Matrix

	TAAC	EE	FC	SI	DT
TAAC	**0.906**				
EE	0.163**	**0.857**			
FC	0.138*	0.499***	**0.81**		

SI	0.171**	0.228***	0.089	**0.783**	
DT	0.290***	0.174**	0.102	0.09	**0.784**

Sources: Authors.

The hypothesis is confirmed by CFA. AMOS 22.0 is employed in this study because it is easy to use and has a robust graphical display (Gaskin, J., 2016). Composite reliability, convergent validity, and discriminant validity have been tested for the measurement model in CFA. The values are: CMIN/Df is 1.669, which is below the five threshold values. The GFI (0.921), RMSEA (0.047), CFI (0.974), IFI (0.974), TLI (0.969), PCFI (0.820), and PNFI (0.789).

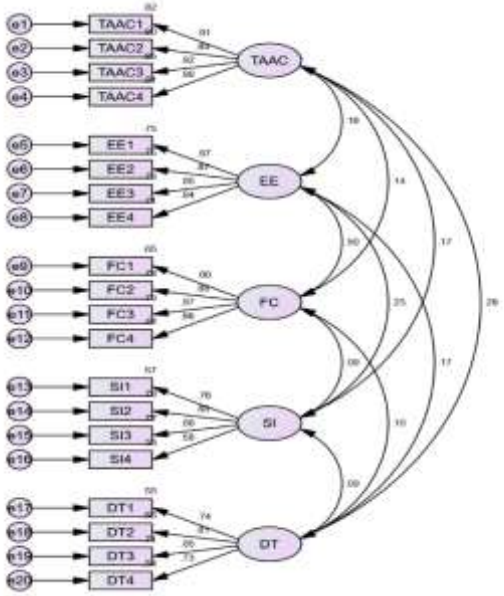

Figure 2: CFA Model For The Proposed Framework.

The model fit results are obtained by inserting the three latent variables, one mediating variable and one dependent variable, and associated indicators into AMOS 22.0. According to the calculations, the threshold value was reached when the CMIN/Df was 2.142, RMSEA (0.062), CFI (0.954), IFI (0.954), TLI (0.946), PCFI (0.818), and PNFI (0.787). Table 4 displays the path estimations.

Table 4: Path Analysis Results.

	Estimate	**S.E.**	**C.R.**	**P**	**Supported/Not supported**	**Significance Level**
TAAC <--- FC	0.084	0.064	1.218	0.223	Not Supported	Not significant
TAAC <--- EE	0.097	0.065	1.389	0.165	Not Supported	Not significant
TAAC <--- SI	0.144	0.058	2.267	0.023	Supported	Significant at 5% level (p < 0.05)
DT <--- FC	0.007	0.052	0.093	0.093	Not Supported	Not significant at 5% level (p < 0.05)
DT <--- EE	0.125	0.054	1.748	0.08	Not Supported	Not significant at 5% level (p < 0.05)
DT <--- SI	0.019	0.047	0.289	0.773	Not Supported	Not significant
DT <--- TAAC	0.266	0.052	4.121	***	Supported	Significant at 1% level (p < 0.01)

Sources: Authors.

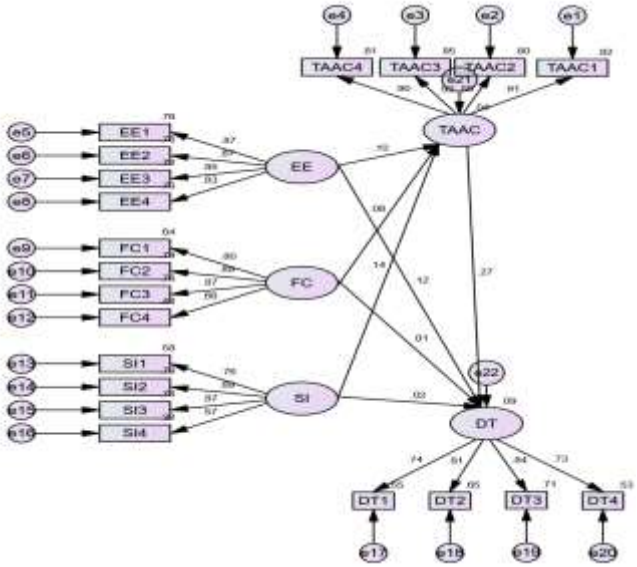

Figure 3: Final Structural Model For Digital Transformation In Nbfcs. Sources: Authors.

5. DISCUSSION

The objective of this study was to find the determinants of customer technology adoption and digital change in India's NBFCs, with the support of the UTAUT. The results that were achieved through the SEM confirm several major findings. Firstly, social influence (SI) was found to have a positive and statistically significant impact on customers' TAAC (β = 0.144, p = 0.023), hence supporting the hypothesis at the 5% significance level. This finding confirms that customers' decisions regarding digital financial services adoption are based on peers', family members', and society's opinions and behaviour. This finding is congruent with previous studies, e.g. (Cao et al., 2021; Venkatesh et al., 2003), which also highlighted the central role played by social influence in shaping user intentions and behaviour, especially in cases motivated by social interaction or new technologies.

On the other hand, EE and FC had no statistically significant impact on technology adoption (p = 0.223 and p = 0.165, respectively), and therefore, it can be

concluded that the respective hypotheses were invalid. Although earlier studies (Amron et al., 2019; Venkatesh et al., 2012) have highlighted infrastructural enabling and ease of use interfaces, the absence of significance here may be attributed to the digital maturity of the users, who may now consider basic digital tools as the standard and not a hindrance. Additionally, infrastructural issues may already have been resolved in urban and semi-urban NBFC settings.

The transition to DT revealed a highly significant and statistically strong influence of TAAC on DT ($\beta = 0.266$, $p < 0.001$), thereby testing the hypothesis at the 1% level. This finding identifies the key mediating influence of customer adoption to achieve digital objectives in NBFCs. These findings corroborate the research of (Chatterjee & Bhattacharjee, 2020), which portrayed the end-user adoption as critical for the utmost benefits of AI and digital systems in banking and finance. However, the direct effects of FC, EE, and SI on DT were not significant ($p > 0.05$), in that these variables do not directly enable transformation results unless mediated by user adoption. This entirely indirect process emphasises the importance of the original emphasis on user-level behavioural acceptance, a contention supported by research by Abdullah & Almaqtari (2024) and Mohsen et al. (2024), which emphasises the importance of customer-focused strategies as key drivers of digital innovation.

The findings reveal that TAAC is an essential mediator between customer beliefs and the achievement of DT for NBFCs. While SI was a powerful direct predictor of adoption, EE and FC lacked significant direct impacts. The finding suggests that in the NBFC context, the impact of social peers, social norms, and extrinsic motivation is greater on adoption behaviour than on usability perceptions or infrastructural support, which could be seen as minimum requirements. The mediating impact of TAAC reveals that even if some antecedents have nonsignificant or weak direct impacts, their effect on digital transformation is realised indirectly through customers' adoption behaviour. This suggests that the key driver of digital transformation among NBFCs is not technology provision, but enabling its active adoption and sustained use by customers.

5.1. Theoretical Implications

This research provides several significant theoretical contributions to the technology adoption and DT literature, specifically to NBFCs in India. Second, the research broadens the applicability horizon of the UTAUT to the NBFC sector, which is a comparatively less-researched area in emerging economies. Although UTAUT has been widely applied in banking and e-government (Venkatesh et al., 2003, 2012), its application in particularly in the case of semi-urban and rural customers, provides fresh empirical insights. By validating the prominent role of social influence in technology adoption and its subsequent effect on DT, the research underscores the need for context-based application of UTAUT constructs. Second, empirically, research in this paper proves that TAAC is an essential mediating variable that connects behavioural antecedents (FC, EE, SI) to the achievement of DT. Although existing research has considered customer adoption to be largely an outcome (Chatterjee & Bhattacharjee, 2020), this study repositions it as an organisational enabler of digital achievement at the institutional level. This reframing fortifies the UTAUT by adding an organisational impact factor that unites individual-level adoption with firm-level transformational achievements.

Third, the results oppose the generalizability of some variables in the UTAUT model. The insignificant contribution of EE and FC to technology adoption and DT suggests that with increasing digital literacy and infrastructure, these variables might lose significance for particular user groups. This result is consistent with research explaining the necessity for contextual adaptation of UTAUT (Dwivedi et al., 2019), emphasising that theoretical models need to evolve with changing technological acquaintance and user sophistication. Lastly, the research contributes to the emerging debate of DT in financial services, with a focus on the Indian NBFC industry. By laying down an empirical relationship between organisational-level digital results and customer conduct, the study strengthens the theoretical underpinnings for describing how micro-level adoption arrives at macro-level digital innovation. Further, it opens the door for the intersection of DT, innovation diffusion (Rogers, 2003), and dynamic capabilities (Teece et al., 1997) theories to offer an integrated explanation of digital maturity in financial firms.

5.2. Practical Implications

The research has some practical implications for Indian financial services' NBFC managers, policymakers, and DT strategists. The strong impact of TAAC by SI suggests that customers are likely to adopt digital financial services under the influence of peers, family, or institutional influence. NBFCs may leverage peer influence and social proof in marketing

campaigns, including testimonials, referral programs, and influencer collaborations, to promote adoption, particularly in rural and semi-urban areas. The absence of strong effects of FC and EE suggests that customers are no longer looking at basic usability and accessibility to be key barriers. Instead, customers appear to look for value-added experiences, e.g., rewards, ease of use, or better financial outcomes. Therefore, NBFCs must shift their attention from making platforms easy for themselves to offering rewards, gamification, and customised services that optimise perceived usefulness and participation.

TAAC emerges as the key driver of DT for NBFCs through the study. This emphasises the importance of investing in customer digital literacy programs, mobile onboarding support, and feedback loops. Customer engagement through digital channels improves the user experience in tandem with allowing NBFCs to simplify operational processes, derive meaningful insights, and drive business innovation. With more and more dependence on digital channels, NBFCs have to use analytics, AI, and customer behaviour information to know what the customer requires and offer customised solutions. The study reiterates the importance of organisations aligning IT capabilities with customer requirements to build trust and have long-term usage.

The findings can be utilised by policymakers and regulators to craft specific digital inclusion initiatives. Initiatives to incentivise NBFCs to offer digital onboarding in rural areas or government campaigns to emphasise the security, convenience, and credibility of digital transactions can enhance country-level financial inclusion goals. Since facilitation conditions were not a strong predictor of adoption in this study, NBFCs can consider reallocating resources from ground-level infrastructure support to advanced-level training schemes and innovation-oriented projects, such as AI-driven customer service, digital product bundling, and blockchain implementation.

6. CONCLUSION

This study examines the determinants of technology adoption and its effect on DT in the Indian NBFC industry using the UTAUT framework. Employing a systematic quantitative research approach and evaluating 302 usable responses collected from different locations in India, the study presents empirical evidence regarding how SI, FC, and EE influence TAAC, and how this, in turn, contributes to attaining DT goals. Results show that social influence is a major driver of customer adoption, while effort expectancy is not and facilitating conditions play no statistically significant role in influencing adoption behaviour under this specific scenario. This shows that Indian NBFC customers, particularly customers in rural and semi-urban areas, are influenced more by peer and social recommendations than by ease of use or infrastructure support. Interestingly, customer TAAC significantly and positively and statistically influences the success of DT, and this reflects the key role played by end-user engagement in driving organisational digital initiatives.

These implications are significant in terms of theoretical and practical contributions. Theoretically, the research extends the use of UTAUT in the context of NBFCs and highlights the increasing significance of customer behaviour in technology-facilitated change. Practically, it provides strategic insights to NBFC managers and policymakers in terms of evoking the imperative of strengthening social influence processes, customer-centric innovations, and rationalising digital engagement strategies to drive change.

6.1. Limitations And Future Scope Of The Study

Although providing pertinent observations, there are limitations to the research. First, the study is cross-sectional, and information is gathered from customer responses at a specific point in time. Thus, it may not capture the entire gamut of customer attitude or behaviour changes over a while in response to evolving technology or policy interventions. Longitudinal research in the future could provide greater insight into technology adoption patterns and DT in NBFCs.

Second, while the sample does contain respondents from different parts of different regions of India, the actual usable sample of 302 respondents, while sufficient for SEM analysis, might not adequately represent the country's heterogeneous customer base of the whole Indian NBFC system. Subsequent studies can extend the sample, particularly through stratified sampling across different regions, income levels, and educational levels, to yield more generalised findings. Third, the study considers only customer perceptions and does not include organizational and employee perceptions. Future studies can adopt a multi-stakeholder approach, incorporating the views of NBFC employees, DT specialists, and policymakers to create a broader picture of technology adoption and its effects.

Fourth, this research study is understandably

based on the UTAUT model, which, while broad, does not include several relevant constructs like perceived trust, digital literacy, data privacy concerns, and cultural considerations, all of which are becoming more and more relevant to the Indian fintech environment. Future research can investigate the application of expanded UTAUT models or their integration with other frameworks, such as TAM, TOE, or Institutional Theory, to enhance global applicability. Lastly, the research employed data collected from self-reports, which are susceptible to response bias. Future research can incorporate behavioural observation or transactional data to cross-validate self-reported intentions with real use behaviour. Thus, finally, the subsequent step of this study is to formulate a more dynamic, inclusive, and multidimensional conceptualisation of DT in NBFCs based on broader sampling, longitudinal data, stakeholder triangulation, and greater theoretical integration. Also, the future study will consider the usage of demographic variables like age, sex, education level, income, and occupation as a moderation variable for the analysis.

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