TRANSFORMAÇÃO DIGITAL E EXPERIÊNCIA DO CLIENTE: UM ESTUDO LONGITUDINAL DA SATISFAÇÃO NO SETOR BANCÁRIO PÚBLICO BRASILEIRO

DIGITAL TRANSFORMATION AND CUSTOMER EXPERIENCE: A LONGITUDINAL STUDY OF SATISFACTION IN THE BRAZILIAN PUBLIC BANKING SECTOR

ALEXANDRE GIDARO
ESCOLA SUPERIOR DE PROPAGANDA E MARKETING - ESPM

MARCELO LUIZ DIAS DA SILVA GABRIEL
ESCOLA SUPERIOR DE PROPAGANDA E MARKETING - ESPM

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Objetivo do estudo
Este estudo examina como a expansão dos canais digitais se relaciona com eficiência operacional, desempenho regulatório, experiência do cliente e manutenção do relacionamento na CAIXA Econômica Federal entre 2022 e 2025. A análise é exploratória e associativa, não causal.

Relevância/originalidade
As literaturas de transformação digital, experiência do cliente e lealdade evoluíram em paralelo, com escassa evidência sobre bancos públicos. A originalidade reside em tratar plataformas públicas de reclamação como janelas auditáveis de mensuração, e não como objeto teórico do estudo.

Metodologia/abordagem
Estudo de caso único e longitudinal, descritivo-analítico, referente a 2022–2025. A análise documental segue Bardin (2016); a análise descritiva de séries temporais utiliza dados secundários públicos da CAIXA, do Banco Central, do Consumidor.gov.br e do Reclame Aqui, organizados por triangulação teórica.

Principais resultados
A participação digital passou de 81,5% para 95,3% e as transações por cliente cresceram 145%, sem deterioração regulatória. A satisfação mostrou-se contingente ao canal: 4,50 internamente contra 2,5–2,8 externamente. No Reclame Aqui, a reputação evoluiu de Não Recomendada para Boa.

Contribuições teóricas/metodológicas
O estudo propõe a experiência do cliente como fenômeno relacional contingente ao canal e sensível ao instrumento, e evidencia o deslocamento do paradoxo da produtividade para a qualidade relacional. Metodologicamente, triangula indicadores públicos heterogêneos sem reduzi-los a um índice único de desempenho.

Contribuições sociais/para a gestão
Gestores não devem equiparar sucesso digital a sucesso relacional. Recomenda-se transferir a qualidade relacional dos canais internos para os digitais e externos, monitorar proxies de lealdade além do NPS e preservar empatia humana em momentos críticos, sustentando inclusão financeira sem erodir confiança.

Palavras-chave: Transformação digital, Experiência do cliente, Lealdade do cliente, Bancos públicos, Omnicanalidade

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Study purpose
This study examines how the expansion of digital channels relates to operational efficiency, regulatory performance, customer experience, and relationship maintenance at CAIXA Econômica Federal between 2022 and 2025. The analysis is exploratory and associative rather than causal.

Relevance / originality
Digital transformation, customer experience, and loyalty literatures have evolved in parallel, with scarce evidence from public banks. The study is original in treating public complaint platforms as auditable measurement windows into experience, recovery, and continuity intention rather than as the theoretical object.

Methodology / approach
Applied, descriptive-analytical single longitudinal case study covering 2022–2025. Documentary analysis follows Bardin (2016); descriptive time-series analysis uses public secondary data from CAIXA reports, the Central Bank, Consumidor.gov.br, Reclame Aqui, and Opinion Box, organized through theoretical triangulation.

Main results
Digital share rose from 81.5% to 95.3%, transactions per customer grew 145%, and the Central Bank complaint share fell from 14.0% to 10.7%. Satisfaction proved channel-contingent: internal channels scored 4.50 against 2.5–2.8 externally. Reclame Aqui reputation recovered from Not Recommended to Good.

Theoretical / methodological contributions
The study proposes customer experience as a channel-contingent, measurement-sensitive relational phenomenon and shows the productivity paradox migrating from productivity to relational quality. Methodologically, it triangulates heterogeneous public indicators theoretically, without collapsing them into a single performance index.

Social / management contributions
Managers should not equate digital success with relational success. The study recommends transferring internal-channel relational quality to digital and external touchpoints, monitoring loyalty proxies beyond NPS, and preserving human empathy in critical moments, sustaining financial inclusion without eroding trust.

Keywords: Digital transformation, Customer experience, Customer loyalty, Public banking, Omnichannel

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1 Introdução

Digital transformation has become one of the main strategic drivers of the financial sector, altering customer expectations and pushing traditional institutions to reconfigure their value propositions (Verhoef et al., 2021; Vial, 2019). Brazil is a particularly relevant context: PIX processed approximately 63 billion transactions in 2024, banking penetration reached 90% of adults, and digital banks and fintechs hold roughly 55% of checking accounts, intensifying competition around customer experience (McKinsey & Company, 2025). In this environment, the digitalization of relationship channels has become imperative for incumbents (Marques, Freitas, & Paula, 2022; Munira, 2025).

For public banks, the challenge is amplified by a social mandate. CAIXA Econômica Federal, the largest public bank in Brazil, is present in about 98% of municipalities and serves more than 157 million customers. Its transformation program migrated almost all transactions to digital channels while the physical network was reconfigured. The case therefore offers a privileged setting for examining whether operational digitalization is accompanied by changes in perceived experience, trust, loyalty, and relationship maintenance.

The literature on digital transformation, customer experience, service quality, and loyalty has advanced considerably, yet the relationship among efficiency, compliance, satisfaction, trust, and loyalty in public-bank digital transformation remains underexplored. In particular, available indicators are often channel-specific and instrument-specific: satisfaction with an internal ombudsman process, satisfaction with a complaint on Consumidor.gov.br, reputation on Reclame Aqui, and NPS-based recommendation do not measure the same construct. Treating them as interchangeable risks an overly simple interpretation of customer experience.

Accordingly, this study asks: how does the expansion of digital channels relate to operational efficiency, regulatory performance, customer experience, and relationship maintenance in a large public bank between 2022 and 2025? The article is exploratory and associative: it does not infer causality from aggregated data. Instead, it examines how public indicators jointly reveal the architecture of experience across channels and instruments.

Although the literature has extensively examined digital transformation, service quality, customer experience, and customer loyalty, these streams have largely evolved in parallel. Existing studies typically assess isolated outcomes, such as operational efficiency, customer satisfaction, complaint management, trust, or loyalty, without examining how these dimensions jointly interact in large-scale digital transformation processes. Moreover, evidence remains limited regarding public banking institutions, where digital transformation must simultaneously support operational efficiency, financial inclusion, regulatory compliance, and long-term customer relationships. As a result, the literature still lacks a framework capable of explaining how digital transformation outcomes become visible through different customer-experience measurement channels and how these measurements relate to trust, loyalty, and relationship maintenance.

This study offers three complementary contributions. First, it extends digital-transformation research by demonstrating that operational performance improvements and relationship outcomes do not necessarily evolve in parallel. Second, it contributes to customer-experience and relationship-marketing literature by showing that customer experience is channel-contingent and measurement-sensitive, requiring the joint interpretation of multiple customer-feedback mechanisms. Third, it proposes an integrative analytical perspective linking

digital transformation, customer experience, trust, loyalty-related outcomes, and relationship maintenance in public banking environments.

2 Theoretical Background

2.1 Digital transformation in public banking

Digital transformation is not simply digitization or channel migration; it is a process through which digital technologies reshape value creation, structures, and organizational capabilities (Vial, 2019; Verhoef et al., 2021). In banking, this process is linked to operational efficiency, personalization, accessibility, and financial inclusion (Munira, 2025). For public banks, digital transformation also intersects with inclusion and vulnerability: digital channels may expand access, but they may also expose customers with lower digital literacy to new forms of exclusion or insecurity (Cassola et al., 2025).

Recent marketing strategy research pushes this logic further. Kumar, Kotler, and Kumar (2026) argue that new-age technologies—including generative AI, agentic AI, blockchain, metaverse applications, machine learning, and related infrastructures—are transforming how firms formulate marketing strategies, personalize experiences, create value, and adapt strategically. For this article, the key implication is that customer experience should be understood not merely as an outcome of digital channel migration, but as a strategic capability embedded in technology-enabled relationship management.

This duality is central to the CAIXA case. Digitalization can increase scale, reduce pressure on physical infrastructure, and improve regulatory responsiveness. Yet the quality of the relationship cannot be inferred from transaction volume alone. Digital transformation must therefore be analyzed through operational, regulatory, and relational metrics.

2.2 Customer experience and omnichannel service journeys

Customer experience is multidimensional and cumulative, emerging from interactions across a journey of touchpoints rather than from a single transaction (Lemon & Verhoef, 2016; Verhoef et al., 2009). In omnichannel environments, the same organization can generate different experiences across apps, call centers, branches, ombudsman processes, and public complaint platforms. Gahler, Klein, and Paul (2023) provide a particularly useful basis for this study by developing a customer experience scale designed to compare experience across touchpoints and journey stages.

Research on brand and customer experience also links experience to loyalty-related outcomes. Brakus, Schmitt, and Zarantonello (2009) show that experience affects satisfaction and loyalty, while Khan, Rahman, and Fatma (2016) demonstrate in online banking that online brand experience mediates the relationship between engagement and satisfaction/loyalty. More recently, Khan et al. (2023) show that platform differences shape the relationships among engagement, experience, relationship quality, and loyalty intention. These studies support the idea that experience is not independent of channel architecture.

2.3 Service quality, e-satisfaction, and e-loyalty

The SERVQUAL model conceptualizes service quality as the gap between customer expectations and perceptions, measured through reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman, Zeithaml, & Berry, 1988). Digital service environments require an additional lens: E-S-QUAL captures dimensions such as efficiency, availability, fulfillment, and privacy (Parasuraman, Zeithaml, & Malhotra, 2005). This distinction is

relevant because CAIXA's customer journey combines a dominant digital core with assisted and human channels.

This transition toward digitally mediated interactions is consistent with the expansion of self-service technologies discussed by Meuter et al. (2000), who argue that customer satisfaction increasingly depends on technology-based service encounters. In banking, mobile applications, internet banking, and automated service channels have become central touchpoints through which customers evaluate convenience, reliability, and service quality.

The connection between digital satisfaction and digital loyalty is particularly important. Anderson and Srinivasan (2003) show that e-satisfaction and e-loyalty are linked but contingent, whereas Harris and Goode (2004) emphasize the pivotal role of trust in online service loyalty. In banking, service quality, satisfaction, perceived value, trust, and commitment repeatedly emerge as loyalty antecedents (Kim, Jindabot, & Yeo, 2024; Redda & van Deventer, 2023).

Recent evidence from digital banking also reinforces the multidimensional nature of satisfaction. Moraes and Schaefer (2026) show that customer satisfaction in digital banking environments is associated with service quality, digital channels, mobile banking, and complementary financial services, suggesting that satisfaction emerges from a network of interconnected service dimensions rather than from a single touchpoint. Thus, poor satisfaction in one channel does not merely signal an operational gap; it may affect trust and continuity intention if not addressed.

2.4 Trust, loyalty, and relationship maintenance

The revised theoretical core of this article lies in relationship maintenance. Relationship marketing identifies trust and commitment as central mechanisms sustaining durable relationships (Morgan & Hunt, 1994). Sirdeshmukh, Singh, and Sabol (2002) connect trust, value, and loyalty in relational exchanges, while Chaudhuri and Holbrook (2001) show that brand trust and brand affect contribute to purchase loyalty and attitudinal loyalty. These foundations allow the present study to interpret satisfaction indicators not only as evaluations of service episodes, but as signals with potential implications for trust and relationship continuity.

Loyalty itself is multidimensional. Dick and Basu (1994) distinguish between attitudinal and behavioral loyalty, showing that repeat behavior may reflect convenience, inertia, or constraints rather than genuine preference. Oliver (1999) conceptualizes loyalty as a progression from cognitive evaluation to affective attachment, conative commitment, and action.

This framework is useful for interpreting public indicators such as "would do business again," Net Promoter Score (NPS) metrics, and complaint-platform reputation. Originally proposed by Reichheld (2003), NPS became one of the most widely adopted indicators of recommendation and customer advocacy. However, subsequent research has shown that NPS should be interpreted cautiously because recommendation intention does not necessarily correspond to actual loyalty behavior or revenue growth (Keiningham et al., 2007). For this reason, NPS is treated here as one loyalty-related indicator among several rather than as a definitive measure of loyalty.

Because trust and loyalty cannot be directly observed through the public secondary indicators available in this study, they are treated as theoretically informed relational outcomes rather than directly measured constructs. Indicators such as complaint-handling satisfaction, reputation scores, response behavior, recommendation metrics, and willingness to continue doing business are interpreted as observable manifestations associated with trust formation, relationship recovery, and loyalty-related intentions identified in prior research.

2.5 Complaint platforms as measurement windows

Complaint platforms are not treated here as the theoretical center of the study. They are public, auditable measurement windows through which different dimensions of customer experience, service recovery, reputation, and relationship maintenance become visible. Hirschman's (1970) exit-voice-loyalty framework helps explain why customers escalate dissatisfaction rather than exit immediately, especially in public banking contexts where institutional ties are strong. Tax, Brown, and Chandrashekaran (1998) help interpret the recovery dimension: complaint handling affects trust and commitment through distributive, procedural, and interactional justice.

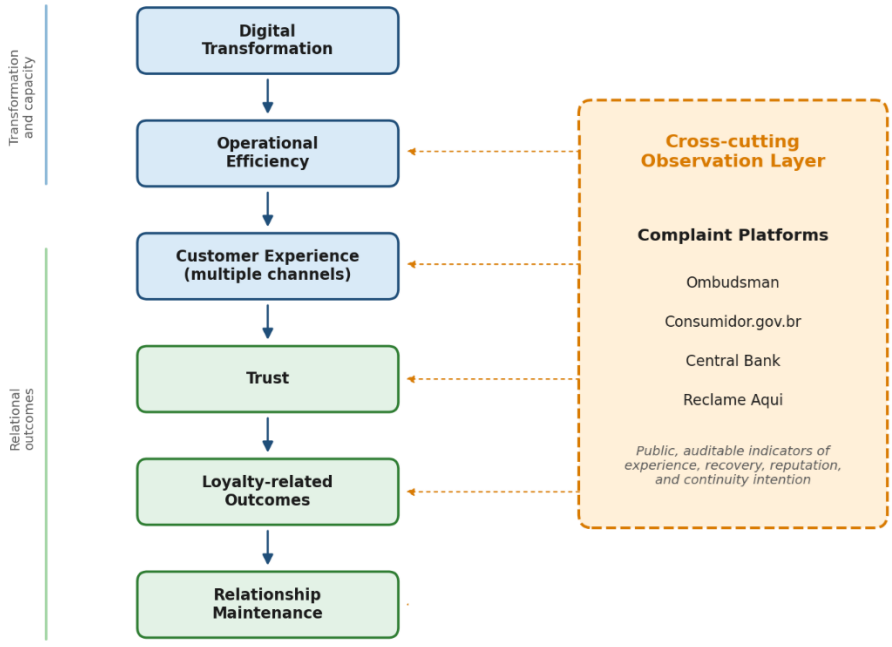
This positioning keeps the analysis focused on experience, trust, and loyalty while still using complaints as empirical evidence. The relevant question is not "what do complaints mean in themselves?" but rather "what do complaint-related indicators reveal about satisfaction, recovery, trust, and continued relationship?"

Consequently, complaint platforms are not interpreted as direct measures of trust or loyalty. Instead, they are treated as observable relational arenas where customer evaluations, recovery perceptions, satisfaction judgments, reputational assessments, and continuity intentions become publicly visible. Their value lies in providing empirical access to relationship dynamics that are otherwise difficult to observe using public data.

2.6 Integrative synthesis and propositions

Figure 1 summarizes the conceptual framework that guides the study. Digital transformation is interpreted as a process that produces operational efficiency gains, but whose relational effects become visible only through customer experience indicators across multiple channels. Trust, loyalty-related outcomes, and relationship maintenance are treated as relational consequences that can be indirectly observed through public complaint platforms and customer-feedback mechanisms.

Figure 1. Conceptual framework



Source: Prepared by the authors (2026).

Complaint platforms are represented as a cross-cutting observation layer because they do not measure trust or loyalty directly. Instead, they provide public and auditable indicators of experience, recovery, reputation, and continuity intention across different stages of the customer relationship.

The theoretical framework suggests that digital transformation may improve operational performance while relationship indicators vary across channels and measurement instruments. Based on the conceptual framework presented in Figure 1, five exploratory propositions guide the empirical analysis:

P1. Digital transformation in large banks is associated with faster and more measurable gains in operational efficiency than in relational perception.

P2. Digitalization may occur without deterioration—and even with improvement—of regulatory compliance performance.

P3. Conflict-resolution indicators and perception indicators evolve in a relatively decoupled manner, requiring distinct measurement.

P4. Perceived satisfaction varies according to channel, instance, and measurement instrument, with implications for trust and relationship maintenance.

P5. Improvements in channel-specific service recovery are associated with reputational recovery and positive loyalty-related indicators, such as repurchase intention.

3 Method

This research is applied and descriptive-analytical, combining a systematic reading of public documents with descriptive time-series analysis of secondary indicators. We refrain from labeling it 'mixed-methods' because no qualitative coding procedure is applied; the qualitative component is limited to structured document interpretation. The design is a single longitudinal case study over the 2022–2025 period, with 2020–2021 treated as historical context. The case-study design is appropriate when the phenomenon is contemporary, context-dependent, and not controlled by the researcher (Yin, 2015).

The qualitative component relied on documentary analysis of institutional reports, complaint summaries, ombudsman publications, and public regulatory documents. Following Bardin (1977/2016), documents were examined through a process of thematic categorization focused on five analytical dimensions: digitalization, operational efficiency, service quality, complaint management, and customer experience. These categories guided the interpretation and triangulation of evidence across sources.

CAIXA is an emblematic case because it is the largest public financial institution in Brazil, a leader in housing credit and social payments, and has national reach across heterogeneous customer segments. The case is not statistically generalizable, but it is theoretically informative for examining public-bank digital transformation.

Data collection relies exclusively on public secondary data, triangulating official reports and public platforms. The data were collected between October 2024 and August 2026. Triangulation enhances credibility by confronting the same phenomenon through different sources of evidence (Zappellini & Feuerschütte, 2015).

The indicators collected from the different public sources were not combined into a single performance index. Instead, they were analytically organized according to the theoretical dimensions identified in the literature review: operational efficiency, regulatory performance, customer experience, trust-related signals, loyalty-related signals, and relationship maintenance. This procedure preserves the specificity of each measurement instrument while enabling cross-source interpretation through theoretical triangulation.

Table 1. Data sources and indicators mobilized in the triangulation

Dimension	Public source	Indicators extracted
Digitalization and efficiency	CAIXA Performance Analysis Reports and Integrated Report	Transactions by channel; customer base; service network; productivity
Regulatory performance and channels	Central Bank Complaints Ranking; CAIXA Ombudsman Reports	Share among the largest institutions; volume by channel; satisfaction by channel; complaint topics
Perceived experience and recovery	Consumidor.gov.br, Reclame Aqui, and PROCON data	Resolution rate; complaint-handling satisfaction; reputation; repurchase intention
Competitive context	Opinion Box — Voice of the Customer Award (NPS)	Segment average NPS; leadership in recommendation

Source: Prepared by the authors (2026) based on the indicated public sources.

Three caveats guide interpretation. First, annual transaction figures are retrospectively revised by CAIXA; the most recent series was adopted. Second, the Central Bank changed its complaints-index methodology in 2024; therefore, relative share among the largest institutions was used as the comparable metric. Third, Opinion Box NPS data are proprietary and only disclose the top three brands by segment; they are used as contextual evidence, not as a direct CAIXA score.

The purpose of triangulation is not to establish causal relationships or derive equivalent scores across platforms. Rather, the strategy seeks analytical convergence among heterogeneous indicators that capture distinct stages of the customer journey, service recovery process, and relationship-development cycle. Therefore, findings should be interpreted as associative evidence consistent with the theoretical framework rather than as direct measurements of latent constructs.

4 Results

4.1 Digitalization, inclusive efficiency, and regulatory performance

The first analytical layer concerns operational performance. Between 2022 and 2025, the share of digital channels in total transactions rose from 81.5% to 95.3%, while assisted and in-person volume declined (Table 2).

Table 2. Distribution of transactions by channel nature (Digital × In-person/Assisted), 2022–2025

Year	Total transactions	Digital (App+IB)	In-person/Assisted	% Digital
2022	21.9 bn	17.8 bn	4.0 bn	81.5%
2023	33.5 bn	30.0 bn	3.4 bn	89.7%
2024	47.2 bn	44.1 bn	3.0 bn	93.6%
2025	55.8 bn	53.2 bn	2.6 bn	95.3%

Source: Prepared by the authors (2026) based on CAIXA Performance Analysis Reports (Q4-21 to Q4-25).

In parallel, the physical service network contracted while the customer base grew (Table 3), producing an efficiency gain captured by transactions per customer and transactions per physical point (Table 4).

Table 3. Evolution of the physical service network and the customer base (2022–2025)

Component	2022	2023	2024	2025	Δ 2022→2025
Branches and service posts	4.3 k	4.3 k	4.3 k	3.9 k	−9.3%
Lottery agents and correspondents	22.5 k	22.2 k	21.8 k	20.9 k	−7.1%
Automated teller machines (ATMs)	26.6 k	25.9 k	24.4 k	21.8 k	−18.0%
Total service points (excl. ATMs)	26.8 k	26.5 k	26.1 k	24.8 k	−7.5%
Customers (millions)	151.1	152.4	153.7	157.2	+4.0%

Source: Prepared by the authors (2026) based on CAIXA Performance Analysis Reports.

Table 4. Inclusive-efficiency indicators (2022–2025)

Indicator	2022	2023	2024	2025	Δ 2022→2025
Total transactions (billions)	21.9	33.5	47.2	55.8	+155%
Transactions per customer (year)	145	220	307	355	+145%
Digital share (%)	81.5	89.7	93.6	95.3	+13.8 pp

Source: Prepared by the authors (2026) based on CAIXA Performance Analysis Reports.

The evidence supports P1: digital transformation was associated with operational gains that are both fast and measurable. Importantly, these gains did not coincide with deterioration in relative regulatory performance. CAIXA's share of complaints among the top 15 institutions in the Central Bank ranking declined from 14.0% to 10.7% (Table 5).

Table 5. CAIXA's position in the Central Bank Complaints Ranking (2022–2025)

Year	Ranking position	Substantiated complaints	Share of the TOP15
2022	11th	6,251	14.0%
2023	7th	7,064	13.8%
2024	12th	14,303	13.4%
2025	11th	14,239	10.7%

Source: Prepared by the authors (2026) based on the Central Bank Complaints Ranking. Note: relative share is used because the Central Bank changed the calculation methodology in 2024.

On Consumidor.gov.br, CAIXA also maintained high resolution rates and outperformed the banking segment in complaint-handling satisfaction across the period (Table 6). This supports P2 and reinforces the need to distinguish regulatory performance from perceived experience.

Table 6. Resolution rate and complaint-handling satisfaction on Consumidor.gov.br (2022–2025)

Year	Complaints finalized	Resolution rate	Handling satisfaction	Segment average
2022	30,492	80.2%	2.91	2.60
2023	29,321	81.6%	2.89	2.51
2024	33,594	85.9%	2.99	2.56
2025	54,628	83.2%	2.65	2.22

Source: Prepared by the authors (2026) based on Consumidor.gov.br public panels. Note: the satisfaction indicator measures complaint handling on the platform, not overall institutional satisfaction.

4.2 Customer experience as channel-contingent and measurement-sensitive

When the analysis turns to customer experience, the data cease to tell a single story. Instead, different instruments reveal different dimensions of the relationship. The Ombudsman Reports distinguish internal channels from external escalation channels, showing that satisfaction varies across the architecture of complaint handling (Tables 7 and 8).

Table 7. Evolution of complaint volume by channel and instance (2024–2025)

Channel	Instance	2024	2025	Change
SAC	Internal (1st)	264,335	309,406	+17%
Ombudsman	Internal (2nd)	20,864	15,418	−26%
Consumidor.gov.br	External	36,021	57,173	+59%
Central Bank	External	62,350	78,963	+27%
PROCON	External	39,458	44,798	+14%
Total (all channels)	—	423,524	564,286	+33%

Source: Prepared by the authors (2026) based on CAIXA Ombudsman Reports.

The Ombudsman channel was the only one to decline in volume (−26%), while external channels expanded. This suggests that internal first-instance resolution improved, but also that external digital platforms became more frequently used. The relevance of these patterns is not merely operational; it is relational, because the satisfaction associated with each channel differs sharply.

Table 8. Resolution rate and satisfaction by complaint channel (2025)

Channel	Instance	Resolution rate	Satisfaction / score
CAIXA Ombudsman	Internal (2nd)	91–92%	4.50 (service); 3.97 (resolution) — scale 5
Consumidor.gov.br	External	≈ 83%	2.5–2.8 — scale 5
PROCON	External	83%	— (not disclosed)
Reclame Aqui	External	66–69%	5.1–5.8 — scale 10 (≈ 2.6–2.9 on scale 5)

Source: Prepared by the authors (2026) based on CAIXA Ombudsman Reports and public platform indicators.
Note: figures derive from distinct instruments and are used for approximate comparison only.

This does not mean that the internal and external scores are directly equivalent. They come from different instruments, populations, and moments in the complaint journey. Precisely for that reason, they are theoretically useful: they demonstrate that customer experience is channel-contingent and measurement-sensitive. Internal channels may offer more interactional justice and relationship repair, while external platforms tend to concentrate cases already marked by frustration and escalation. These patterns are consistent with P3 and P4, although the scores derive from different instruments, populations, and journey stages and therefore should be read as convergent evidence rather than as directly comparable magnitudes.

4.3 Reputation recovery and relationship maintenance in an external channel

Reclame Aqui provides a particularly useful bridge between satisfaction and loyalty-related outcomes because it reports not only reputation and resolution, but also whether evaluating consumers would do business with the institution again. The trajectory from 2024 to the first half of 2026 indicates a channel-specific recovery (Table 9).

Table 9. CAIXA's reputation trajectory on Reclame Aqui (2024–first half of 2026)

Period	Reputation	Answer rate	Avg. response time	Resolution rate	Consumer score	Would do business again
2024	Not Recommended (n/a)	34.3%	124 days	n/a	n/a	n/a
2025	Regular (6.7)	98.7%	16 days	65%	5.28	58.9%
Last 6 mo. (H1 2026)	Good (7.2)	98.8%	10 days	70.3%	6.03	66.1%

Source: Prepared by the authors (2026) based on Reclame Aqui public panels for CAIXA.

The trajectory is meaningful. CAIXA moved from Not Recommended in 2024 to Regular in 2025 and Good in the most recent six-month window. The improvement was accompanied by a rise in answer rate from 34.3% to around 99%, a reduction in response time from 124 days to 10 days, an increase in consumer score from 5.28 to 6.03, and an increase in declared willingness to do business again from 58.9% to 66.1%.

This evidence should not be interpreted as proof of a universal improvement in customer experience. It more directly demonstrates that channel-specific service recovery can improve reputation and loyalty-related indicators. In relationship-marketing terms, the data suggest that improving response capacity and recovery justice may help rebuild trust and support relationship maintenance. This supports P5 and strengthens the article's theoretical movement from satisfaction to loyalty-related outcomes.

4.4 Complaint topics and competitive recommendation

The thematic composition of complaints helps identify the substance of dissatisfaction. In the second half of 2025, complaints were concentrated mainly in credit-related products, while PIX appeared as a smaller but relevant digital topic (Table 10).

Table 10. Most complained-about topics at CAIXA, all channels (2nd half of 2025)

Topic	Share	Associated dimension
Housing finance	19%	Reliability
Credit card	10%	Reliability
Personal loans	5%	Reliability
Savings account — individuals	5%	Reliability
Payroll-deductible credit	4%	Reliability
PIX	4%	E-S-QUAL (efficiency/availability)
FIES (student financing)	4%	Reliability
Other topics	49%	Various

Source: Prepared by the authors (2026) based on the CAIXA Ombudsman Report (2nd half of 2025).

Most complaints are therefore linked to reliability and trust-related issues—contracts, billing, credit, and calculation—rather than pure digital usability. PIX indicates that digital-service issues exist, but they are not the dominant category. This reinforces the argument that the experience challenge is not only technological; it is relational.

The sector NPS context also reinforces the relational dimension. The average banking NPS improved from 38 to 47, but leadership remained with digital-native or cooperative institutions rather than large public or traditional banks (Table 11).

Table 11. Banking segment NPS and leadership in recommendation (2022–2025)

Year	Segment average NPS	1st	2nd	3rd
2022	38	Nubank (65)	Inter (58)	C6 Bank (56)
2023	36	XP (58)	Sicredi (55)	BTG Pactual (55)
2024	43	Nubank (63)	Sicredi (62)	XP (60)
2025	47	Inter (64)	Sicredi (60)	Nubank (59)

Source: Prepared by the authors (2026) based on Opinion Box NPS Benchmarking, Banks segment. Note: CAIXA is among the evaluated brands, but its specific position is not disclosed.

Although the NPS evidence does not reveal CAIXA's score, it situates the competitive field: recommendation leadership is associated with modern, digital-native experiences. For CAIXA, therefore, the issue is not merely to be efficient and compliant; it is to convert efficiency, recovery, and reliability into trust and relational continuity.

4.5 Synthesis of the empirical evidence

The evidence supports three integrated conclusions. First, digital transformation improved scale and efficiency without compromising relative regulatory performance. Second, customer experience varies by channel and instrument, which means no single satisfaction number can represent the institution as a whole. Third, improvements in complaint handling on a specific external platform are associated with reputation and repurchase-intention recovery, linking service recovery to relationship maintenance.

Table 12. Synthesis of the dimensions analyzed and their theoretical reading (2022–2025)

Dimension	Indicator and trajectory	Theoretical reading
Digitalization and efficiency	Digital share 81.5% → 95.3%; transactions/customer +145%	Efficiency and convenience rising (P1)
Regulatory compliance	Share of TOP15 (BACEN): 14.0% → 10.7%	Reliability and compliance rising (P2)
Resolution vs. perception	High resolution but external satisfaction below 3.0	Distinct metrics required (P3)
Experience by channel	Internal 4.50 vs. external 2.5–2.8	Channel-contingent experience; relationship implications (P4)
Reclame Aqui recovery	Not Recommended → Regular → Good; 58.9% → 66.1% repurchase intention	Service recovery and relationship maintenance (P5)
NPS context	Digital banks lead recommendation; CAIXA outside disclosed Top 3	Recommendation depends on trust, experience, and loyalty mechanisms

Source: Prepared by the authors (2026) from triangulation of the mobilized sources.

4.6 Managerial implications

Managers should avoid treating digital success as equivalent to relational success. CAIXA's internal channels already show high satisfaction, and the Reclame Aqui trajectory shows that targeted investment in response and recovery can repair reputation. The managerial challenge is to transfer relational quality to digital and external channels while monitoring trust and loyalty-related indicators (Table 13).

Table 13. Managerial implications for aligning digitalization and relationship maintenance

Dimension	Implication and suggested action	Monitoring indicator
Trust and interactional justice	Humanize sensitive digital and external touchpoints; improve explanations and procedural transparency	Satisfaction by channel; qualitative feedback
First-instance resolution	Strengthen SAC and self-service resolution to reduce external escalation	First-contact resolution rate
Service recovery	Monitor response rate, response time, resolution, and repurchase intention on external platforms	Reclame Aqui indicators
E-S-QUAL	Ensure availability, navigability, and usability of digital products such as PIX	Complaints of digital origin
Loyalty and recommendation	Track loyalty proxies beyond NPS, including repurchase intention and trust indicators	NPS, "would do business again," trust surveys
Integrated monitoring	Create a multichannel dashboard linking efficiency, satisfaction, trust, and relationship maintenance	Integrated experience dashboard

Source: Prepared by the authors (2026) based on SERVQUAL, E-S-QUAL, relationship marketing, and service-recovery theory.

Emerging service technologies, such as virtual assistants and conversational artificial intelligence, may support this transition if implemented as part of a hybrid human–AI model that preserves empathy in critical moments (Oyeniyi, Ugochukwu, & Mhlongo, 2024).

5 Discussion

5.1 Digital transformation beyond efficiency

The first contribution of the study is to show that digital transformation in a public bank can produce operational scale and regulatory stability simultaneously. CAIXA's digital share reached 95.3%, transactions per customer grew 145%, and productivity per physical point grew 175%. These indicators show a successful reconfiguration of capacity, consistent with the process view of digital transformation (Vial, 2019) and with the broader claim that digital technologies alter how firms create and deliver value (Verhoef et al., 2021).

Yet the results also suggest that efficiency is an insufficient lens for evaluating transformation. The bank expanded digital scale while maintaining or improving relative regulatory performance, but this does not automatically translate into homogeneous relationship outcomes. This distinction matters because recent transformative marketing research argues that new-age technologies should not be evaluated only by productivity or automation effects; they reshape strategic adaptation, personalization, value creation, and customer engagement (Kumar, Kotler, & Kumar, 2026). In this sense, the CAIXA case illustrates a central tension of technology-enabled marketing: operational transformation can precede, exceed, or diverge from relational transformation.

This finding also engages the productivity-paradox literature, though by inversion. Brynjolfsson (1993) documented a persistent gap between large-scale investment in information technology and any measurable gain in productivity. He attributed this gap to four sources: mismeasurement of outputs and inputs, lags in learning and adjustment, redistribution of profits without aggregate gain, and mismanagement of the technology itself. The first two locate the problem in research rather than in practice. Brynjolfsson et al. (2017) extend the argument to artificial intelligence, holding that returns materialize only as complementary organizational capabilities accumulate. The CAIXA case reverses the sequence. Operational returns were immediate and fully legible in the transaction statistics, while relational returns (the dimension Brynjolfsson associated with delayed and hard-to-measure benefits) remained heterogeneous and contingent on channel. The paradox therefore does not disappear under digital transformation. It migrates. What resists measurement is no longer productivity, but the quality of the relationship that productivity is meant to serve.

This interpretation is especially relevant in public banking. A private digital-native bank can optimize experience around relatively narrower target segments, whereas a public bank must serve broad, heterogeneous populations and support social-policy operations. The same digital transformation that expands reach may also generate differentiated experiences across customers, channels, and complaint instances. Therefore, the appropriate question is not whether digitalization "improved satisfaction" in a single aggregate sense, but how operational transformation interacted with relational indicators across the customer journey.

5.2 Experience heterogeneity under successful transformation

The second contribution lies in documenting experience heterogeneity under a broadly successful digital transformation. The data do not support a simple negative narrative: CAIXA outperformed the sector average in Consumidor.gov.br complaint-handling satisfaction and reduced its relative share in the Central Bank complaint set. At the same time, the data do not support a simplistic positive narrative either: external customer-facing indicators remained below internal levels and digital-native banks led recommendation rankings. The article therefore advances a third interpretation: experience is channel-contingent and measurement-sensitive.

This interpretation extends omnichannel customer-experience research. Gahler, Klein, and Paul (2023) argue that customer experience must be measured across touchpoints and journey stages; the present study shows why such measurement matters empirically. In CAIXA's case, internal relationship channels and external escalation platforms reveal different satisfaction patterns. The Ombudsman channel shows a high service evaluation, whereas external platforms concentrate more conflictual and already escalated interactions. A single indicator would obscure this architecture.

This also clarifies the role of complaint data. Complaints are not treated here as the theoretical object. They are observable traces of experience, recovery, and relationship strain. Their analytical value derives from the fact that they externalize different moments in the relationship: first-instance resolution, post-failure escalation, public reputation, and willingness to transact again. Treating these instruments as measurement windows avoids reducing the article to a study of complaints while still exploiting the richness of public data.

5.3 From satisfaction to trust, loyalty, and relationship maintenance

The third contribution is to connect customer experience indicators to trust, loyalty, and relationship maintenance. The new theoretical emphasis matters because satisfaction alone does not exhaust the relational meaning of the data. A consumer who reports willingness to do

business again after a complaint is not merely evaluating a service episode; the consumer is revealing a continuity intention. This is why Oliver's (1999) staged view of loyalty and Dick and Basu's (1994) distinction between behavioral and attitudinal loyalty are useful. The empirical proxies available here are imperfect, but they point toward loyalty-related mechanisms.

The Reclame Aqui trajectory is particularly important in this regard. CAIXA moved from Not Recommended to Regular and then to Good, while response time fell sharply and the share of customers willing to do business again rose from 58.9% to 66.1%. Rather than treating this as proof of overall customer satisfaction, the article interprets it as channel-specific service recovery with implications for trust and relationship maintenance. This interpretation is consistent with Tax, Brown, and Chandrashekaran's (1998) service-recovery framework and with relationship-marketing theories that connect trust and commitment to durable relationships (Morgan & Hunt, 1994; Sirdeshmukh, Singh, & Sabol, 2002).

The theoretical payoff is that public complaint platforms can be read as more than reputational dashboards. When combined with resolution, response time, consumer score, and "would do business again," these platforms approximate a relational sequence: a failure occurs, the firm responds or fails to respond, the customer evaluates the interaction, and the relationship is either weakened or repaired. In banking, where trust and continuity are central to relationship value, this sequence is strategically consequential (Kim, Jindabot, & Yeo, 2024; Redda & van Deventer, 2023).

A central theoretical implication of the study is that customer experience should be understood as a distributed relational phenomenon rather than as a single measurable construct. Different channels reveal distinct stages of the relationship between customer and organization, producing complementary rather than interchangeable indicators. This perspective helps reconcile apparently contradictory satisfaction results and advances a more nuanced understanding of digital transformation outcomes.

5.4 Implications for public banking and digital-native competition

The fourth contribution concerns the competitive position of a public incumbent. The NPS evidence indicates that recommendation leadership in the banking segment is held by digital-native firms and a cooperative, not by large traditional or public banks. This does not invalidate CAIXA's operational and regulatory achievements. Instead, it suggests that efficiency, compliance, and recommendation leadership are governed by related but different mechanisms. Digital-native firms may be better positioned to deliver simplicity, modernity, and perceived innovation, while public banks are required to balance scale, social reach, reliability, and public-policy functions.

This distinction has strategic implications. The task for a public bank is not to mimic a fintech completely, but to translate its distinctive strengths—trust, reach, reliability, and social role—into an experience that customers perceive as clear, responsive, and relationship-preserving. The strong internal-channel satisfaction observed in the Ombudsman data suggests that the organization already possesses relational capabilities. The challenge is to transfer these capabilities to digital and external channels, where public evaluations are more visible and where dissatisfied customers can shape reputation.

From the standpoint of transformative marketing, technology should therefore be embedded in a broader relationship strategy. New-age technologies may improve productivity, personalization, and responsiveness, but only if they are aligned with purpose, governance, and customer trust (Kumar et al., 2026). For CAIXA, this means that digital transformation should be managed not only as infrastructure modernization, but as relationship maintenance at scale.

6 Conclusion

This study analyzed how the expansion of digital channels relates to operational efficiency, regulatory performance, customer experience, and relationship maintenance at CAIXA Econômica Federal between 2022 and 2025. The evidence shows that digital transformation was associated with strong inclusive-efficiency gains and improved relative regulatory performance. It also shows that customer experience cannot be reduced to a single satisfaction indicator: experience varies across channels, complaint instances, and measurement instruments.

The article contributes theoretically by connecting digital transformation, omnichannel customer experience, service quality, trust, loyalty, and relationship maintenance in a public-bank context. It shows that public complaint platforms can function as auditable measurement windows into service recovery, reputation, and continuity intention, without making complaints the theoretical object of the study. The central contribution of this study is the proposition that customer experience in digitally transformed service organizations should be interpreted as a channel-contingent and measurement-sensitive relational phenomenon whose implications for trust, loyalty, and relationship maintenance become visible only through the integration of multiple customer-feedback mechanisms.

The study has limitations. It relies on aggregated secondary data; the available satisfaction indicators stem from different instruments and populations; NPS data are contextual and proprietary; and the single-case design limits statistical generalization. Future studies should test the mechanisms suggested here using primary quantitative instruments, including SERVQUAL, E-S-QUAL, omnichannel customer-experience scales, trust scales, and loyalty measures. Future research should ask not merely whether digital transformation improves satisfaction, but where, through which channels, for which customers, and with what implications for trust, loyalty, and relationship maintenance.

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