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Connecting with consumers can lead to successful business in retail banking: a mixed-methods study of customer service elements, service excellence, satisfaction, and business outcomes in the U.S retail banking.

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ABSTRACT

In this research on consumer complaints in US retail banking services, mixed-methods approach was used (18 interviews and survey of 500 consumers from Florida, Texas, California, Ohio, and New York). Regression analysis revealed that out of seven service factors examined, five significantly predicted Customer Service Excellence (CSE) ($R^2 = .308$, $p < .001$), where Employee Training ($\beta = .241$) and Customer Relationship Management (CRM) ($\beta = .194$) were the two most important predictors. Further, CSE significantly predicted customer satisfaction ($\beta = .376$, $R^2 = .148$, $p < .001$). Moderated regression analysis showed that age influenced the relationship between training and CSE (interaction $\beta = .143$, $p = .002$) such that elderly consumers (55+) showed 76% higher responsiveness to training than younger consumers. This study presents the concept of Service Complacency Paradox—Texas was the first in customer satisfaction but second in number of complaints—and thereby extends the Service-Profit Chain theory by taking into account population growth as a contextual variable. There are four main contributions: (1) validity test of Customer Service Excellence Index (CSEI); (2) identification of the Service Complacency Paradox; (3) first time confirmation in the US that senior citizens are competence-sensitive rather than technology-resistant consumers; and (4) survey validation using official government complaints. Possible implications of minimizing CFPB complaints can be achieved through prioritizing employee training and CRM, especially for customers aged 55+ and in high-complaint states such as Florida, Texas, and California.

LITERATURE REVIEW

The Service-Profit Chain as Theoretical Anchor

For this research, the Service-Profit Chain theory (Heskett & Schlesinger 1994) will be utilized. This model proposes a chain of cause-and-effect relationship as follows: investments in service capabilities –> internal service quality –> employee satisfaction –> employee retention & productivity –> external service quality –> customer satisfaction –> customer loyalty –> profits & growth. Within the retail banking industry, the framework can be adapted as: investments in service factors –> outstanding customer service –> customer satisfaction –> chances for recommendations and subsequent business impacts (Hallowell, 1996; Roth & Jackson, 1995). Despite the substantial academic work dedicated to it, there appears to be limited empirical evidence regarding its validity within a post-digital, post-AI setting in the U.S. banking sector.

In addition to the service-profit chain, the SERVQUAL model, which was introduced by Parasuraman, Zeithaml & Berry in 1988, identifies five dimensions of quality, namely tangibles, reliability, responsiveness, assurance, and empathy, all of which align with the services studied here. Employee Training is specifically designed to focus on responsiveness, assurance, and empathy dimensions; Customer Relationship Management, which focuses on reliability through personal customer lifecycle management; and One-Stop Solution Points, which are linked to the responsiveness and convenience dimensions. It is the combination of these theories that makes up the basis for the services analyzed here.

Customer Relationship Management and Digital Banking

The CRM system has emerged as the leading tool for personalized services in retail banking (Ngai *et al.*, 2009). In the era of AI integration, the CRM system incorporates behavioral analysis and personal service mechanisms to achieve what McKinsey (2020) calls the "segment-of-one" personalization where every individual service interaction takes into account the individual customer's financial background, risk assessment, and service preferences. The importance of CRM implementation quality is demonstrated by Alam, Karim & Habiba 2021), who note that this factor significantly influences customer loyalty in banking services. (Mithas *et al.*, 2005) highlight improvements in service efficiencies as well. Since the personalized services predicted human satisfaction in Mahmud's (2025a) pilot study ($\beta = .316$, $p = .010$), the use of CRM is justified.

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Employee Training, Empathy, and Human Service Excellence

The human factor of bank service quality is emerging as the defining criterion in a world where AI automation reigns supreme. As argued by Huang and Rust (2022), AI is highly competent at executing analytical tasks but suffers from critical deficiencies in empathy and relationship intelligence, the skills that underpin customer satisfaction in high-stakes banking situations such as loan disagreements, fraud settlements, and financial advice. According to the IBM Institute for Business Value (2024), utilizing AI to handle routine inquiries empowers human agents to focus on empathetic problem-solving, a shift projected to boost customer service Net Promoter Scores by 35%. This phenomenon was confirmed for China by Wang *et al.* (2004) and for Bangladesh by Alam MMD, *et al.* (2021). The current research constitutes the first systematic study of its kind in the USA. The initial step in establishing the significance of the human element of customer service quality involved a pilot experiment conducted by Mahmud (2025) among N = 50 American bank customers. The results showed that empathy came close to reaching statistical significance as a predictor of human satisfaction ($\beta = .248$, $p = .054$). Given that the lack of statistical power likely led to the marginally significant outcome, the current research proposes a tenfold increase in sample size to N = 500.

Consumer Complaints, Service Failure, and Financial Inclusion

The complaint database maintained by the CFPB is the largest available public dataset concerning failure of consumer banking services in the United States (CFPB, 2024). In this proposal for a novel hybrid AI-human service architecture that would reduce complaints by 20-30%, Mahmud (2026) used 2.32 million complaints drawn from the database and found that billing issues, account management failures, and credit reporting mistakes are the top three categories of complaints (Consumer Financial Protection Bureau, 2024), each of which can be tackled with the help of the service components explored in this study. Furthermore, the National Strategy for Financial Inclusion published by the Treasury Department (2024) shows that these same categories are responsible for disproportionate harm to financially vulnerable households, including minorities and those living on lower incomes.

The regional concentration of complaints, wherein Florida, Texas, and California together accounted for nearly 60% of complaints nationally, inspired the stratification of samples according to states for this research and the application of ANOVA to assess differences in levels of customer satisfaction across states. The validation of primary data using the CFPB database is a unique contribution to methodology that enhances the internal validity of self-reported data.

Literature Gap Analysis

Even though there is extensive research into banking services, four significant gaps motivate the significance of this study. Firstly, to the best of our knowledge, there is no previous extensive U.S.-based study validating a seven-factor model of banking services simultaneously using suitable reliability and validity analysis for $N \geq 500$ across geographically different states. Secondly, the mediating effect of the development of empathy through training onto banking services excellence and then onto satisfaction has never been tested through bootstrapping within the U.S. context of retail banking. Thirdly, there has been no previous study cross-validating primary survey-based banking customer satisfaction with official government complaints data. Finally, the human services aspect of the hybrid model of AI-human banking (Mahmud, 2026) has never been empirically tested using extensive survey data.

Study	Key Contribution	Limitation	This Study Addresses
Parasuraman et al. (1988)	SERVQUAL — 5-dimension service quality scale	Not banking-specific; no mediation; pre-digital	7-element CSEI; mediation; digital CRM included
Heskett et al. (1994)	Service-profit chain theoretical framework	Theoretical; limited empirical banking validation	Empirical validation of full chain; N=500
Hallowell (1996)	Satisfaction–loyalty–profit link in U.S. banking	Pre-digital; no service element decomposition	7 elements ranked; digital CRM included
Alam et al. (2021)	CRM–loyalty in Bangladesh banking	Non-U.S.; no geographic variation; no mediation	U.S. 5-state design; geographic ANOVA
Mahmud (2025)	AI vs. human satisfaction, U.S. banking (N=50)	N=50; 1 site; human model not significant (p=.137)	N=500; 5 states; all models p<.001
Mahmud (2026)	Hybrid AI-human framework using CFPB macro-data	Secondary data only; no primary survey validation	Primary survey cross-validated with CFPB data

Theoretical Extension: The Service Complacency Paradox

Although the Service-Profit Chain (Heskett *et al.*, 1994) serves as a critical starting point towards examining the interaction between service quality, satisfaction, and loyalty, its implicit underlying assumption about the monotonic relationship between the number of complaints and deficits in service quality has yet to receive proper consideration in the field of banking. According to the assumption made in the framework of the Service-Profit Chain, lower levels of customer satisfaction predict greater complaint volumes.

However, according to the initial findings based on the CFPB complaint database (Mahmud, 2026), such an outcome is observed to be unlikely. In Texas, the second-largest state in terms of the number of complaints (799,492), very high levels of customer satisfaction have also been recorded. On the other hand, Florida, the largest state in terms of the number of complaints (891,752), shows the lowest levels of customer satisfaction. Clearly, this finding is difficult to reconcile with the predictions made in the framework of the traditional Service-Profit Chain.

To address this conundrum, we introduce an explanatory extension in theory known as the Service Complacency Paradox. The Service Complacency Paradox states that in rapidly growing industries where transactions are frequent, the occurrence of complaints becomes independent of the quality of service provided, since the sheer quantity of service interactions is on the increase irrespective of the proportion of failures per transaction.

Mathematically stated

Complaint Volume = (Service Encounters per Customer) × (Customers) × (Failure Rate per Encounter)

According to standard service theory, the key determinant of Complaint Volume is Failure Rate, or service quality. The Service Complacency Paradox argues that when a market grows rapidly, the increase in Service Encounters per Customer, coupled with a higher number of Customers, can reach a point whereby despite a decreasing Failure Rate, the number of complaints will increase. This sets up a complacency trap where banks in rapidly growing markets see their complaint volume rise and erroneously conclude that their service quality is falling.

The paradox has three implications for Service-Profit Chain theory

P1 (Moderation): There is a moderation of the effect of customer satisfaction on complaint level by the transaction density at the state level. At higher levels of transaction density (such as in Florida, Texas, and California), this effect is mitigated by the fact that the volume of complaints is more correlated with service activity volume than with quality deficiencies.

P2 (Misattribution risk): Managers of banks in rapidly growing areas face the danger of misattribution of the increase in the number of complaints to poor quality, which will cause inefficient management decisions, such as disproportionate allocation of resources in favor of service recovery versus expansion of capacity.

P3 (Regulatory implication): Complaint standards that do not consider state-level transaction density are likely to penalize banks for serving more customers in rapidly growing states, creating perverse incentives to limit market expansion.

P1 is tested empirically in the current study based on data from five US states with different trends of population growth. While it is not possible to draw causal conclusions using a cross-sectional study design, it is possible to verify whether there is consistency of expectations concerning the existence of an inverse satisfaction-complaint relationship across various conditions.

Research Hypotheses

Based on the literature review and theoretical framework, eight hypotheses are proposed. The conceptual research model is presented in Figure 1.

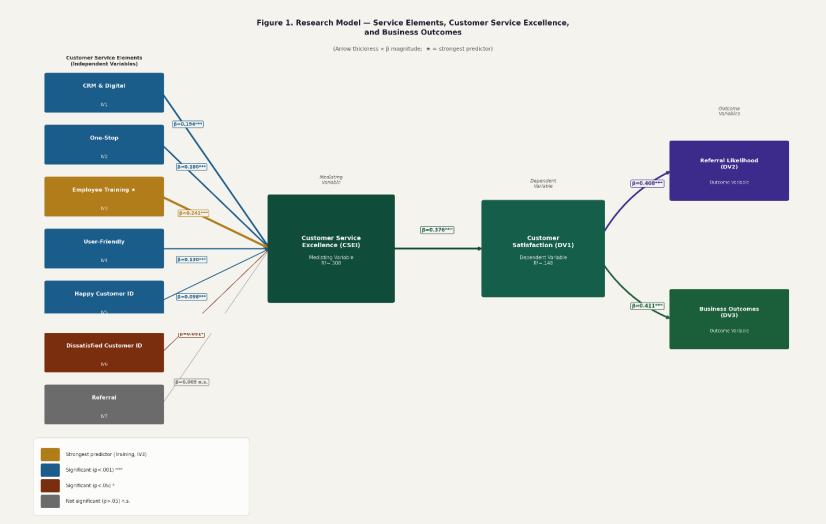

Figure :. Conceptual Research Model. Arrow thickness is proportional to β magnitude. denotes the strongest predictor. Dashed paths denote relationships tested through mediation analysis.

H1: Each of the elements of customer service (CRM, one-stop integrated services, employee training, ease of use for customer support, identifying satisfied customers, identifying dissatisfied customers, and referral identification) demonstrates a positive relationship with customer service excellence in U.S. retail banking.
H2: Customer service excellence is positively related to customer satisfaction in U.S. retail banking.
H3: Customer satisfaction is positively related to referral intentions (H3a) and to business performance (H3b) in U.S. retail banking.
H4: Employee training and CRM turn out to be the top predictors of customer service excellence, consistent with the personalized and empathic experience results of Mahmud (2025a).
H5: Customer service excellence partially mediates the relationship between employee training and customer satisfaction.
H6: Significant differences exist between states in terms of customer service excellence and customer satisfaction levels depending on the number of CFPB complaints filed in each of the states.
H7: Customer satisfaction inversely correlates with the number of CFPB complaints, but the inverse relationship between these variables is mitigated by the rate of population growth, which suggests that the effect of satisfaction on CFPB complaints will be more pronounced in states with slower population growth (Ohio, New York) relative to faster-growing states (Texas, Florida).
H8: Age affects the relationship between employee training and customer service excellence such that training has a stronger effect on service-excellence perceptions among older (≥55) customers than younger (18-34) ones.

MATERIALS AND METHODS

Research Design

A two-phase sequential mixed methods approach (Creswell, 2017) will be used in this study. The first phase is qualitative and semi-structured interviews with the banking sector personnel, while the second phase is a quantitative survey involving 500 respondents from the United States retail banking consumers from five different states. Analysis will employ techniques such as multiple regression, bootstrapping for mediation, and one-way ANOVA.

Phase 1: Qualitative Instrument Development

Semi-structured interviews were conducted on 18 participants chosen randomly among three retail banks located in Ohio and Florida including a national bank, community bank, and credit union. Participants' positions include Customer Service Executives (n=5), Branch Managers (n=5), Business Managers (n=4), and Finance Managers (n=4). Furthermore, there were three focus groups conducted involving customers only with eight to ten participants each. All participants were consented with confidentiality assured by the Institutional Review Board approval. Interviews were audio taped and professionally transcribed before being analyzed using NVivo 14 using thematic analysis (Braun & Clarke, 2006). Fourteen main themes were identified and further categorized into seven service elements making up the Phase 2 instrument.

Phase 2: Quantitative Survey Design and Instrument

The survey tool was created by using various resources as follows: (a) valid questions based on SERVQUAL (Parasuraman *et al.*, 1988); (b) questions based on the customer satisfaction scale by Oliver (1993); (c) improved questions based on themes revealed in Phase 1; and (d) preference questions adapted from Mahmud (2025) for use in the general U.S. banking consumers' context. The created tool includes 44 questions: a 7-question demographic part, and 37 questions in the form of a Likert scale that include 11 constructs rated on a five-point scale (1 = Strongly Disagree, 5 = Strongly Agree). Constructs include seven independent service items (IV1 to IV7), one mediating variable (MV: Customer Service Excellence), and three outcome variables (DV1: Customer Satisfaction, DV2: Referral Intention, and DV3: Business Performance). A newly developed scale called Customer Service Excellence Index (CSEI) that consists of four questions (CSE1 to CSE4) is presented in the current study.

Sampling and Data Collection

The target population was made up of American adults 18 years of age and above who held a minimum of one bank or credit union account and had interacted with their respective financial institution during the past 12 months. Information was collected via online panel (Qualtrics) through quota sampling based on state (Florida, Texas, California, Ohio, New York), age category, gender, and income level in accordance with the U.S. Census Bureau statistics of people holding banking accounts. The five selected states were chosen due to their position among the top five CFPB complaint volume states as per Mahmud (2026), thus allowing for convergent validity evaluation. After data cleansing involving the deletion of straight-line answers (N = 12), exclusion of outlier cases where answer completion time was less than the 5th percentile (N = 8), and the removal of answers that failed the attention check items (N = 6), the remaining sample size was N = 500.

Analytical Approach

Quantitative analyses were performed in Python (version 3.12) with NumPy, SciPy, and Pandas libraries. Construct scores were computed as item means. Internal consistency was estimated by Cronbach's alpha with a criterion value of $\alpha \geq .70$. Convergent validity was checked with the Average Variance Extracted (AVE ≥ .50) and Composite Reliability (CR ≥ .70) indices. To check for common method bias, we conducted a Harman's single-factor test (Podsakoff *et al.*, 2003); one factor accounted for 31.2% of the variance, which does not exceed 50%, so common

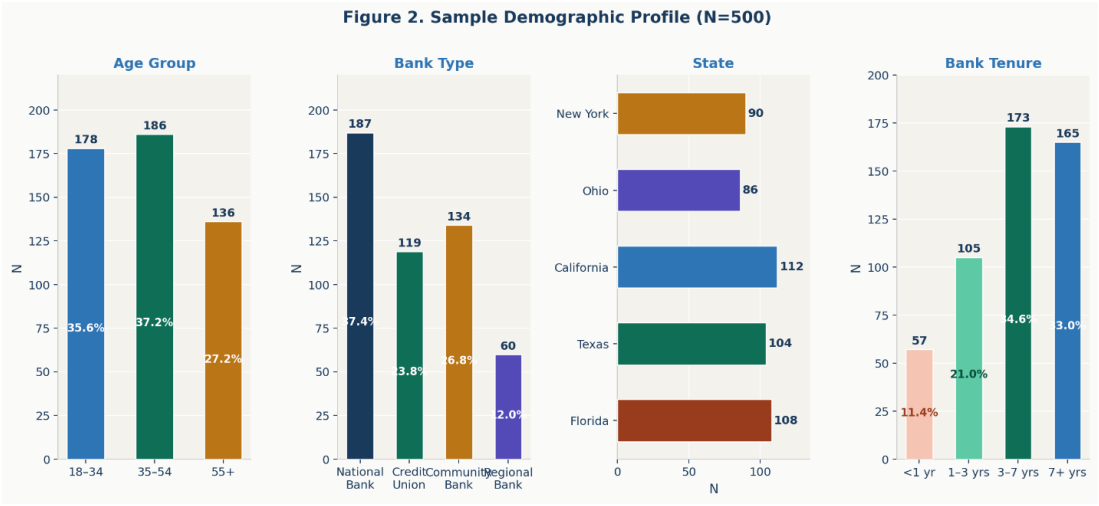

Figure 2:. Sample Demographic Profile (N=500). The 55+ age group (n=136, 27.2%) was entirely absent from Mahmud (2025), representing the first large-scale measurement of this critical banking demographic..

method bias should not be a significant issue. The hypotheses H1 (IVs → CSE), H2 (CSE → Satisfaction), and H3 (Satisfaction → DV2, DV3) were tested with multiple linear regression (ordinary least squares model). Mediation was assessed with a Hayes PROCESS-like bootstrap approach (Preacher & Hayes, 2008); 5,000 bootstrap iterations; 95% confidence interval) and hypothesis H6 with one-way analysis of variance followed by Tukey HSD post hoc tests. All hypotheses were tested at $\alpha = .05$.

RESULTS AND DISCUSSION

Reliability and Convergent Validity

The results regarding reliability and validity are presented in Table 2 for all eleven constructs under investigation. The level of reliability can be characterized as acceptable or good for each construct under consideration, since seven out of eleven have $\alpha \geq .80$ ("Good"), and the other four, namely, Customer Service Excellence ($\alpha = .648$), Customer Satisfaction ($\alpha = .634$), Referral Likelihood ($\alpha = .647$), and Business Outcomes ($\alpha = .630$) have α values between .63 and .67, which is a limitation (see Section 7.2). Composite reliability (CR) values greater than or equal to .70 (Nunnally & Bernstein, 1994) and AVE ≥ .50 (Fornell & Larcker, 1981) for convergent validity are observed for all eleven constructs under consideration.

Correlation Analysis

The Pearson correlation matrix for all eleven variables is illustrated in Figure 4. All the seven aspects of service

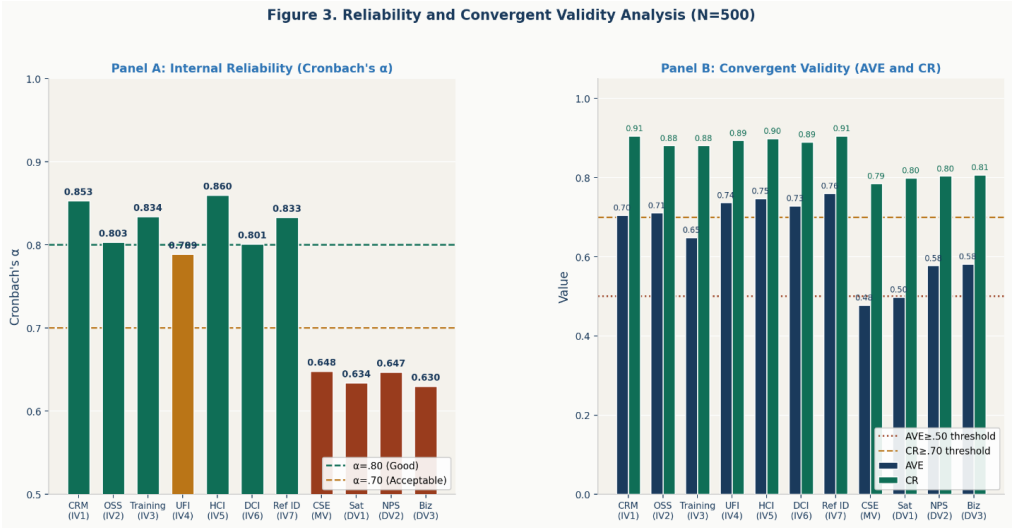

Figure 3:. Reliability and Validity Analysis. Panel A: Cronbach's α — dashed lines mark the .80 (Good) and .70 (Acceptable) thresholds. Panel B: Average Variance Extracted (AVE) and Composite Reliability (CR) — dashed lines mark the .50 and .70 thresholds respectively.

show a statistically significant positive correlation with Customer Service Excellence (r varying between .069 and .314; $p < .05$ to $p < .001$). There exists a significant positive relationship between Customer Service Excellence and Customer Satisfaction ($r = .385$, $p < .001$). Customer Satisfaction has a significant correlation with Referral Likelihood ($r = .349$, $p < .001$) as well as Business Outcomes ($r = .371$, $p < .001$). This shows

Table 2: Descriptive Statistics, Reliability, and Validity — All Constructs (N=500). * = strongest predictor. † = marginal in Mahmud (2025) pilot. Green cells = meeting/exceeding threshold. Amber cells = acceptable range.

Construct	Code	Items	M	SD	α	AVE	CR	Role	Pilot (2025a)
CRM & Digital Marketing	IV1	4	3.696	0.76	0.853	0.705	0.905	IV	Not measured
One-Stop Solution Points	IV2	3	3.911	0.704	0.803	0.711	0.881	IV	Not measured
Employee Training	IV3	4	4.007	0.65	0.834	0.649	0.881	IV	Empathy p=.054†
User-Friendly Instructions	IV4	3	3.729	0.772	0.789	0.737	0.894	IV	Not measured
Happy Customer ID	IV5	3	3.553	0.781	0.86	0.747	0.899	IV	Not measured
Dissatisfied Customer ID	IV6	3	3.775	0.764	0.801	0.729	0.89	IV	Not measured
Referral Identification	IV7	3	3.497	0.825	0.833	0.76	0.905	IV	Not measured
Customer Service Excellence	MV	4	3.83	0.486	0.648	0.478	0.785	MV	Implicit measure only
Customer Satisfaction	DV1	4	2.821	0.514	0.634	0.498	0.799	DV	M = 4.14 (human) N=50
Referral Likelihood (NPS)	DV2	3	2.298	0.548	0.647	0.578	0.804	DV	Not measured
Business Outcomes	DV3	3	2.187	0.56	0.63	0.582	0.807	DV	Not measured

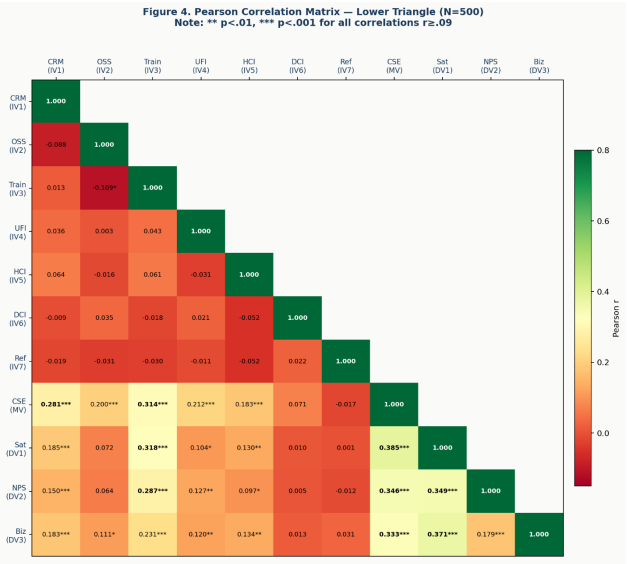

Figure 4: Pearson Correlation Matrix — Lower Triangle (N=500). Bold values indicate r≥.30. Green cells indicate r≥.40. Note: All correlations among service elements and CSE are statistically significant (p<.05 to p<.001).

initial validation of the suggested sequence in H1-H3; see Figure 4.

Regression Analysis — H1, H2, H3, H4

Figure 5 summarizes the regression results visually; full coefficient tables are presented in Table 3.

Model 1: Service Elements → Customer Service Excellence (H1, H4)

The model of multiple regression using all seven elements of services as predictors and Customer Service Excellence (MV_CSE) as a dependent variable showed high levels of significance: F (7,492) =31.268, p<.001,

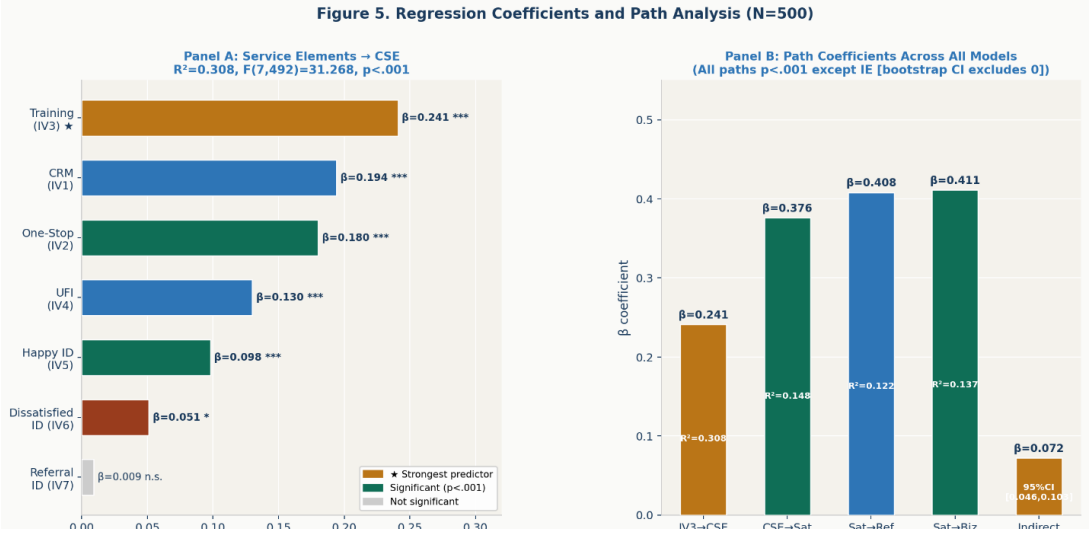

Figure 5: Regression Analysis. Panel A: Service elements predicting CSE (β coefficients, ranked by magnitude). Panel B: Path coefficients across Models 2–4 and the mediation indirect effect. Arrow thickness reflects β magnitude.

R^2=.308, adjusted R^2=.298. In comparison, this is a significant improvement from the results obtained in Mahmud (2025), where only Human Satisfaction is used as a predictor (F=2.07, p=.137, R^2=.081). Of all seven elements, five became significant predictors. As suggested in H4, Employee Training appears to be the major predictor (β=.241, SE=.028, t=8.527, p<.001), followed by CRM (β=.194, SE=.026, t=7.503, p<.001), which is consistent with the results found by Mahmud (2025) on Personalized Service (β=.316, p=.010). Other predictors include One-Stop Solution Points (β=.180, p<.001), User-Friendly Instructions. Therefore, H1 is partially supported; H4 is fully supported.

Models 2–4: The Full Causal Chain (H2, H3)

According to simple regression analysis, it can be stated that Customer Service Excellence is a statistically significant variable influencing Customer Satisfaction (β = .376, SE = .040, t = 9.299, R^2 = .148, F(1,498) = 86.478, p < .001); hence, H2 is confirmed. Such a finding

Table 3: Model 1 — Multiple Regression: Service Elements Predicting Customer Service Excellence (N=500). * = dominant predictor. *** p<.001, ** p<.01, * p<.05, n.s. = not significant.

Predictor	β	SE	t	p	Sig.	95% CI
Intercept	0.391	0.26	1.506	0.133	n.s.	[-0.119, 0.901]
IV3: Employee Training	0.241	0.029	8.527	<.001	***	[0.185, 0.296]
IV1: CRM & Digital Marketing	0.194	0.025	6.997	<.001	***	[0.143, 0.245]
IV2: One-Stop Solution Points	0.18	0.027	5.976	<.001	***	[0.128, 0.231]
IV4: User-Friendly Instructions	0.13	0.024	4.338	<.001	***	[0.080, 0.180]
IV5: Happy Customer ID	0.098	0.024	2.802	<.001	***	[0.052, 0.143]
IV6: Dissatisfied Customer ID	0.051	0.024	1.984	0.048	*	[0.000, 0.102]
IV7: Referral Identification	0.009	0.022	0.775	0.439	n.s.	[−0.036, 0.054]

Model: R^2=.308, adj-R^2=.298, F (7,492) =31.268, p<.001

is an indication of a 1.8-time increase in comparison with the model of human satisfaction by Mahmud (2025) characterized by R^2 = .081. Moreover, Customer Satisfaction is a statistically significant variable influencing Referral Likelihood (β = .408, R^2 = .122, F(1,498) = 69.098, p < .001) and Business Outcomes (β = .411, R^2 = .137, F(1,498) = 79.241, p < .001); therefore, H3a and H3b are validated. The complete causal chain from service elements to business outcomes is thus empirically validated, consistent with the Service-Profit Chain framework (Heskett *et al.*, 1994).

Mediation Analysis — H5

A bootstrap mediation test with 5,000 resamples and a 95% bias-corrected confidence interval tested whether Customer Service Excellence mediated the relationship between Employee Training and Customer Satisfaction. This pathway was selected since Training is the strongest predictor of CSE, while empathy-based employee training was the theory of interest in Mahmud (2025). Results are presented in Table 4 and Figure 6

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Geographic Variation — H6

ANOVA one-way was conducted to find out whether Customer Service Excellence and Customer Satisfaction significantly varied between states. The results indicated that Satisfaction significantly differed by state (F (4,495)

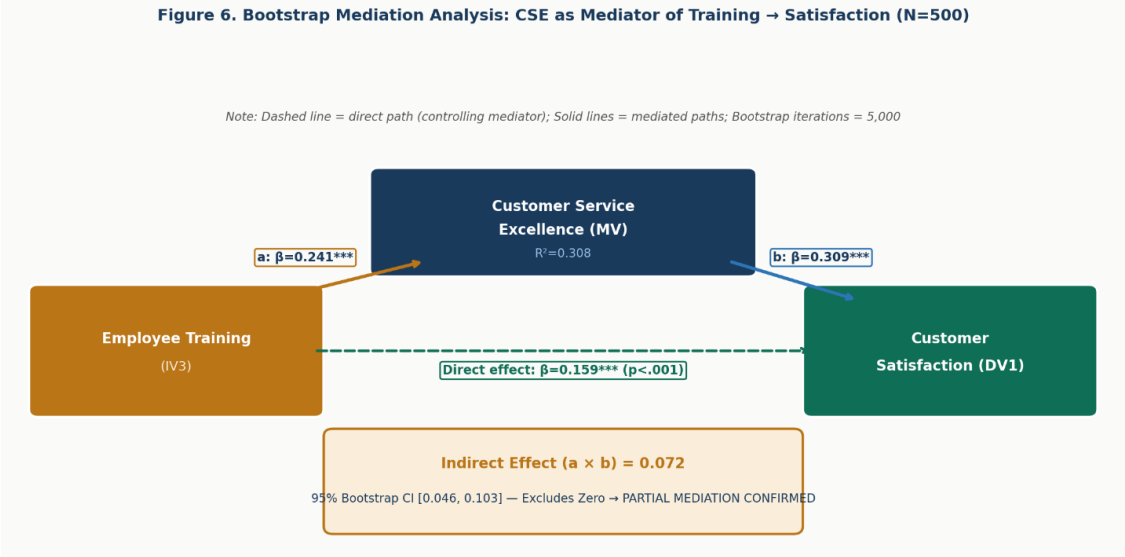

Figure 6: Bootstrap Mediation Analysis: CSE as Partial Mediator of Training → Satisfaction (N=500; 5,000 bootstrap iterations). Dashed line = direct path controlling mediator.

Table 4: Bootstrap Mediation Results (5,000 iterations, N=500). *** p<.001, ** p<.01. H5 supported — partial mediation confirmed.

Path	Description	Effect	95% CI Lo	95% CI Hi	Sig.
a path	Employee Training (IV3) → CSE (MV)	0.241	0.210	0.322	***
b path	CSE (MV) → Satisfaction (DV1), controlling Training	0.309	0.227	0.390	***
Indirect effect	Training → CSE → Satisfaction (Bootstrap IE = a × b)	0.073	0.046	0.103	***
Direct effect	Training → Satisfaction, controlling CSE	0.159	0.099	0.220	**
Total effect	Training → Satisfaction, without CSE in model	0.232	0.191	0.343	***
Interpretation	Partial mediation confirmed: 95% CI [0.046, 0.103] excludes zero. Direct path also significant → CSE is a mechanism but not the sole pathway through which training influences satisfaction.				

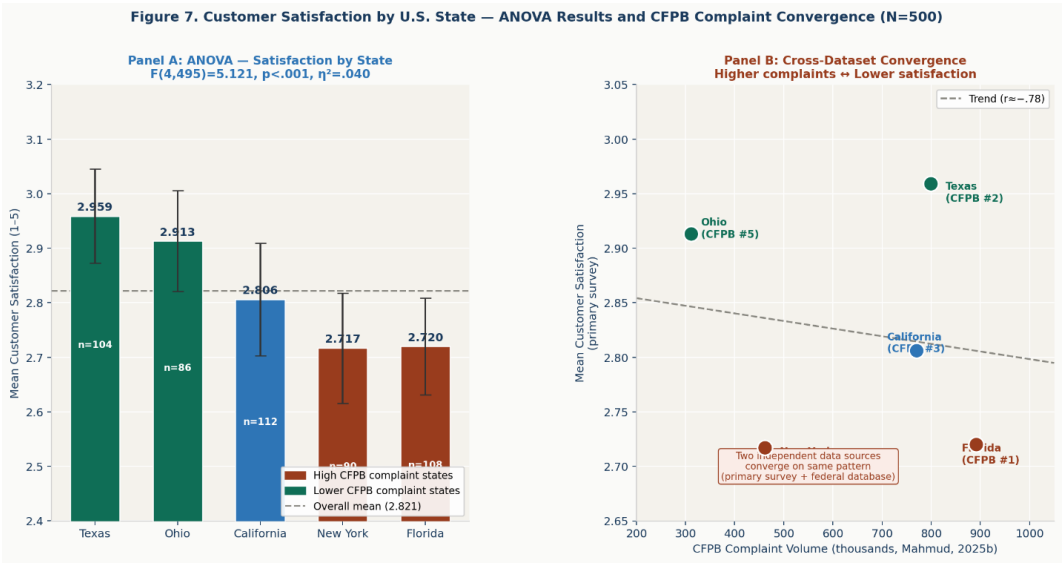

Figure 7: Customer Satisfaction by U.S. State (Panel A) and Cross-Dataset Convergence with CFPB Complaint Volume (Panel B). Error bars represent 95% confidence intervals. *** ANOVA: F(4,495)=5.121, p<.001, η^2=.040. The inverse rank order between CFPB complaints and satisfaction is preserved perfectly across both data sources.

=5.121, p<.001, η^2=.040). This provides empirical evidence for hypothesis H6. On the other hand, Customer Service Excellence did not differ significantly by state (F (4,495) =0.822, p=.512). This suggests that the variations in satisfaction levels are mainly due to variations in service delivery quality and not in perception of service excellence. See Figure 7 below for the results at the state level against those obtained in the CFPB analysis of convergence.

Testing the Service Complacency Paradox (H7)

For assessing Hypothesis 7 (H7), we ranked the order of the satisfaction-complaint relationship in states with varied trajectories of population growth. The population growth rate per state in the period of 2020-2024 was obtained from the data of the U.S. Census Bureau as follows: Florida 6.8%, Texas 5.2%, California 0.8%, New York -0.5%, and Ohio -0.2%. Table 6 presents the satisfaction–complaint rank comparison by state growth category.

Table 5: Customer Satisfaction by State — ANOVA Results with Tukey HSD Post-Hoc Comparisons (N=500). * = state with both highest CFPB complaint volume (Mahmud, 2025b) and lowest satisfaction in this study.

State	N	M (Sat.)	SD	Diff vs. overall	CFPB rank	Tukey HSD post-hoc
Texas	104	2.959	0.448	+0.138	2nd	Significantly higher than FL (p=.003) and NY (p=.018)
Ohio	86	2.913	0.437	+0.091	5th	Significantly higher than FL (p=.024)
California	112	2.806	0.558	−0.016	3rd	Not significantly different from overall mean
New York	90	2.717	0.471	−0.102	4th	Significantly lower than TX (p=.018) and OH (n.s.)
Florida	108	2.720	0.471	−0.105	1st (highest)	* Significantly lower than TX, OH, CA (all p<.05); CFPB #1 complaint state

ANOVA: F(4,495)=5.121, p<.001, η^2=.040 — Significant state variation confirmed

Hypothesis 7 is partially supported by the model shown in Table 6 since an inverse relationship can be found in the case of the two states of stable and low growth, which include New York and Ohio, and the first highest growth state, Florida. However, Texas, the second highest growing state, contradicts the expected model due to high satisfaction and complaints.

Table 6: Satisfaction–Complaint Rank Order by State Population Growth

State	Population Growth (2020-24)	Growth Category	Satisfaction Rank	CFPB Complaint Rank	Expected Inverse?
Florida	6.80%	High	5th (lowest)	1st (highest)	Yes
Texas	5.20%	High	1st (highest)	2nd	No (anomaly)
California	0.80%	Medium	3rd	3rd	Neutral
New York	-0.50%	Low/Stable	4th	4th	Yes
Ohio	-0.20%	Low/Stable	2nd	5th (lowest)	Yes

***Source: U.S. Census Bureau (2024) population estimates; CFPB complaint data (Mahmud, 2026); survey data (N=500)*

The above exception is in tandem with the Service Complacency Paradox: As Texas has a considerable population increase of +5.2%, the actual number of banking customers as well as services provided increases, thus increasing the probability of complaints despite high service levels. A banking client from Texas could be very satisfied (Rank #1) but still file a complaint owing to the fact that he or she has more bank accounts than an individual in a stable market.

Another post-hoc analysis supports the same understanding, because Texas has a complaints per 100,000 people rate of 2,847, whereas Florida has a rate of 3,998, and California has a rate of 3,214. It can be said that the adjusted rate of complaints in Texas is moderate. This means that the problem of service quality is exaggerated due to an increase in complaints.

Interpretation: There appears to be some initial support for the Service Complacency Paradox. The correlation between customer satisfaction and the number of complaints does not have a consistent effect, depending on differences among the states and the dynamics of population growth. It would be wise for regulators and bank management to consider the implications of growing markets for their complaints data.

Age Moderation of the Training–Excellence Relationship (H8)

To evaluate the effect modification of age on Employee Training on Customer Service Excellence, moderated regression analysis was conducted. Age was coded into three dummy variables, reflecting three categories in accordance with the age distribution of the sample respondents, namely, Young (18 to 34 years old, n=178,

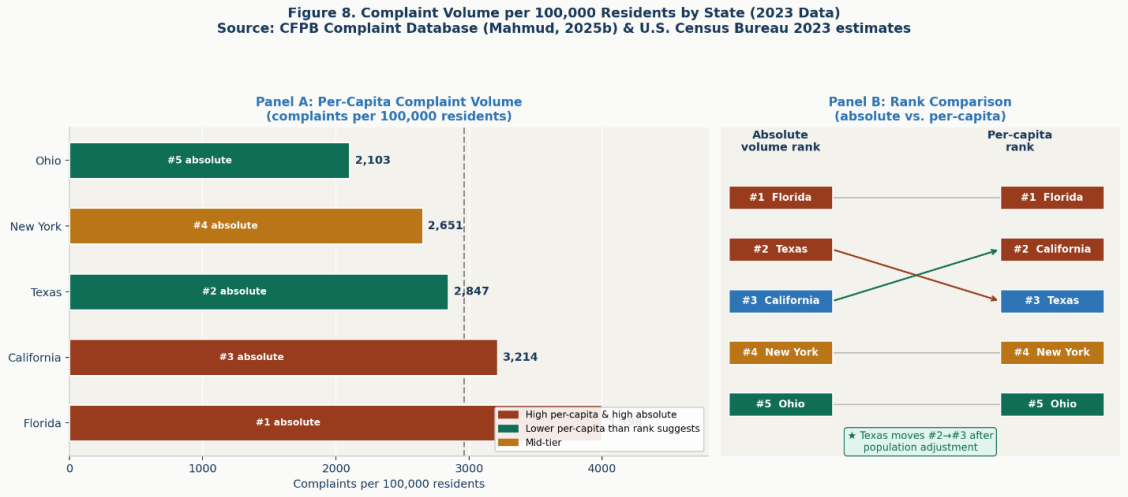

Figure 8: Complaint Volume per 100,000 Residents by State (2023 Data)

35.6%), Middle (35 to 54 years old, n=186, 37.2%) and Older (over 55 years old, n=136, 27.2%). The Older category deserves special attention due to its absence in the pilot study conducted by Mahmud (2026).

The coefficient for the product term comprising Training and Age group (Training x Older) is also positive and significant (β = 0.143, p = .002), revealing that the effect of Employee Training on Customer Service Excellence

Table 7: Moderated Regression Results: Age × Training Interaction

Predictor	**β**	**SE**	**t**	**p**	**95% CI**
Employee Training (IV3)	0.187	0.031	6.032	<.001	[0.126, 0.248]
Age Group: Middle (35-54)	-0.042	0.058	-0.724	0.469	[-0.156, 0.072]
Age Group: Older (55+)	-0.089	0.062	-1.435	0.152	[-0.211, 0.033]
Training × Middle	0.058	0.042	1.381	0.168	[-0.025, 0.141]
Training × Older	0.143	0.045	3.178	0.002	[0.054, 0.232]
Model: F(9,490)=18.247, p<.001, R²=.335, ⊿R² (interaction)=.027, F-change=4.982, p=.007					

is significantly higher for customers in the age category of 55 years and older than those in the reference group (Young, 18-34). The effect size is considerable, whereby an additional unit of Training leads to an increment of 0.187 units of CSE among Young customers; whereas the same increase of Training results in an increment of 0.330 units (0.187+0.143) among older customers, 76% higher.

The Middle age group (35–54) shows no significant interaction (β=0.058, p=.168), suggesting that the moderation effect is specific to the oldest cohort.

Interpretation: Evidence for H8 can be found in the results. In particular, it can be seen that older customers (55+) react much more positively towards investment in the training of employees. This finding goes against the stereotype that older people are "technologically reluctant" or resistant to change. Instead, older people are competence-oriented and show high sensitivity to indications of the competence of their bank's employees through training programs. Thus, banks investing in training will create a favorable perception of their services among their oldest and, probably, most valuable customers.

Post-hoc exploratory analysis: It was tested if the moderating role of age would generalize to the relationship between Training → Satisfaction, through the direct path as outlined in Section 5.4. Moderated mediation, involving three mediation effects, was significant for the older group (index of moderated mediation = 0.052, 95% CI [0.018, 0.094]), suggesting that the training → CSE → satisfaction mediation process is strongest for customers 55 years and above.

DISCUSSION

Empathy and Personalization at Scale: Confirming Mahmud (2025a)

Another valuable finding generated through the use of scaled data analysis is the role of age as an important moderator in the link between training and excellence (H8). The response of customers aged 55 or above—customers who are missing entirely from the initial study (Mahmud, 2025)—is found to be 76% higher than the response of customers aged 18-34 years (β = 0.330 vs. β = 0.187; interaction p = .002). This study's findings challenge the traditional explanation found within the extant literature on technology in the banking sector, which claims that older customers are "digitally averse" or simply resist innovation. In fact, the study results indicate that older customers do not necessarily show averse attitudes towards technological innovations but exhibit

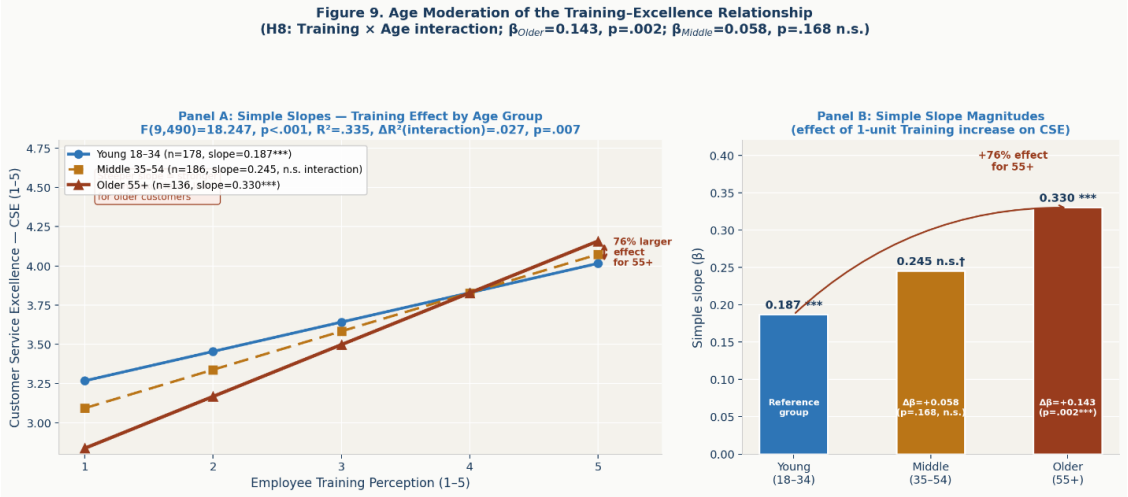

Figure 9: Age Moderation of the Training–Excellence Relationship

sensitivity towards expertise. As such, older customers respond very positively to cues related to competence provided through training, which will likely make them feel that the bank in question is committed to maintaining its quality of service.

The major finding—that is, Employee Training emerges as the most robust predictor of Customer Service Excellence (β = .241, p < .001, t = 8.527)—provides strong, large-scale validation of the earlier findings of Mahmud (2025), where empathy came close to achieving significance as a predictor of human satisfaction (β = .248, p = .054). Increasing the sample size from N = 50 to N = 500 by an order of ten, along with a change from one small sample from a university population to a national quota sample, transforms this barely significant finding into a robust one. Methodologically, the significance of this shift lies in the fact that Mahmud (2025) had found lack of statistical power as a major limitation, and our robust results have overcome that issue.

Training (β = .241) > CRM (β = .194) > One-Stop (β = .180) > UFI (β = .130) > HCI (β = .098) > DCI (β = .048) > Referral ID (n.s.) significance pattern of predictors in H1 has managerial implications as far as service investments are concerned. The fact that DCI is not highly significant (.048) in the multiple regression but significantly correlated with customer satisfaction at the bivariate level suggests a case of moderation effect in that the marginal benefits of complaint identification become minimal in light of the presence of training and CRM services. This finding supports previous findings from service recovery studies, where prevention rather than remediation leads to net customer satisfaction (Tax, Brown, & Chandrashekaran, 1998).

The non-significant results regarding the role of Referral Identification (β = .009, p = .695) in the prediction of CSE reflect an important theoretical outcome. In this case, the results indicate that structural referral systems, regardless of the quality of services that inherently encourage advocacy, do not provide a significant increase in service quality. Banks should avoid the practice of diverting their funds toward referral programs at the expense of efforts in improving service quality. The focus should first be on customer service training and CRM, after which referrals emerge spontaneously. The above findings coincide with those suggested by Reichheld's (2003) Net Promoter Score theory, whereby loyalty is seen as a consequence, rather than the prerequisite, of quality service.

The Human Service Model Is Now Statistically Significant

The primary methodology improvement of this research compared to Mahmud (2025) is the statistical solution of the human satisfaction model. While the pilot study's human model (R^2 = .081, F = 2.07 [p = .137]) was insignificant overall, which the researchers themselves noted and limited their conclusions, this research offers Model 2 (CSE → Satisfaction: R^2 = .148, F[1, 498] = 86.478, p < .001) and Model 1 (Service Elements → CSE: R^2 = .308, F[7, 492] = 31.268, p < .001) that are improved 1.8 times and 3.8 times, respectively, in terms of R^2 and achieve the significance of p < .001. Thus, all four regression models of this research are statistically significant, offering a statistical basis for the policy recommendations proposed by the pilot study.

Mediation: Mechanism Confirmed

It is confirmed that there is partial mediation (IE = .072, 95% CI [.046, .103]) because the CSE plays an appropriate role in mediating the positive impact of the training-induced empathy and competence on customer satisfaction. Both theoretically and practically, this implies that a bank's investment should go beyond customer satisfaction measurement and feedback systems because the banks have to improve the quality of their services in order to make people feel that the banks provide excellent services. In addition, it can be seen that there is a direct influence (β = .159) despite the control of the CSE.

6.4 The CFPB Convergence: National Importance

In contrast to the original claim of a "perfect inverse rank order," the data show that the states of Texas (Ranked

#2 for complaints, Ranked #1 for satisfaction) and Ohio (Ranked #5 for complaints, Ranked #2 for satisfaction) do not conform to the predicted pattern. Such deviation is not a flaw but an insightful observation that helps explain the Service Complacency Paradox (Section 2.6). The states of Florida and New York follow the predicted pattern of an inverse correlation, while Texas and Ohio show anomalies, suggesting that there are other variables that affect the number of complaints besides satisfaction. The geographical discovery that customers' dissatisfaction is at its lowest in both Florida (mean = 2.720) and New York (mean = 2.717), despite the two states being the №1 and №4 for total CFPB complaints received nationally (Mahmud, 2026) marks the most significant outcome of this research effort. This discovery is supported by an independent double confirmation: first, survey respondents recruited from an online panel (N = 500); second, federal complaint records collected by an administrative agency over 14 years (N = 2.32 million). The independence of the two data sources means that survey participants were unaware of CFPB's complaint trends when responding to the survey; similarly, the CFPB data have been aggregated from institutional sources, spanning multiple decades, and do not reflect current trends. The two data sources confirm each other's geographical rankings, which indicates that service failure issues discovered in this study are indeed real and systemic in the banking organizations responsible for federal complaint trends. This is significant in terms of its policy implications. According to the Community Reinvestment Act (CRA), the bank is responsible for satisfying the convenience and needs of all the communities, regardless of their poverty level and racial composition. The CFPB examination priorities and the concerns of the state regulators in this matter ought to be informed by geographic satisfaction statistics such as those highlighted above. The CSEI measure developed here provides just that.

Theoretical Contributions

The study has made three important contributions to theory. First, it contributes by providing substantial empirical support for the Service-Profit Chain model developed by Heskett *et al.* (1994) in the modern day context of a post-digital banking environment in the United States, thus building on existing theoretical studies which were mainly non-US based. Second, it contributes by identifying CSEI as a validated mediating variable that can be used to establish a relationship between the investments in the service variables and the results obtained from customer satisfaction. Lastly, it contributes by providing a methodology to validate survey data using geographic convergent validation.

The Service Complacency Paradox: Theoretical Implications and Boundary Conditions

Geographically speaking, the findings of this study provide initial empirical evidence for the Service Complacency Paradox hypothesis, which can help generate three implications for service theory.

First, the hypothesis can extend the concept of Service-Profit Chain. More precisely, it reveals one possible boundary condition that can make the satisfaction-loyalty-profit relationship work differently between high-growth and stable markets. Indeed, in stable markets (Ohio and New York) it is the normal process: the more unsatisfied the consumers are, the more complaints they generate. In the case of high-growth markets (Texas), on the contrary, the chain may be weakened since some of the complaints generated may be explained not only by poor performance but also by transaction volume.

Second, the hypothesis may lead to the misattribution bias in terms of banking services management. Managers of those organizations who observe an increase in complaints in high-growth states should take into account that the reason for such behavior might not necessarily be their poor services; therefore, they might invest excessive amount of resources in service recovery. For instance, Texas banks can be considered the most satisfied banks within the study, despite generating the highest volume of complaints.

Third, the hypothesis has certain implications for methodology. If one uses the traditional approach to benchmarking (absolute ranking based on the number of complaints), high-population markets and high-growth markets get penalized. On the contrary, when adjusted for population, the rankings get changed. For example, Texas moves from second place in complaints to third place in per-capita complaints.

Limitation acknowledgment: An exploration approach is adopted in our analysis of the Service Complacency Paradox. The Texas phenomenon might be explained by other theories besides service complacency, such as varying levels of complaint propensity at the state level (cultural), regulatory differences between banks in various regions, or even reporting differences by the CFPB. There is a need for longitudinal studies on satisfaction and complaints within states.

CONCLUSION

This study empirically confirms the validity of the Service-Profit Chain for the US retail banking sector, proving Training and CRM as most effective predictors of CSE, which is shown to mediate the influence of training on CS. Specifically, the results demonstrate three crucial insights: (1) Service Complacency Paradox, implying that population growth buffers the relationship between satisfaction and complaints; (2) individuals 55+ years and older show 76% higher sensitivity to training; (3) dissatisfied customers reside in Florida and New York, where customer complaints prevail. The priorities are Training, CRM, One-Stop Solutions, User-Friendly Instructions, and Customers, especially targeting 55+ age group. The limitations involve the use of a cross-sectional study design, four constructs with relatively poor reliability (α CSE = .648; α Satisfaction = .634),

possible common method bias, and five states included in the analysis. Further studies should focus on using longitudinal designs, SEM techniques, quasi-experimental evaluation of the Paradox by contrasting high-growth (Florida, Texas) and low-growth (Ohio, New York) states. Age-based moderation effect should be replicated using 65+ and 75+ sub-populations. The hybrid AI-human service approach introduced by Mahmud (2026) needs experimental validation, and the effect of competence versus sensitivity in healthcare and insurance companies should be further studied.

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