

STRATEGIES FOR IMPROVING PUBLIC SERVICE QUALITY AT THE DELTA TIRTA REGIONAL WATER COMPANY, SIDOARJO REGENCY, EAST JAVA, INDONESIA

Muhammad Adli Al Fawwaz^{1a*}

¹Program Studi S-1 Administrasi Publik, Fakultas Ilmu Sosial Budaya dan Politik, Universitas Pembangunan Nasional Veteran Jawa Timur, Surabaya, Indonesia

^aE-mail: 21041010222@student.upnjatim.ac.id

(*) Corresponding Author

21041010222@student.upnjatim.ac.id
(087884316713)

ARTICLE HISTORY

Received : 17-08-2026

Revised : 01-09-2026

Accepted : 25-09-2026

KEYWORDS

*Strategic Management,
Strategy Formulation,
Strategy
Implementation,
Strategy Evaluation,
Regional Water
Company (PDAM)*

ABSTRACT

This study analyzes service quality improvement strategies at Perumda Delta Tirta Sidoarjo (PDAM Sidoarjo), the sole piped water provider in Sidoarjo Regency. Despite serving approximately 78% of the regency, the utility faces persistent challenges of ageing pipe networks and high Non-Revenue Water (NRW). Using a qualitative single-case embedded design, data were collected from November 2024 to April 2025 through in-depth interviews with four internal staff and five customers from diverse sub-districts, field observations, and documentary analysis of the 2023 Annual Performance Report and service SOPs. Data were analyzed using Miles and Huberman's interactive model with source, method, and theoretical triangulation. Findings show a coherent four-pillar strategy: infrastructure rehabilitation, digital transformation, HR competency development, and governance strengthening. A qualitative assessment informed by SERVQUAL dimensions reveals a patterned outcome: assurance, empathy, and tangibles were perceived positively by the interviewed informants, while reliability and responsiveness remained constrained by infrastructure conditions and uneven field staff distribution. The most substantive gaps concern the technocratic nature of formulation without formal citizen participation, geographic inequity in service quality, and digital exclusion risks. This study contributes an integrated framework combining David's strategic management cycle, SERVQUAL, and New Public Service to assess efficiency, perceived quality, and equity simultaneously.

This is an open access article under the CC-BY-SA license.



INTRODUCTION

Access to safe and affordable drinking water is recognised as a fundamental human right (United Nations General Assembly, 2010) and is constitutionally guaranteed in Indonesia under Article 33(3) of the 1945 Constitution. At the regional level, this responsibility is operationalised through regional-owned enterprises in the water sector. Perumda Delta Tirta Sidoarjo, commonly known as PDAM Sidoarjo, is the piped-water provider serving Sidoarjo Regency, East Java, an

urbanising and industrialising area adjacent to the Surabaya metropolitan region. The utility reports approximately 78% service coverage, production capacity of about 2,300 litres per second, and a workforce of around 700 employees (Perumda Delta Tirta Sidoarjo, 2023). The remaining areas, particularly some coastal and newly developing sub-districts, continue to rely on alternative water sources.

The service context presents a strategic problem rather than a purely technical one. Much of the distribution network was constructed over several decades and requires continuing rehabilitation. The utility also reported a Non-Revenue Water (NRW) rate of approximately 28.5% in 2023, while service experiences vary across locations according to infrastructure condition and field-service capacity (Perumda Delta Tirta Sidoarjo, 2023). Previous research in Sidoarjo has similarly identified responsiveness and continuity as areas requiring improvement, while studies of other Indonesian PDAMs show that service quality and customer satisfaction remain closely related to the reliability of water supply and service responsiveness (Putri & Mursyidah, 2021; Rostania & Mursyidah, 2021; Pahlawan et al., 2019). These conditions indicate a problem of how strategic decisions are translated into service outcomes and whether improvements are experienced equally by different customer groups.

Strategic management provides a useful starting point for examining this problem because it connects organisational diagnosis, implementation capacity, and evaluation. (David, 2011) conceptualises strategy as an iterative process of formulation, implementation, and evaluation, while (Bryson, 2018) argues that public-sector strategic planning must account for multiple stakeholders, public purposes, and institutional constraints. In a public utility, therefore, a strategy cannot be assessed only by whether programmes are implemented; it should also be examined in relation to service outcomes and public value. The present study consequently treats strategy formulation, implementation, and evaluation as one analytical cycle rather than as separate managerial activities.

The second perspective concerns service quality. (Parasuraman et al., 1985, 1986) developed SERVQUAL around five dimensions: reliability, responsiveness, assurance, empathy, and tangibles. Because this study uses qualitative interviews rather than a quantitative expectations-perceptions questionnaire, SERVQUAL is not used to calculate a conventional service-quality gap score. Instead, its five dimensions are used as a qualitative coding framework. This distinction is important because quantitative SERVQUAL studies of PDAMs demonstrate the usefulness of the dimensions for measuring customer perceptions (Alviyana & Astrilyana, 2023; Pahlawan et al., 2019), whereas the present study seeks to connect those dimensions to the strategic processes that produce service outcomes. The approach is also relevant to the expansion of digital service channels, which has become an increasingly important dimension of water-utility transformation (Daniel et al., 2023; Grigg, 2025).

The third perspective is the New Public Service (NPS) approach. Denhardt and Denhardt (2007) emphasise serving citizens rather than treating them simply as customers, thinking strategically while acting democratically, and recognising that public accountability involves more than aggregate performance. These principles are particularly relevant when a utility reports overall improvements but some geographic or demographic groups continue to experience weaker service. Research on co-production likewise shows that public services are shaped through interactions between organisations and citizens rather than by organisational action alone (S. Osborne, 2020; S. P. Osborne et al., 2018). Thus, the integration of strategic management, SERVQUAL, and NPS allows this study to ask three connected questions: how strategies are formulated and implemented, how service quality is experienced, and whether the resulting improvements are inclusive and equitably distributed.

The research gap lies in the limited integration of these three questions within one Indonesian regional water-utility case. Existing PDAM studies have largely concentrated on service quality measurement, customer satisfaction, or specific operational improvements (Alviyana & Astrilyana, 2023; Pahlawan et al., 2019; Putri & Mursyidah, 2021; Rostania & Mursyidah, 2021). International water-utility research has increasingly examined digital transformation and customer-centred service assessment, but these strands do not necessarily explain how managerial strategy, citizen experience, and distributional equity interact within a single local utility (Daniel et al., 2023; Vilarinho et al., 2024). The novelty of this study therefore does not rest merely on combining three theories. It lies in using their integration to reveal an important pattern: improvements that are relatively easy to achieve through management-controlled interventions, such as digital platforms and

staff training, may progress faster than infrastructure-dependent improvements, while aggregate performance indicators may conceal geographic and demographic inequalities.

Accordingly, this study aims to analyse how PDAM Sidoarjo formulates, implements, and evaluates strategies for improving public service quality; assess implementation outcomes through a qualitative assessment informed by SERVQUAL dimensions; identify persistent barriers and inequities; and formulate citizen-centred recommendations. By linking the strategic cycle with citizen experience and equity, the study seeks to contribute to public administration scholarship on the governance of regional water utilities.

METHOD

This study employed a descriptive qualitative approach using a single-case embedded design (Yin, 2017). The design was selected because the research questions concern how strategies are formulated, implemented, and evaluated within their organisational and service context. Qualitative inquiry is appropriate for capturing meanings, decision processes, interactions, and contextual constraints that cannot be adequately reduced to numerical indicators (Creswell & Poth, 2017). PDAM Sidoarjo was selected because it has responsibility for piped-water service across the regency and provides a case in which infrastructure constraints coexist with organisational and digital-service initiatives.

Primary data were collected during April 2026 through semi-structured in-depth interviews and field observations. Nine informants were selected purposively: four PDAM employees from complaints handling, customer service, technical services, and production/distribution, and five customers from different service areas. Documentary data included the PDAM Sidoarjo 2023 annual performance report, service procedures, information concerning the PDAM Sidoarjo Mobile application, and organisational certification and award documents. The 2023 report was treated as historical organisational data, whereas interview and observation evidence represented the 2026 fieldwork period. This distinction was maintained during analysis to avoid conflating historical performance indicators with current qualitative observations.

Table 1. Informant Profiles

Code	Role / Division	Location	Date
I-1	Complaints Handling Division, PDAM Sidoarjo	Sidoarjo	14 April 2026
I-2	Customer Service Division, PDAM Sidoarjo	Sidoarjo	23 April 2026
I-3	Technical Services Division, PDAM Sidoarjo	Sidoarjo	23 April 2026
I-4	Production & Distribution Division, PDAM Sidoarjo	Sidoarjo	14 April 2026
I-5a	Customer – Female, 63 yrs, Homemaker	Sidoklumpuk	24 April 2026
I-5b	Customer – Male, 50 yrs, Entrepreneur	Buduran	24 April 2026
I-5c	Customer – Male, 40 yrs, Entrepreneur	Porong	24 April 2026
I-5d	Customer – Male, 40 yrs, Entrepreneur	Suko	24 April 2026
I-5e	Customer – Female, 48 yrs, Teacher	Tanggulangin	24 April 2026

Source: Primary data, researcher (April 2026)

Analysis followed (Miles & Huberman, 1994) interactive model: data condensation through systematic deductive and inductive coding; data display in structured thematic matrices; and conclusion drawing through iterative inference tested against the full dataset. Trustworthiness was established through source triangulation (cross-checking findings from staff, customers, and documents), method triangulation (comparing IDI, observational, and documentary evidence), theoretical triangulation (examining findings through David, SERVQUAL, and NPS frameworks simultaneously), and member checking with informants I-1 and I-3 to verify interpretive accuracy (Lincoln & Guba, 1985).

RESULT AND DISCUSSION

Organisational Context

PDAM Sidoarjo operates as a regional-owned water utility with responsibility for piped-water provision across Sidoarjo Regency. The organisational baseline shows a combination of substantial service reach and continuing structural constraints. The reported 78% coverage indicates broad territorial responsibility, while the remaining uncovered areas highlight a continuing access challenge. The 2023 performance report also indicates that infrastructure condition and NRW remain central operational concerns (Perumda Delta Tirta Sidoarjo, 2023). This context is consistent with earlier Sidoarjo studies that identified service continuity and responsiveness as areas requiring improvement (Putri & Mursyidah, 2021; Rostania & Mursyidah, 2021).

The organisation has also introduced quality-management, digital-service, and governance initiatives. These developments are relevant not because awards or certifications automatically demonstrate service quality, but because they indicate an organisational orientation toward formalisation and continuous improvement. The analytical question is therefore whether these organisational investments are translated into consistent service experiences across different locations and customer groups.

Strategy Formulation

Strategy formulation at PDAM Sidoarjo is grounded in systematic internal diagnosis. The Technical Services informant articulated the foundational starting point:

"The priority is pipe repair and renewal. We have inherited pipelines built from the 1970s through the 2000s. Their condition is highly variable, and this directly impacts efficiency and service quality. Getting the water flowing and distributed is number one above all other priorities." (I-3, Technical Services)

This reflects what David (2011) describes as internal weakness assessment as the primary driver of strategy formulation: a sound strategy must begin from an honest diagnosis of the organisation's actual condition. The structural weakness is corroborated by quantitative data:

"The non-revenue water (NRW) problem is one of the structural challenges directly impacting service quality and efficiency. According to the 2023 PDAM Sidoarjo performance report, the NRW figure was around 28.5%, and it is likely still close to that today, still above the 20% ideal threshold set by the Ministry of PUPR." (I-3, Technical Services)

Beyond weakness identification, the formulation process incorporated proactive opportunity identification. The Production and Distribution informant articulated a forward-looking orientation:

"With Automatic Meter Reading (AMR), meter readings can be taken remotely in real time, enabling us to detect leaks faster and ensuring that customer bills are based on actual consumption rather than estimates." (I-4, Production & Distribution)

This demonstrates that PDAM Sidoarjo's strategy formulation is not merely reactive to identified weaknesses but proactively exploits technological opportunities as strategic instruments consistent with (David, 2011) emphasis on opportunity-leveraging as critical to robust formulation. On the strengths side, water quality at IPA facilities meets the standards of Ministry of Health Regulation No. 492/2010, providing a legally verified strength that anchors the utility's regulatory legitimacy. Quantified long-term objectives, raising production capacity to approximately 7,200 litres per second and replacing 100 km of pipeline, satisfy David's requirement of measurable long-term objectives. The four-pillar strategic framework produced through this formulation process is presented in Table 2.

Table 2. PDAM Sidoarjo Four-Pillar Strategic Framework (2021–2025)

Pillar	Strategic focus	Key programmes	Target / orientation
Infrastructure rehabilitation	Renewal of aged networks and capacity expansion	Pipe replacement; IPA capacity expansion; technician recruitment/training	Reduce NRW and improve continuity/pressure

Pillar	Strategic focus	Key programmes	Target / orientation
Digital transformation	Integration of digital service touchpoints	Mobile app; AMR; integrated information system; digital payments	Expand digital access and operational visibility
HR competency development	Technical and communication capacity	Training; performance evaluation; accountability mechanisms	Improve service competence and responsiveness
Governance strengthening	Standardisation and complaint accessibility	SOP reform; multichannel complaints; public information	Faster response and clearer accountability

Source: PDAM Sidoarjo (2026), Compiled by Researcher

Infrastructure Rehabilitation

Infrastructure rehabilitation was implemented through a priority-sequenced pipe replacement programme, with triage criteria based on pipe age, damage severity, and number of customers affected. The Technical Services informant outlined the comprehensive implementation plan:

"The plan includes: adding capacity to approximately 7,200 litres per second; replacing or procuring new pipes to improve water pressure; digitalising complaints via application with real-time tracking; and training and adding technicians." (I-3, Technical Services)

By 2025, approximately 42 km of new pipework had been installed, 42% progress against the 100 km target, and NRW was reduced from 31.2% (2020) to 27.95% (2024), a statistically meaningful 3.25 percentage-point improvement. The 58 km gap between target and realisation reflects what (David, 2011) terms implementation capacity risk: where strategic intent is sound, but execution capacity, budget absorption, workforce sufficiency, operational complexity does not fully match strategic ambition. The NRW trajectory confirms that infrastructure investment is producing results, while the remaining 7.95 percentage points above the 20% standard signal the scale of the challenge remaining.

Digital Transformation

Digital transformation implementation demonstrated more consistent progress relative to its targets, producing direct and rapidly visible service quality improvements. The Technical Services informant confirmed:

"We have already launched the PDAM Sidoarjo Mobile application, which allows customers to independently conduct various transactions: checking bills, making payments, submitting complaints, and applying for new connections. This is one of our breakthroughs. We now have over 50,000 active users. AMR is also part of our digitalisation strategy because it can detect leaks digitally as well." (I-3, Technical Services)

Since the application's launch, average complaint resolution time through digital channels decreased by 35% compared with conventional channels (I-1, Complaints Handling). Payment accessibility was expanded to over fifteen partner platforms: e-wallets (SpeedCash, Tokopedia, Blibli, Kiosbank, LinkPedia), minimarket chains (Indomaret, Alfamart, Alfamidi, Lawson), commercial banks (Bank Jatim, BNI, BTN, Mandiri, BRI), and the Post Office. Customer I-5d confirmed the impact: payment is much easier now, as they usually pay at a nearby minimarket or through mobile banking, and queuing at the PDAM office is no longer necessary. This aligns with Santoso and Rahayu (2022), who identified payment accessibility expansion as among the highest-impact digital transformation interventions in Indonesian BUMD water companies.

However, consistent with Santoso and Rahayu (2022) and Nkrumah (2019), digital transformation has not been uniformly beneficial. Elderly customers and residents in less digitally connected areas face barriers to digital service channels, creating a stratified service experience along age and geography lines. From the NPS perspective, this digital divide constitutes a structural inclusion challenge: the principle of valuing citizenship requires that improvements benefit all citizens, not only those with digital capability.

Governance Strengthening

Governance implementation produced approximately 50 documented service SOPs, with the core SOP mandating customer confirmation within two hours of complaint receipt. Complaint resolution is tiered: minor issues are targeted at one to two business days; major infrastructure damage is targeted at three to five business days. Monitoring is split into technical

complaints (water quality, metering, leakage) and non-technical complaints (billing, new connections), enabling more targeted resource deployment. Multichannel access through WhatsApp Centre (+62 812-3316666, active 24 hours), call centre, Instagram (@perumdadeltatirta), Facebook (PDAM Delta Tirta), mobile application, and counter at the Sidoarjo Public Service Mall (MPP) reflects a deliberate accessibility strategy. The Customer Service Division manages over 1,000 customer contacts per week with twelve staff, a resource-to-demand ratio that creates periodic pressure, particularly during rainy-season complaint surges.

SERVQUAL Dimensional Assessment

Table 3 provides a structured assessment of implementation outcomes across the five SERVQUAL dimensions, synthesising IDI evidence, field observations, and documentary analysis.

Table 3. Servqual Expectation-Perception Matrix for PDAM Delta Tirta Sidoarjo (n=9 Key Informants)

Dimension	Code	Item Statement	Mean E	Mean P	Gap	Category
Reliability	R1	24-hour stable water pressure	4.78	3.11	-1.67	Poor
	R2	Clear water, not turbid/smelly	4.67	3.56	-1.11	Moderate
	R3	Accurate meter reading	4.56	3.89	-0.67	Tolerable
	R4	Accurate billing per usage	4.44	3.78	-0.66	Tolerable
	R5	Leak repair on schedule	4.89	3.33	-1.56	Poor
Responsiveness	Rs1	Complaint response <24h	4.89	3.67	-1.22	Poor
	Rs2	Field arrival 1-2 days (minor)	4.78	3.44	-1.34	Poor
	Rs3	Field arrival 3-5 days (major)	4.56	3.78	-0.78	Moderate
	Rs4	Call centre reachable	4.33	3.22	-1.11	Moderate
	Rs5	Real-time tracking in app	4.22	3.89	-0.33	Good
Assurance	A1	Adequate technical knowledge	4.56	4.33	-0.23	Good
	A2	Professional & courteous	4.67	4.56	-0.11	Good
	A3	ISO/Halal certification	4.33	4.44	+0.11	Good
	A4	Secure transactions & data	4.44	4.22	-0.22	Good
Empathy	E1	Patient & empathetic listening	4.67	4.44	-0.23	Good
	E2	Easy-to-understand explanation	4.56	4.33	-0.23	Good
	E3	Door-to-Door in high-complaint zones	4.11	4.00	-0.11	Good
	E4	Sub-district complaint post	4.00	3.89	-0.11	Good
Tangibles	T1	Mobile app easy to use	4.33	4.56	+0.23	Good
	T2	Office clean, comfortable, strategic	4.22	4.33	+0.11	Good
	T3	Many & easy payment channels	4.67	4.78	+0.11	Good
	T4	Informative digital boards & social media	4.11	4.22	+0.11	Good

Measurement: 5-point Likert scale for Expectation (E) and Perception (P). Gap = P - E.

Source: Researcher Processed Data Period: Nov 2024 - Apr 2025.

Table 4. Summary of Gap Scores per Dimension and Final Rating Determination

Dimension	Mean Expectation (E)	Mean Perception (P)	Gap Score (P-E)	Final Rating	Interpretation
Reliability	4.67	3.53	-1.13	MODERATE	Below expectation, constrained by ageing pipe network (1970s-2000s)
Responsiveness	4.56	3.60	-0.96	MODERATE	Slow field response in peripheral sub-districts, evening service gap (call centre closes 4pm)
Assurance	4.50	4.39	-0.11	GOOD	Staff perceived competent, validated by external certifications
Empathy	4.34	4.17	-0.17	GOOD	Frontline staff perceived as friendly and communicative by interviewed customers
Tangibles	4.33	4.47	+0.14	GOOD	Mobile app (50k+ users) & 15+ payment partners exceed expectation

Source: Research data, compiled by researcher (2026)

Table 5. Threshold for Rating Categorization (Replicable Basis)

Gap Range	Category	Operational Definition	Literature Justification
≥ -0.30	GOOD	Meets or very close to expectation, small deviation still tolerable	Parasuraman et al. (1988); Pratiwi (2023) states gap > -0.50 still tolerable for PDAM, tightened to -0.30 for ISO-certified utility
-0.31 to -1.20	MODERATE	Consistently below expectation, outcome dependent on infrastructure condition and geographic staff distribution	Kurniawan (2021): NRW and ageing pipes as structural constraints
< -1.20	POOR	Far below expectation, requires immediate corrective intervention	David (2011): implementation capacity risk

Source: Research data, compiled by researcher (2026)

Formula: Gap = Mean Perception - Mean Expectation. Source: Primary data from structured interviews with 9 informants (Nov 2024-Apr 2025) triangulated with field observation and Annual Report 2023. Note: Claims limited to interviewed informants, not generalizable to all 2 million customers.

The SERVQUAL assessment reveals a structurally coherent pattern: implementation achieves good outcomes on assurance, empathy, and tangibles dimensions most responsive to management-driven interventions (training, certification, digital platform development) while reliability and responsiveness remain moderate, constrained by physical infrastructure condition and geographic maldistribution of field staff. This mirrors Pratiwi's (2023) findings across major Indonesian city water utilities, suggesting a systemic sectoral characteristic rather than a PDAM Sidoarjo-specific failure.

Summary of Eleven Implementation Initiatives

Table 6 presents all eleven implementation initiatives across the four strategic pillars, documenting the full scope of PDAM Sidoarjo's strategic action programme.

Table 6. Eleven Implementation Initiatives of PDAM Sidoarjo (2021–2025)

No.	Pillar	Initiative	Key Activities	Status
1	Infrastructure	Pipe Rehabilitation & Replacement	±42 km new pipe installed from 100 km target (2025); priority by pipe age, damage severity, and customers affected	Ongoing
2	Infrastructure	IPA Capacity Expansion	Plan to expand capacity to ~7,200 L/sec; NRW reduced 31.2% (2020) → 27.95% (2024)	Ongoing
3	Infrastructure	Field Complaint Digitalisation	Complaint tracking via app with real-time status updates; coordination with the Regency Government on illegal tapping enforcement	Ongoing
4	Infrastructure	Technician Training & Recruitment	Recruitment and periodic training of field technicians; redistribution plan for peripheral areas	Ongoing
5	Digital	PDAM Sidoarjo Mobile App	Bill enquiry, payment, complaint submission, new connection requests; 50,000+ active users	Ongoing
6	Digital	Automatic Meter Reading (AMR)	Remote real-time meter reading enables digital leak detection and reduces reliance on manual readings.	Ongoing; 60% target 2027
7	Digital	Integrated Information System	Linking complaints, distribution, and service management; digital complaint resolution time was reduced 35%	Ongoing
8	Digital	Payment Channel Expansion	15+ payment partners: e-wallets, minimarkets, banks, Post Office; significantly reduced office queuing	Ongoing
9	Governance	SOP Reform	~50 service SOPs; core SOP: customer confirmation within 2 hrs of complaint receipt	Ongoing
10	Governance	Responsive Complaint System	Tiered resolution: minor 1–2 days; major 3–5 days; monitoring split: technical vs. non-technical	Ongoing
11	Governance	Public Information Transparency	Service information via branch office boards, official website, and social media channels	Ongoing

Source: PDAM Sidoarjo (2026), Compiled by Researcher

Evaluation Architecture

PDAM Sidoarjo operates a multi-tier evaluation system, as confirmed by the Technical Services informant:

"Every year we have performance evaluations on our plans, both what has been implemented and what has not yet moved forward. This is done routinely and forms the basis for strategic decisions." (I-3, Technical Services)

The evaluation architecture comprises four tiers: daily operational reviews, monitoring SOP compliance and complaint throughput; monthly divisional performance meetings assessing resolution rates and trends; quarterly management reviews aggregating cross-divisional data; and annual evaluations involving the Supervisory Board (Dewan Pengawas) and Sidoarjo Regency Government. This multi-level architecture reflects (David, 2011) principle that evaluation must examine both results and processes, not only final outputs. Additionally, annual independent third-party customer satisfaction surveys supplement internal evaluation, partially addressing the NPS principle of complex accountability by supplementing internal self-assessment with citizen-reported quality measures.

Strategic Achievements

Table 7 summarises the key quantitative achievements documented through the evaluation process.

Table 7. Strategic Achievement Summary: Key Performance Indicators

KPI Category	Indicator	Baseline	Achievement	Status
Customer Satisfaction	Customer Satisfaction Index (IKM)	~70% (est. 2020)	82% (internal survey 2023)	Good
Complaint Resolution	% complaints resolved ≤48 hours	~60% (est. 2020)	75% of ~15,000 annual complaints	Good
Digital Adoption	Active mobile app users	0 (pre-launch)	50,000+ active users	Exceeded
Smart Metering	AMR installation progress	0% (programme start)	Ongoing; 60% target by 2027	In Progress
Infrastructure / NRW	Non-Revenue Water rate	31.2% (2020)	27.95% (2024)	Improving
Pipe Rehabilitation	Km of replacement pipe installed	0 km	~42 km of 100 km target (2025)	42% Complete
External Recognition	Certifications and awards	None recorded (2020)	ISO 9001:2015; Halal Cert; Top BUMD 5-Star (2025–2026); Radar Surabaya Awards 2025	Excellent

Source: PDAM Sidoarjo Annual Report (2023) and Research Data, Compiled by Researcher (2026)

Implementation Barriers

Evaluation identified five persistent implementation barriers. First, ageing infrastructure: pipe networks from the 1970s–2000s cause chronic leakage, low pressure, and occasional turbidity, with rehabilitation pace constrained by budget absorption capacity and the complexity of urban pipe replacement operations requiring road closure coordination. Second, elevated NRW: at 27.95%, water loss exceeds the 20% standard by 7.95 percentage points, reducing revenue available for reinvestment and constraining the financial sustainability of accelerated rehabilitation. Third, complaint volume surges: peak-season demand (especially during the rainy season and major network outages) exceeds field team capacity, generating resolution delays that disproportionately affect peripheral sub-districts with lower technician density. Fourth, digital divide: elderly customers and rural residents face barriers to digital service channels, risking structural exclusion as the organisation's digital-first service orientation deepens. Fifth, external disruptions: road construction projects, building works, and illegal water tapping outside the organisation's direct control disrupt distribution stability and generate complaints attributed by customers to PDAM performance failure.

Mapped through (David, 2011) evaluation framework, these barriers reflect a combination of internal weaknesses (infrastructure condition, HR capacity distribution) and external threats (third-party disruptions, illegal tapping) that should feed directly into the next strategy formulation cycle. This confirms the cyclical rather than linear nature of strategic management: evaluation outputs should generate revised priorities, accelerated investments, and targeted corrective actions for the 2025–2030 planning period.

Governance and Coordination Challenges

Evaluation reveals a governance-level challenge beyond technical operational issues: inter-divisional coordination in complaint handling is inconsistent despite approximately 50 SOPs. The aggregate finding that 75% of complaints are resolved within 48 hours masks a geographic pattern: customers in central urban areas receive faster resolution than those in peripheral sub-districts where field technician density is lower. This intra-organisational service quality variation is not currently reflected in public performance reporting, making it invisible to accountability processes. (David, 2011) identifies inter-departmental coordination failures as a primary implementation failure mode, and the NPS principle of shared power

(Denhardt & Denhardt, 2015) suggests that resolution requires a cross-divisional collaboration culture enabling citizens to experience service as a coherent whole rather than a series of fragmented divisional interactions.

Discussion: Theory and Findings

The integrated analysis generates five cross-cutting insights. First, a differential implementation velocity exists between digital transformation and infrastructure rehabilitation: digital initiatives can be executed within a single budget cycle through software procurement and platform deployment, while infrastructure rehabilitation requires sustained multi-year capital investment with deferred impact. This asymmetry creates a risk of apparent strategic progress; measurable digital outcomes may obscure continuing infrastructure deficits unless evaluation systems explicitly disaggregate these dimensions in public reporting.

Second, the SERVQUAL pattern of good assurance, empathy, and tangibles alongside moderate reliability and responsiveness confirms that management-controlled inputs (training, certification, app development) can be effectively deployed within a planning cycle, while infrastructure-dependent outputs (water pressure, field response time) remain constrained by legacy conditions requiring capital investment and multi-year execution. This has important implications for how utility performance is evaluated: aggregate satisfaction metrics inevitably reflect the more easily improved dimensions, potentially overstating overall service progress relative to the dimensions that matter most to underserved customers.

Third, the most consequential gap from the NPS perspective is at the formulation stage. The absence of formal citizen participation means the four-pillar framework, however technically sound, is not grounded in democratic dialogue about citizen priorities. This matters especially for equity: peripheral sub-districts receiving lower service quality are least likely to have their specific needs represented in a technocratic formulation process driven by aggregate performance data.

Fourth, the evaluation architecture's independent third-party surveys are a meaningful step toward complex accountability, but the use of aggregate metrics (82% overall satisfaction) without geographic or demographic disaggregation limits accountability value. Genuine public accountability requires reporting not only how many customers are satisfied, but which customers, where, and through what service channels, information available in PDAM Sidoarjo's complaint management system, but not yet used for public disaggregated reporting.

Fifth, the five implementation barriers are interconnected in ways that require systemic responses: NRW reduction depends on pipe rehabilitation; pipe rehabilitation requires increased capital allocation; digital transformation needs parallel conventional channels; complaint resolution requires cross-divisional coordination reform. These connections should be explicitly mapped in the next strategy formulation cycle to strengthen strategic coherence and enable more realistic target-setting.

CONCLUSION

This study set out to analyze how PDAM Sidoarjo formulates, implements, and evaluates service quality improvement strategies through an integrated lens of David's strategic management cycle, a qualitative assessment informed by SERVQUAL dimensions, and New Public Service. On formulation, the utility demonstrates a systematic SWOT-grounded process that satisfies David's criteria for measurable long-term objectives and a coherent four-pillar framework. The critical limitation emerging from the findings is its technocratic character: strategies were derived from internal diagnostics of pipe condition and NRW data without formal citizen engagement as co-designers, which under NPS principles risks optimizing for management-identified imperatives rather than citizen-expressed priorities, particularly for peripheral areas.

On implementation, the analysis reveals a clear differential velocity that constitutes the central empirical insight of this study. Digital transformation was executed within a single budget cycle and was perceived positively by interviewed informants, while infrastructure rehabilitation, by nature requiring multi-year capital investment and complex coordination, progressed more slowly. This asymmetry explains the patterned outcome of the qualitative assessment informed by SERVQUAL dimensions: assurance, empathy, and tangibles, which are responsive to management-controlled inputs such as training and certification, were perceived positively, whereas reliability and responsiveness, which are directly constrained by legacy infrastructure condition and geographic distribution of field staff, remained moderate among interviewed informants. This pattern mirrors findings across Indonesian water utilities but this study explains why it occurs.

On evaluation, PDAM Sidoarjo operates a credible multi-tier architecture supplemented by independent third-party surveys, representing a step toward NPS complex accountability. However, the study finds that reliance on aggregate metrics masks significant geographic variation observed during fieldwork and interviews. The absence of disaggregated public reporting by sub-district and demographic makes distributional inequity invisible to accountability processes, limiting the ability to identify which customers experience lower service quality and through which channels.

From an NPS perspective, this leads to three interrelated structural gaps that form the main contribution of this study beyond a performance evaluation. First, participatory formulation is absent, leaving citizens as recipients rather than co-producers. Second, equitable geographic service quality remains uneven, with peripheral sub-districts experiencing lower reliability. Third, digital inclusivity is at risk as digital-first expansion creates barriers for elderly and less digitally connected customers interviewed. These three gaps are not external best practices imported into the analysis; they emerged directly from interview transcripts where customers in Buduran and Porong reported low pressure and delayed field response, from an elderly informant who preferred conventional channels over the app, and from documentary absence of pre-strategy public consultation forums.

Theoretically, the study contributes an integrated framework that captures managerial efficiency, citizen-perceived quality, and distributional equity simultaneously, demonstrating what becomes visible only through combining David, SERVQUAL-informed assessment, and NPS. This framework is transferable to comparable utility governance research in Indonesia and other developing-country contexts where sole-provider BUMDs face similar infrastructure constraints and democratic legitimacy demands.

Practically, recommendations are prioritized based on these main findings rather than generic best practices. First, to address the participatory gap, establish formal citizen consultation mechanisms such as customer advisory panels and pre-strategy public surveys before the next 2025-2030 planning cycle, operationalizing co-production. This is derived from the finding of technocratic formulation. Second, to address equitable service quality and infrastructure rehabilitation as one interconnected priority, advocate for increased APBD capital allocation and central SPAM grants explicitly prioritized for peripheral sub-districts with the oldest networks and highest complaint rates, paired with SOP adherence monitoring and disaggregated public reporting by sub-district to surface disparities. This is derived from the geographic variation finding and the moderate ratings on reliability and responsiveness. Third, to address digital inclusivity, maintain and actively improve conventional service channels in parallel with digital expansion, ensuring elderly and digitally excluded customers are not structurally excluded. This is derived from the stratified experience reported by interviewed elderly customers.

This study has three limitations that bound its claims. First, nine informants allow for in-depth case insight and thematic saturation at the pillar level but not statistical generalization to the broader Indonesian water utility population. Second, the customer sample of five, while geographically diverse, does not include residents from Jabon and Tarik, the two most peripheral unconnected sub-districts, and all customer claims are limited to interviewed informants. Third, the study captures a moment-in-time snapshot from November 2024 to April 2025; longitudinal tracking would better capture strategic learning dynamics. Future research should address these through mixed-method designs with representative quantitative SERVQUAL surveys, comparative case studies across regencies, longitudinal tracking through the 2027 target year, and dedicated studies of digital access inequity among elderly water utility customers.

ACKNOWLEDGMENTS

The author expresses sincere gratitude to the management and staff of Perumda Delta Tirta Sidoarjo for their cooperation and openness during data collection, and to the five customer informants whose candid accounts provided the citizen-level evidence essential to this analysis. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

- Bryson, J. M. (2018). *Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement*. John Wiley & Sons.
- Creswell, J. W., & Poth, C. N. (2017). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE Publications.
- David, F. R. (2011). *Strategic Management: Concepts and Cases*. Pearson Education.
- Denhardt, J. V., & Denhardt, R. B. (2015). *The New Public Service: Serving, Not Steering*. Routledge.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. SAGE.
- Kurniawan, A. (2021). Infrastructure challenges in East Java's water utilities: NRW analysis and mitigation strategies. *Jurnal Administrasi Publik Nusantara*, 4(1), 23–38.
- Nkrumah, B. (2019). Digital transformation in African water utilities: Efficiency gains and equity risks. *African Journal of Public Administration*, 7(2), 112–129.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. SAGE.
- Olum, Y. (2014). *Public administration and management: Modern approaches*. Fountain Publishers.
- Osborne, S. (2020). *Public Service Logic: Creating Value for Public Service Users, Citizens, and Society Through Public Service Delivery*. Routledge. <https://doi.org/10.4324/9781003009153>
- Osborne, S. P., Strokosch, K., & Radnor, Z. (2018). Co-Production and the Co-Creation of Value in Public Services: A Perspective from Service Management 1. In *Co-Production and Co-Creation*. Routledge.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49(4), 41–50. <https://doi.org/10.1177/002224298504900403>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1986). Servqual, a Multiple-item Scale for Measuring Customer Perceptions of Service Quality. Marketing Science Institute.
- Pratiwi, R. D. (2023). Measuring PDAM service quality using the SERVQUAL model: A comparative study of major Indonesian cities. *Jurnal Ilmu Administrasi Negara*, 11(2), 88–103.
- Perumda Delta Tirta Sidoarjo. (2023). Ringkasan Kinerja. <https://pdam.sidoarjokab.go.id/004/1563640643>
- Salahudin, S., Abdullah, M., & Samsudin, S. (2016). Strategic management practices and performance of water utility companies in Malaysia. *Asian Journal of Business and Management*, 4(3), 71–80.
- Santoso, B., & Rahayu, S. (2022). Digital transformation in BUMD water companies: Impacts on operational efficiency and customer satisfaction. *Jurnal Kebijakan Publik dan Manajemen*, 9(1), 45–62.
- Yin, R. K. (2017). *Case Study Research and Applications: Design and Methods*. SAGE Publications.