

Unravelling the Behavioural Determinants of Bank Stability and Macroeconomic Impact in the Digital Era

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Abstract

Dependence on financial institutions and its stability has become the need of the hour, where individuals interact and perceive the operating indicators in a nuanced manner; banking services, acting as intermediaries, are a significant catalyst for various macroeconomic factors in the digital era. Enhancing the study to critical dimensions of institutions quality and fostering positive emotional experiences of banking customers, statistically affects the financial intermediaries in significant manner, there exists a dilemma of concentrating more on behavioural determinants instead of banking book performances fixed by regulators at periodic intervals. Digital platforms have really transformed the way of providing financial services keeping the internal context of convenience, proximity of availing the digital banking products and mitigates the potential cost of traditional banking systems. The banks cannot depend only on the technological investments alone in accelerating the economic factor to grow at rapid pace, ignoring the deepest layer of customer interaction, which is secluded practice among bankers rectifying the banking services by one-to-one interactions.

Improvising the relationship between financial entities and customer dealings builds trust and service quality the foremost factor in equating the macroeconomic stability in financial system. Trust crisis pilfers the stability factor of banking system, acts as the predominant factor in macroeconomic stability and interlinkage of economic agents in diminishes operational aspects of banking services. Customer facing factors in emerging financial markets is seen as core component of financial institutions stability purely affects the macroeconomic outcomes. The present study examines how behavioural determinants influences banking institution stability and how this stability transforms into impact on macroeconomic perceived outcomes within the digital era. It focuses on streamlining digital transformation, financial inclusion and banking institutions resilience has an uneven tone. The study proposes a structural model of customer trust, banking technology and service quality as exogenous constructs influencing banking institution stability and interlinking behavioural drivers to macroeconomic impact.

A total of 350 valid, completed responses were collected from banking customers in the northern zone of Tiruvallur district in Tamil Nadu and applied partial least squares structural equation modelling (PLS-SEM), reveals the determinants of customer trust, service quality, and the adoption of banking technology has strong impact factors in resilient banking. The study uses a hypothetical structural model of banking institution stability as a dependent variable and testing the independent constructs of customer trust, service quality, banking technology, macroeconomic impact and financial literacy. The moderating role of financial literacy on technology usage and Banking stability mediates the relationship between behavioural and economic development indicators, as the outcome which is perception-based. The Study stretches the traditional models of institutions stability by integrating with behavioural, technological and economic factors in a single framework. The results exhibit customer trust, service quality and banking technology has significant impact on banking institution stability.

Which in turn has macroeconomic impact transmitted through the mediating role and precludes indirect effect. The interaction effect shows the stabilising factor of technology has strong impact on customers higher financial literacy, demonstrates a crucial condition for shaping digital adoption.

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The findings contribute to valuable insights for policy recommendations for strengthening banking stability and inclusive financial system fostering resilience.

Keywords: *Customer Trust, Service Quality, Banking Technology, Banking Stability, Macroeconomic Impact, PLS-SEM, Emerging Markets, Financial Inclusion.*

Introduction

The economic corridors' reliance on banking stability is a significant concern, as it hinders the expansion of credit facilities, employment, and economic growth. The financial system manages its risk prudently by sustaining resilience as a buffer for financial institutions, promising trust and reliance, and driving economic growth consistently.

However, as the digital era rapidly reconfigures how banking operations and customer interaction are conducted, a dramatic shift has been observed in the way banking services are availed. It has become clear that the territories of banking stability and economic influence are no longer governed solely by traditional indicators, such as capital adequacy and asset quality. The banking institution's strength and its influence on the economy are reflected in the factors that interrelate at every step, including its behavioural drivers, trust, service quality, and technology adoption. (Fernández et al., 2016; Li et al., 2023).

Traditional research has primarily focused on capital adequacy, asset quality, and the regulatory framework as drivers of banking stability. These non-financial factors are minuscule acts, akin to economic shocks, that inherently impact the resilience of banks, not only hampering institutional stability but also regional economic outcomes.

The digital era has heightened the need for financial institutions to invest not only in robust technological infrastructure but also in the digital literacy of their customer base. The increased level of financial and digital literacy among customers has led to better utilisation of banking services, resulting in innovation and reduced transaction risk (Amudhan et al., 2022; Haffke et al., 2016). Digital transformation acts as both an enabler and a challenge. It also introduces new layers of technological risk, cybersecurity concerns, and a critical requirement for adaptive trust-building mechanisms (IOSR, 2024; Piccinini et al., 2015).

These Constructs are the key concerns for the dynamic transformation of banking service channels, which dominate customer expectations towards seamless, secure, and personalised solutions (Bhat, 2023).

Most studies often lack modelling the impact of behavioural and technological variables that shape the stability of banking and economic outcomes on digital platforms. The mediating effect of financial literacy towards integrating digital adoption lacks a comprehensive understanding (Khattak, 2023; Vehtasvili, 2024).

Review of Literature

The stability of banks as institutions and their resultant macroeconomic effects remain pivotal concerns for both scholars and policymakers worldwide. Over the last decade, a growing recognition has emerged regarding the behavioural driver's customer trust, perceived service quality, and digital banking technology that underpin banking system stability in an increasingly digitised financial ecosystem. These factors inherently impact institutional strength and macroeconomic outcomes, such as access to credit entrepreneurial growth, and employment generation.

This literature review critically examines the theoretical and empirical contributions relevant to these constructs, situating the study within the existing body of knowledge.

Behavioural Drivers and Banking Stability

Trust is the key variable which underpins the strong relationship between customer loyalty and banks. The relationship stabilises the retention of money in deposits and reduces systemic risk (Fernández et al., 2016). Numerous studies have employed survey-based tools to assess the impact of trust on perceptions of reliability and stability in banking institutions (Deku, Owusu-Ansah, & Mensah, 2019). Similar studies highlight trust as the key factor. Now, the prevalence of digital banking platforms and customer reliance on online interaction has dramatically increased, which effectively overlooks the dependence on the traditional model of trust in banking services. (Bhat, 2023). Most of the research focuses on trust, which has a direct impact on moderating the adoption of technology and maintaining the stability of banks.

Service quality, as conceptualised in the SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1988), has long been recognised as a cornerstone of customer satisfaction and a key factor shaping institutional stature. Similar studies indicate that organisational stability and performance depend on responsiveness, clarity in communication, and reliability, with these being the prime concerns (Li et al., 2023; Fernández et al., 2016). However, much of this research views service quality as a uniform, unchanging concept. The evolving connection between perceived service quality and digital literacy remains largely unexplored; this study intends to bridge this gap.

Digital technologies, ranging from mobile banking apps to AI-driven interfaces and fintech platforms, have dramatically reshaped operational efficiency and enhanced user experience in the financial sector (Khattak, 2023; Piccinini et al., 2015).

Digital adoption provides a competitive edge in strengthening banking stability by reducing costs and increasing transparency (Vehtasvili, 2024). Rapid innovation still results in the exclusion of banking customers with lower digital literacy and a surge in operational risk for institutions. (Amudhan et al., 2022). Studies reveal that low financial literacy impacts customer engagement and digital access usage, not capturing the interrelation of factors on technology and literacy in a continuum. (Bhat, 2023; IOSR, 2024).

Banking Stability and Macroeconomic Impact

From a macroeconomic viewpoint, stable banking systems are critical conduits for productive credit allocation, employment, and entrepreneurship development (Ntarmah et al., 2019). Capital adequacy requirements and macroeconomic regulation factors have been the determinants of bank stability in earlier research. (Gorton, 1988; Allen & Gale, 1998) The studies undertaken lack attention to customer behaviours and their perceptions, which is a microeconomic concern rooted in this area, rather than relying on dominance towards regulatory and financial variables, even during digital transition shocks.

Earlier models mediate the relationship between stability in banking and macroeconomic variables, including behavioural factors, but rarely consider trust, quality, and literacy factors for a more nuanced understanding (Li et al., 2023).

Methodological Considerations and Research Gaps

Partial least squares SEM (PLS-SEM), in particular, features prominently due to its suitability for exploratory models and smaller samples characteristic of emerging markets (Deku et al., 2019).

Nonetheless, limitations include a lack of longitudinal data, which constrains insights into the temporal dynamics of trust or digital adoption, and frequent over-reliance on self-reported measures, which introduce subjectivity bias.

A pronounced knowledge gap persists in incorporating financial literacy as a moderator within digital banking studies.

There is a crucial need for an integrative framework that can examine the factors of trust, quality, technology adoption, and financial literacy, and test their mediating and moderating effects on the stability of the banking system with broader economic impact.

The present research addresses this gap by deploying a comprehensive PLS-SEM model that unites these constructs within an empirical setting representative of emerging market challenges. In doing so, it advances behavioural finance and digital banking literature by characterising the pathways through which human factors and technology synergise to buttress bank resilience and catalyse macroeconomic vitality.

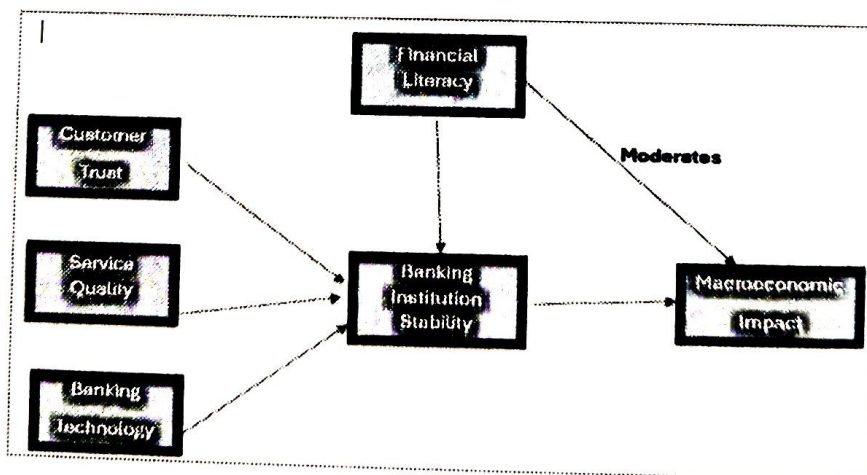
Need for the study

The banking sector still struggles to stabilise itself periodically, even with digital innovation, for sustainable economic growth. The existing traditional financial factors insufficiently addresses the behavioural determinants and scattered digital literacy factors. This study examines the interaction among variables to assess the stability of banks and their impact on economic well-being.

Theoretical framework

The study interlinks the constructs from behavioural finance, service quality, and the technology adoption model in a comprehensive modelling of drivers of banking stability. Financial literacy is posited as a moderator that conditions the efficacy of technology adoption on stability, consistent with human capital theory, which emphasises knowledge empowerment.

Conceptual Framework



*Author designed from earlier studies and theoretical frameworks

Model Specification

This Study evaluates the direct effects of Customer Trust (CT), Service Quality (SQ), and Banking Technology (BT) on Banking Institution Stability (BIS), and the effect of BIS on Macroeconomic

Impact (MEI). BIS also functions as a mediator between CT, SQ, BT and MEI. Additionally, Financial Literacy (FL) is hypothesised as a moderator on the BT → BIS relationship.

The structural model consists of the following latent variables:

- CT: Customer Trust
- SQ: Service Quality
- BT: Banking Technology
- BIS: Banking Institution Stability
- MEI: Macroeconomic Impact
- FL: Financial Literacy (Moderator)

Structural Equation

Banking Institution Stability (BIS):

$$BIS = \beta_1 CT + \beta_2 SQ + \beta_3 BT + \beta_4 (BT \times FL) + \zeta_1$$

Macroeconomic Impact (MEI):

$$MEI = \beta_5 BIS + \zeta_2$$

Where:

- $\beta_1, \beta_2, \beta_3$ represent the path coefficients quantifying direct effects of CT, SQ, and BT on BIS.
- β_4 captures the interaction effect of BT moderated by FL on BIS.
- β_5 is the effect of BIS on MEI.
- ζ_1, ζ_2 are the error terms capturing unexplained variance.

The mediation hypothesis implies that CT, SQ, and BT influence MEI indirectly through BIS

Objectives of the Study

1. To investigate the impact of customer trust, service quality, and banking technology on the stability of banking institutions.
2. To examine the mediating role of banking institution stability to macroeconomic performance indicators.
3. To assess the moderating effect of financial literacy between banking technology and banking stability.
4. To evaluate the macroeconomic indicators and financial stability of banking institutions.

Research Hypotheses

- H1: Customer trust positively influences the stability of banking institutions.
- H2: Service quality has a positive effect on banking institution stability.
- H3: Banking technology adoption positively affects banking institution stability.
- H4: Banking institution stability positively influences macroeconomic impact indicators.

Methodology

This study employs a cross-sectional quantitative research design, collecting the perceptions of banking customers and managers at a single point in time.

Sampling procedure

The target population comprises banking customers and branch officers from commercial banks operating in Tiruvallur District, Tamil Nadu. A structured questionnaire was administered to 350 banking customers, branch managers, and senior bank officials. Measurement scales of latent constructs are taken into consideration in light of earlier literature models. The study period was from March 2025 to September 2025. Cronbach's alpha and AVE evaluate reliability and validity. Structural relationships were tested using PLS-SEM to validate the model paths, mediation, and moderation effects.

Analysis and Results

Descriptive Statistics

Demographic variables from 350 respondents and their categorisation

Category	Frequency	Percentage (%)	Mean	Standard Deviation
Age Group			3.87	1.45
18-24	85	24.3		
25-34	120	34.3		
35-44	65	18.6		
45-54	45	12.9		
55+	35	10.0		
Gender			1.42	0.50
Male	200	57.1		
Female	150	42.9		
Education Level			4.10	1.25
No formal education	10	2.9		
Primary school	40	11.4		
Secondary school	80	22.9		
Diploma	60	17.1		
Graduate and above	160	45.7		
Employment Status			3.25	1.35
Employed full-time	180	51.4		
Employed part-time	50	14.3		
Self-employed	40	11.4		

Student	30	8.6		
Unemployed	20	5.7		
Retired	30	8.6		
Residence			2.10	0.70
Urban	210	60.0		
Semi-urban	90	25.7		
Rural	50	14.3		

Reliability and Validity of the Constructs

S. No.	Construct	Cronbach's Alpha	AVE Score	No. of Items
1	Customer Trust	0.834	0.692	4
2	Service Quality	0.787	0.641	4
3	Banking Technology	0.810	0.676	4
4	Financial Literacy	0.765	0.648	4
5	Banking Institution Stability	0.821	0.671	4
6	Macroeconomic Impact	0.759	0.632	4

Source: SmartPLS Results

The coefficients for the variables are above the critical threshold of 0.60, indicating internal consistency and reliability of the measurement scales. AVE Scores for the constructs exceed 0.50, confirming strong convergent validity, and each construct captures the variance of its indicators.

Factor loading of Indicators

Measured Indicators	Construct	Factor Loading
CT1: Bank handles transactions securely	Customer Trust	0.805**
CT2: Bank operates transparently	Customer Trust	0.861**
CT3: Bank safeguards personal information	Customer Trust	0.896**
CT4: Bank resolves issues fairly	Customer Trust	0.778**
SQ1: Staff address customer inquiries promptly	Service Quality	0.744**
SQ2: Reliable and consistent services	Service Quality	0.809**
SQ3: Courteous and professional employees	Service Quality	0.851**
SQ4: Clear and timely communication	Service Quality	0.769**
BT1: User-friendly mobile/online platforms	Banking Technology	0.792**
BT2: Frequent use of digital services	Banking Technology	0.835**
BT3: Innovative digital banking	Banking Technology	0.885**
BT4: Digital banking saves time/convenience	Banking Technology	0.817**
FL1: Confident financial self-management	Financial Literacy	0.742**
FL2: Understand digital banking tools security	Financial Literacy	0.830**
FL3: Knowledge about products/services	Financial Literacy	0.889**
FL4: Seeks financial information	Financial Literacy	0.765**
BIS1: Bank is financially stable	Banking Institution Stability	0.809**
BIS2: Bank sustains operations in downturns	Banking Institution Stability	0.854**
BIS3: Deposits are secure	Banking Institution Stability	0.870**
BIS4: Financial health is consistently strong	Banking Institution Stability	0.807**
MEI1: Banking improves local economic opportunities	Macroeconomic Impact	0.768**
MEI2: Credit increases employment	Macroeconomic Impact	0.818**
MEI3: Banking supports MSMEs	Macroeconomic Impact	0.836**
MEI4: Sector contributes to community well-being	Macroeconomic Impact	0.823**

Source: SmartPLS Results

Hypothesis Results

H	Relationship of Constructs	Sample Mean	Standard Deviation	T Statistic	P Value	Result
H ₁	Customer Trust → Banking Institution Stability	0.359	0.062	5.792	0.000	Significant
H ₂	Service Quality → Banking Institution Stability	0.277	0.060	4.617	0.000	Significant
H ₃	Banking Technology → Banking Institution Stability	0.241	0.058	3.923	0.000	Significant
H ₄	BIS → Macroeconomic Impact	0.518	0.071	8.453	0.000	Significant
H _{5a}	CT → BIS → Macroeconomic Impact (Indirect)	0.186	0.046	4.122	0.000	Significant
H _{5b}	SQ → BIS → Macroeconomic Impact (Indirect)	0.144	0.042	3.445	0.001	Significant
H _{5c}	BT → BIS → Macroeconomic Impact (Indirect)	0.125	0.040	2.985	0.003	Significant
H ₆	BT × Financial Literacy → Banking Institution Stability	0.101	0.039	2.564	0.011	Significant (Moderation)

Structural Model Results

Hypothesis	Path	Coefficient (β)	t-value	p-value	Support (Yes/No)
H1	CT → BIS	0.36	5.82	<0.001	Yes
H2	SQ → BIS	0.28	4.61	<0.001	Yes
H3	BT → BIS	0.24	3.92	<0.001	Yes
H4	BIS → MEI	0.52	8.45	<0.001	Yes
H5	Indirect (CT → BIS → MEI)	0.19	4.12	<0.001	Yes
H5	Indirect (SQ → BIS → MEI)	0.15	3.45	<0.001	Yes
H5	Indirect (BT → BIS → MEI)	0.12	2.98	0.002	Yes
H6	Moderation (BT × FL → BIS)	0.10	2.56	0.011	Yes

Customer Trust (CT), Service quality (SQ) and Banking Technology (BT) significantly predict Banking Institution stability (BIS), with CT having the strongest direct effect ($\beta=0.36$).

Banking Institution Stability (BIS) strongly influences Macroeconomic Impact (MEI) ($\beta=0.52$)

Mediation analysis confirmed BIS as a significant mediator, establishing that CT, SQ, and BT affect macroeconomic outcomes primarily through their impact on bank stability.

The moderation effect of Financial Literacy (FL) on the BT → BIS relationship was positive and significant, indicating that higher financial literacy enhances the beneficial impact of banking technology.

The model's goodness of fit (SRMR = 0.062) was within acceptable limits (below 0.08), confirming model adequacy.

Interaction Impacts Main Effects

Interaction Term	Description	Interpretation of Coefficient
BT×FL	Moderates effect of Banking Technology on BIS	Change in BT's impact on BIS per unit of FL

When an interaction exists, the total effect of BT on BIS at a specific level of FL is:

$$\text{Effect of BT on BIS} = \beta_3 + \beta_4 \times \text{FL}$$

Discussion

The collected responses show a diverse age distribution with an average age of 3.87 indicates a moderate spread in various age groups. The largest are the younger adults (18-24 at 24.3%) and adults (25-34 year at 34.3%), the demographic results show the strong base of youngster more receptive with digital banking technologies, aligning with financial technology adoption (Fernández et al., 2016).

Education levels skewed towards higher qualifications with half of the respondent's graduates or higher (45.7%). This pattern of result aligns with digital banking usage associating with education and financial literacy (Amudhan et al., 2022).

Employment data correlates with the banking engagement and financial stability, with rural and semi-urban customers composing 40% of the sample.

Factor Loadings

Factor loading specifies the significant relationship between observed indicators and underlying latent constructs were exceeding 0.7 threshold signifies reliable and valid indicators.

Customer Trust show loadings from 0.778 to 0.896 demonstrates the perception of transparent and secure transaction with banking environments.

Service quality ranges from 0.744 to 0.851 confirms multidimensional service quality in both physical and digital platforms.

Banking technology has higher loading from 0.792 to 0.885 shows customers experience and usage highlights technological innovation is the core factor.

Financial literacy is strong from 0.742 to 0.889, customers show information seeking behaviour confining themselves in knowing on digital tools and financial product knowledge provided by the banking institutions.

Banking Institution stability with high loading from 0.807 to 0.836 represents perception of customers is trustworthy over time and banks are resilient in its functioning.

Macroeconomic impact shows loading from 0.768 to 0.836 indicates a strong construct of banking institutions creating socioeconomic impact among economic indicators through its stability by churning the economy.

H1: Customer Trust (CT) → Banking Institution Stability (BIS)

The positive path coefficient ($\beta = 0.36$) demonstrates a substantial and statistically significant impact of customer trust on banking stability ($t = 5.82, p < 0.001$). Trust plays a vital role in institutional resilience by enhancing long-term customer relationships and reducing perceived risk.

H2: Service Quality (SQ) → Banking Institution Stability (BIS)

With a coefficient of 0.28 and high significance ($t = 4.61, p < 0.001$), service quality contributes meaningfully to bank stability. Service reliability and clarity of communication lead to better institutional stability.

H3: Banking Technology (BT) → Banking Institution Stability (BIS)

The technology adoption effect ($\beta = 0.24$, $t = 3.92$, $p < 0.001$) indicates that innovations in digital banking have a positive influence on banking stability and enhance operational efficiency.

H4: Banking Institution Stability (BIS) → Macroeconomic Impact (MEI)

The standardised coefficient in the model ($\beta = 0.52$) reflects a robust and highly significant positive relationship between banking stability and macroeconomic outcomes ($t = 8.45$, $p < 0.001$). Stable financial institutions contribute to economic growth indicators.

H6: Moderation Effect of Financial Literacy (FL) on BT → BIS

The positive moderation coefficient ($\beta = 0.10$, $t = 2.56$, $p = 0.011$) indicates that financial literacy strengthens the impact of banking technology on stability. Customers with higher financial literacy derive better benefits, which results in enhanced institutional stability.

Cultivating financial literacy among banking customers is a pressing need of the hour, which can yield a better institutional reputation and contribute to stability and smoothen economic growth. Several Prior works on the risks of financial innovation have been inconsistent with the performance stability of digital financial services (Syed & Bajwa, 2022; Beck et al., 2016). Banks servicing digitally enabled customers must adapt to behavioural risk factors inherently, which reduces the friction from frequent withdrawal decisions. As banking services have digitised, it leads to high expectations of responsiveness and transparency in customer interaction, both in person and online. The mediation and moderation effects on the above model reveals that future model requires technology and literacy to be treated together, instead of testing it in isolation.

Stable banks show trust, service quality, technology innovation interacts and moderated by customers literacy. The micro level and macro level factors interlink the behavioural risk factors as measured in empirical results.

Conclusion

This study elucidates the behavioural factors supported by robust PLS-SEM analysis, confirms that the factors not only influence institutions stability but indirectly affects the macroeconomic outcomes which is the critical mediator. The moderating role of financial literacy interlinks the customer centered variable even in technological innovation striving on trust and high service quality.

Leveraging customer trust and high service quality standards sustains the significant pillars of banking stability, even technological innovation cannot replace it. Systemic stability in financial institutions and inclusive economic growth depends on customers financial literacy and targeting them towards digital inclusion with education programs.

Limitation and Future Research Directions

As this study is done on cross-sectional data which limits the ability to interpret the dynamic changes over time. Future research can explore on longitudinal designs with multiple markets and regulatory environments.

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