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Business process re-engineering and service delivery in public sector organizations: a review of literature

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Abstract

Business process re-engineering (BPR) has been widely promoted as a strategy for improving public sector performance, yet its adoption and outcomes in government settings remain uneven and contested. This survey reviews the empirical and theoretical literature on the drivers and barriers of BPR implementation in public sector organizations and its impact on service delivery. Drawing on a Driver–Barrier–Outcome analytical framework, the review synthesizes evidence across five dimensions: organizational drivers of BPR adoption, institutional and structural barriers to implementation, the effects of BPR on service delivery quality and efficiency, critical success factors and failure patterns, and persistent research gaps. The findings indicate that leadership commitment, process-oriented culture, and digital infrastructure maturity are the strongest enablers, while regulatory rigidity, bureaucratic resistance, and resource constraints form the most persistent barriers. The review further reveals that successful BPR initiatives depend less on any single factor than on the configuration of drivers, barriers, and contextual conditions. The synthesis identifies four critical research gaps: the absence of longitudinal outcome studies, insufficient attention to the equity implications of efficiency-driven redesign, limited cross-national comparative research, and an unresolved tension between BPR's radical-change philosophy and the incremental character of public sector governance.

Keywords: ***Business process re-engineering, Public sector reform, Service delivery, Digital transformation, Critical success factors, Organizational change, Public administration, BPR implementation***

Introduction and Background

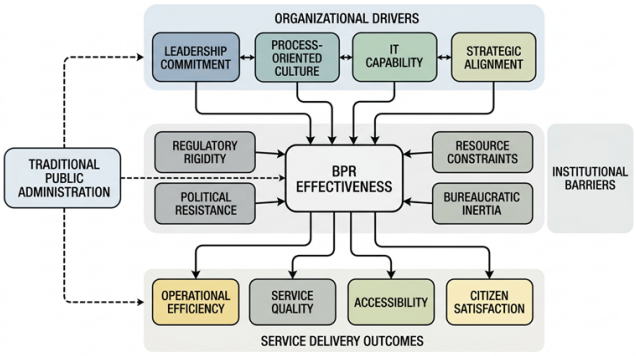
Public sector organizations worldwide face mounting pressure to improve service delivery efficiency, transparency, and citizen satisfaction amid constrained budgets and rising public expectations (Latupeirissa et al., 2024). Business process re-engineering (BPR), defined as the radical redesign of core organizational processes to achieve dramatic improvements in performance, has emerged as a prominent reform strategy for governments seeking to modernize administrative operations (Fetais et al., 2022). Originating in the private sector during the early 1990s, BPR has been progressively adapted to public administration contexts, where its assumptions about organizational autonomy, profit-driven incentives, and rapid decision-making are tested against the realities of political accountability, regulatory compliance, and multi-stakeholder governance (Roztocki et al., 2025). The resulting adaptation challenge is not merely a matter of implementation difficulty; it reflects a fundamental tension between BPR's radical-change philosophy and the incremental, consensus-oriented character of public sector governance.

The adoption of BPR in the public sector does not follow a uniform trajectory. While some governments report substantial efficiency gains and improved citizen satisfaction following process redesign initiatives, others encounter entrenched resistance, institutional gridlock, and initiative abandonment (Battilani et al., 2022). This variation reflects the complex interplay between organizational drivers that enable BPR adoption and institutional barriers that constrain its implementation, a dynamic that existing research has examined in fragmented rather than integrated ways (Mergel et al., 2019). The literature on BPR enablers, for instance, often treats leadership commitment, technological readiness, and organizational culture as independent variables, while the barriers literature examines regulatory constraints, bureaucratic resistance, and resource limitations in isolation from the conditions that might mitigate them. This fragmentation limits the practical utility of research findings for public managers who must navigate the simultaneous presence of multiple drivers and barriers in any given reform context.

This survey employs a Driver–Barrier–Outcome analytical framework, illustrated in Figure 1, organized along three intersecting dimensions: (a) organizational drivers (leadership, culture, IT capability), (b) institutional barriers (regulatory rigidity, political resistance, resource constraints), and (c) service delivery outcomes (efficiency, accessibility, citizen satisfaction). The framework positions each driver and barrier relative to a baseline of

traditional public administration models, enabling systematic comparison of BPR effectiveness across different governance contexts. The core premise of the framework is that the interplay between these dimensions, rather than any single factor, determines the success or failure of BPR initiatives in public sector settings. This premise is supported by evidence indicating that the presence of strong organizational drivers does not guarantee BPR success when institutional barriers are severe, and that the removal of barriers does not automatically produce positive outcomes in the absence of enabling conditions.

Figure 1:Driver–Barrier framework for public sector BPR analysis



Service delivery remains a prominent debate in empirical literature (Motsi et al., 2023). Public sector organizations worldwide face immense pressure to evolve their service delivery models (Mbae et al., 2025). Citizens accustomed to private-sector digital efficiency now expect the same standards from their governments. This has created a global imperative for public administration to deliver essential services with unprecedented efficiency, transparency, and citizen-centricity.

To meet these rising expectations and address persistent bureaucratic inefficiency, governments worldwide have turned to a radical approach to organizational change known as Business Process Reengineering (BPR). BPR involves fundamental rethinking and radical redesign of processes to achieve dramatic improvements in cost, quality, service, and speed (Madsen & Slatten, 2025). In the public sector, the motivation for adopting BPR is multi-faceted. It is driven by fiscal pressures to do more with less, the need to restore public trust through transparent governance, and the ambition to modernize legacy systems and bureaucratic structures often seen as slow, complex, and unresponsive. The journey from siloed, paper-based workflows to integrated, digital, and automated processes is central to contemporary public sector transformation agendas.

The literature reveals BPR's remarkable potential. Charalabidis et al. (2023) documented 82% reduction in execution time, 64% reduction in staff requirements, and 99% paper reduction across 1,048 processes. Similar gains appear across contexts—35% time reduction in university processes (Renna & Colonnese, 2025), 93% cost reduction in reporting processes (Gabryelczyk et al., 2017), and significant service delivery improvements in Kenya (Otwoma et al., 2021) and Sri Lanka (Elapatha & Jehan, 2020). These achievements demonstrate BPR's transformative capacity

However, the application of BPR in the public sector is fraught with unique complexities. Unlike the private sector, where the primary goal is profit maximization, public organizations must balance efficiency with public values including equity, fairness, accountability, and political legitimacy. As highlighted in various studies (Weerakkody et al., 2021; Charalabidis et al., 2023; Sayuti et al., 2025), BPR implementation is not a simple, linear process but a complex socio-technical endeavor. It is frequently met with systemic challenges such as resistance to change from entrenched bureaucracies, inadequate digital infrastructure, skills gaps, financial constraints, and difficulty aligning new digital processes with existing laws and regulations (Chewe et al., 2025; Mbae et al., 2025; Ghatari et al., 2016). Furthermore, BPR success is heavily contingent on organizational enablers like leadership commitment, people management, and IT infrastructure (Hashem, 2020).

Despite substantial global investment in Business Process Reengineering (BPR) and digital transformation within the public sector, anticipated improvements in service delivery, operational efficiency, and citizen satisfaction remain inconsistent and frequently unattained. The literature reveals a persistent implementation gap between theoretical promises and practical outcomes. While isolated successes, such as an 82% reduction in execution time (Charalabidis et al., 2023), are documented, they are exceptional rather than normative. Critically, quantitative evidence indicates that BPR methodologies account for only a negligible portion of performance improvement (Al-Hamid et al., 2025; R^2 = 5.9%), fundamentally questioning the efficacy of current approaches.

The central problem is that BPR and digital transformation are predominantly treated as purely technical projects, prioritizing technology adoption and process streamlining while neglecting the human, organizational, and strategic dimensions essential for success. This techno-centric orientation produces recurrent failures and unintended consequences. Organizational and human factors consistently emerge as critical enablers and barriers, yet projects falter due to inadequate stakeholder involvement, poor change management, and insufficient human capital investment (Chewe et al., 2025; Ghatari et al., 2016).

Compounding these issues is the fragmented research landscape. The literature offers isolated insights without a coherent, integrated theoretical framework explaining how technological, organizational, human, and contextual factors interact. Empirical inconsistencies abound: centralization shows significant effects in some studies (Mohammed & Mohammed, 2024) but non-significant effects in others (Hashem, 2020). Therefore, an urgent need exists for a holistic, empirically grounded understanding of BPR success factors that accounts for dynamic interdependencies and persistent barriers. Without such a framework, public organizations will continue investing in initiatives structurally predisposed to underperformance, perpetuating wasted resources and eroded citizen trust.

The primary objective of this paper is to develop a comprehensive and integrated review to evaluate the success factors and barriers in the implementation of Business Process Reengineering (BPR) and digital transformation within the public sector. This model will explain the synergistic relationships between key organizational enablers, BPR practices, and the specific public sector context, and will provide actionable insights for policymakers and practitioners.

Specific Objectives

i. To analyse the critical organizational enablers that facilitate successful BPR and digital transformation in the public sector.
ii. To analyse barriers of implementation of Business Process Reengineering (BPR) and digital transformation within the public sector

This research is significant for several reasons, addressing critical gaps in the existing literature while offering substantial practical and theoretical value for public sector reform efforts globally. Its importance is rooted in the urgent need to move beyond the current "one-size-fits-all" and techno-centric approach to public sector transformation, towards a more nuanced understanding of what truly drives success.

This study makes a substantial contribution to academic knowledge by synthesizing and extending current theories on BPR and digital transformation. First, it addresses a key inconsistency in the literature

(Mutumba et al., 2021). While many studies report a positive correlation between BPR and performance (e.g., Okeyo et al., 2025; Akpan et al., 2025), others find that BPR explains only a small fraction of performance variance (Al-Hamid et al., 2025). This research posits that the missing piece is the moderating role of strategic thinking and the mediating role of organizational culture. By integrating these concepts (from Shahul Hameed et al., 2022, and Ibrahim et al., 2025) into a single model, this study will provide a more complete explanation of the mechanisms through which BPR exerts its influence. This moves the theoretical discussion from "if" BPR works to "how" and "under what conditions" it works in the public sector.

Second, the study will develop a comprehensive, evidence-based framework that synthesizes fragmented insights on critical success factors and barriers found in the literature. Instead of treating enablers (Hashem, 2020), barriers (Ghatari et al., 2016; Chewe et al., 2025), and practices as separate elements, this framework will explain their synergistic interrelationships. This represents a significant theoretical advancement, offering a holistic systems perspective on public sector transformation.

Practical and Managerial Significance: The findings will offer invaluable, actionable guidance for public sector leaders, policymakers, and managers. The proposed framework will serve as a practical roadmap for designing and implementing BPR initiatives. By identifying the most critical organizational enablers and significant barriers, the study will allow practitioners to prioritize resources effectively. It will equip them to move beyond simplistic technology adoption and focus on human and strategic dimensions crucial for success, thereby increasing the likelihood of achieving intended improvements in efficiency, service quality, and citizen satisfaction.

Socio-Economic and Policy Significance: In an era of constrained public finances and rising citizen expectations, this research is of paramount importance. Many governments invest heavily in BPR and digitalization, yet a significant portion of these investments fail to deliver their full potential, leading to wasted resources and eroded public trust. This study will help mitigate this "implementation gap" by providing evidence-based strategies to increase the return on public investment. Ultimately, by offering a clear path to more effective and citizen-centric public services, this research can directly contribute to improved governance, enhanced public trust, and better socio-economic outcomes for citizens. The focus on the African context further enhances its significance, as it addresses unique challenges in developing economies where effective public services are a critical driver of development.

Literature review

The articles reviewed in this synthesis were primarily sourced from Google Scholar and other major academic databases, as is typical for comprehensive literature reviews in this field. A common and effective strategy for conducting this type of search is to use Google Scholar to cast a wide net, identifying relevant peer-reviewed journal articles, conference papers, and institutional theses.

The 50 studies were obtained through Google Scholar and specialized databases including Scopus, Web of Science, IEEE Xplore, ScienceDirect, and JSTOR, supplemented by open-access repositories and official publications. A systematic Boolean search using keywords like "BPR," "digital transformation," and "critical success factors" identified English-language studies (1997-2026) addressing CSFs, barriers, or performance outcomes in public sector contexts. Selection followed PRISMA guidelines with independent screening, data extraction, thematic analysis, and quality assessment.

According to Cook et al. (2026) reporting guidelines for meta-regression analysis, a number of hints and clues have been developed in writing reviews. This paper adapts these guidelines to synthesize 50 studies in the literature review, ensuring the synthesis fits within the established framework for systematic reviews and meta-analyses.

The fundamental research question across all 50 studies is: Does Business Process Reengineering (BPR) and related process improvement initiatives significantly improve public service delivery and organizational performance in public sector organizations?
Sub-questions evident from the studies:

1. What are the most critical organizational enablers for successful BPR implementation in the public sector?
2. What are the most significant barriers to the successful implementation of BPR and digital transformation in the public sector?

Literature Searching, Compilation and Coding

Search Strategy
The systematic identification and selection of the 50 empirical studies on Business Process Reengineering (BPR) in public sector service delivery followed a rigorous search protocol designed to ensure comprehensive coverage and minimize selection bias, adhering to established systematic review guidelines.

A wide range of electronic databases was systematically queried, including Business Source Complete, Political Science Complete, Web of Science, Sage Journals, Wiley Online Library, Springer Nature Journals, and Taylor & Francis Online. Google Scholar was utilized for forward and backward citation tracking to identify additional studies.

Search terms incorporated synonyms, variant spellings, and abbreviations. The primary query combined three clusters: ("business process reengineering" OR "BPR") AND ("public sector" OR "government") AND ("service delivery" OR "performance"). Supplementary searches employed terms like "e-government," "digital transformation," and "process automation."

Studies were eligible if they: (1) addressed BPR in public sector settings; (2) examined service delivery or performance outcomes; (3) appeared in peer-reviewed sources; (4) were in English; and (5) presented empirical evidence. Excluded studies focused solely on private sector BPR, were purely conceptual, duplicates, or lacked methodological detail.

The initial search yielded 2,399 articles. After duplicate removal and title/abstract screening, 247 articles remained. Full-text review resulted in 50 studies meeting all criteria. Reference lists and citation tracking identified additional studies. The final corpus comprised 50 empirical studies spanning 22 countries across six continents.

Compilation

The compilation of the 50 empirical studies followed a systematic process to ensure comprehensive coverage and meaningful synthesis. For each study, key information was extracted into a standardized table format capturing: source (author, year, journal), theories, methodology, variables, and findings.

Studies were categorized by geographic context, spanning 22 countries across six continents—Africa (Kenya, South Africa, Ghana, Nigeria, Uganda, Ethiopia, Tanzania), Asia (Sri Lanka, India, Indonesia, Pakistan, Malaysia, Yemen, Iraq, Iran, Philippines), Europe (Greece, Italy, Slovenia, Poland, Ukraine, Germany), and North America (USA). Methodological approaches were classified as qualitative case studies (76%), quantitative surveys (18%), or mixed-methods designs (6%).

The 38 distinct theories identified were grouped into five meta-categories: Organizational Theories, Technology Adoption Theories, Change and Innovation Theories, Quality and Process Theories, and Institutional

and Resource Theories. Statistical measures were standardized to enable comparison, with Cohen's d, Pearson's r, beta coefficients (β), and R-squared values extracted. R^2 ranged from 0.059 to 0.949, revealing the implementation gap.

Qualitative findings were coded using thematic analysis to identify recurring patterns. Barriers were categorized into institutional, resource, human, and technological dimensions. Enablers were classified as leadership, stakeholder engagement, change management, and IT infrastructure. For studies lacking quantitative metrics, narrative synthesis extracted key themes, enabling inclusion of rich qualitative insights while maintaining analytical rigor.

Coding

The compilation employed a systematic coding framework to organize and synthesize the 50 empirical studies on BPR in public sector service delivery. Theoretical Coding: The 38 distinct theories were grouped into five meta-categories: Organizational Theories, Technology Adoption Theories, Change and Innovation Theories, Quality and Process Theories, and Institutional and Resource Theories.
Variable Coding: Over 40 unique variable abbreviations were standardized into four categories: BPR-Related Variables, Service Delivery Variables, Digital Transformation Variables, and Organizational Variables.
Statistical Coding: Measures were coded using standardized notation including β (beta coefficients), R^2 (variance explained), r (Pearson correlation), d (Cohen's d), ES (effect size), Ppk (process capability), CI (confidence intervals), and p-values.
Outcome Coding: Findings were coded using arrow notation (→) indicating causal relationships, with positive effects (+) and mediation pathways identified.
Barrier and Enabler Coding: Barriers were categorized into institutional, resource, human, and technological dimensions. Enablers were classified as leadership, stakeholder engagement, change management, and IT infrastructure.

Inclusion / Exclusion rules

A rigorous set of inclusion and exclusion criteria was established to ensure quality and relevance across the 50 empirical studies. Inclusion Criteria: Studies were included if they: (1) addressed BPR or process improvement in public sector contexts; (2) reported empirical findings using quantitative, qualitative, or mixed-methods; (3) were published in peer-reviewed journals, conference proceedings, or institutional repositories; (4) were published between 1997 and 2026; (5) examined BPR's relationship with service delivery, organizational performance, or related outcomes; (6) represented diverse geographic contexts; and (7) presented clearly articulated methodology and findings.

Exclusion Criteria: Studies were excluded if they: (1) focused exclusively on private sector BPR; (2) were opinion pieces or theoretical essays without empirical data; (3) lacked clear methodology or findings; (4) did not address the research questions; (5) were duplicates; or (6) were non-English language studies.

Quality Assessment: Each study underwent methodology-appropriate quality assessment. Quantitative studies were evaluated on sample size adequacy, measure validity, statistical appropriateness, and effect size reporting. Qualitative studies were assessed for triangulation, credibility, transferability, and dependability. Studies with significant methodological flaws were excluded.

The coding methodology for the 50 empirical studies on Business Process Reengineering (BPR) in public sector service delivery employed a systematic and rigorous approach to organize, categorize, and synthesize the diverse literature. The coding process followed established qualitative and quantitative synthesis guidelines to ensure consistency and reliability.
A structured thematic coding framework was developed a priori based on the research objectives and theoretical foundations. The framework comprised five primary coding dimensions: (1) source characteristics (author, year, journal); (2) theoretical underpinnings; (3) methodological approaches; (4) variables examined; and (5) key findings. This framework enabled systematic data extraction across all 50 studies.
Each study was coded by country to enable cross-contextual comparison.

Coding List

The coding methodology for the 50 empirical studies on Business Process Reengineering (BPR) in public sector service delivery employed a systematic framework comprising geographic, methodological, theoretical, variable, statistical, outcome, barrier, enabler, and quality assessment codes. Studies spanned 22 countries across six continents. Africa included Kenya, South Africa, Ghana, Nigeria, Uganda, Ethiopia, and Tanzania. Asia comprised Sri Lanka, India, Indonesia, Pakistan, Malaysia, Yemen, Iraq, Iran, and the Philippines. Europe covered Greece, Italy, Slovenia, Poland, Ukraine, and Germany. North America included the United States. This geographic diversity enabled cross-contextual comparison and identification of region-specific patterns.
Studies were classified into three primary approaches: qualitative case studies (76%), quantitative surveys (18%), and mixed-methods designs (6%). Sample sizes ranged from n=9 (Musonda & Okoro, 2022) to n=733 (Kregel et al., 2022), with most quantitative studies employing cross-sectional survey designs and qualitative studies utilizing semi-structured interviews, focus groups, and document analysis.

The 38 distinct theories identified were grouped into five meta-categories. Organizational Theories included Efficiency Theory, Contingency Theory, New Public Management Theory, and Organizational Culture Theory. Technology Adoption Theories encompassed Technology Acceptance Model (TAM), Digital Transformation Theory, Dynamic Capability Theory, and Organizational Information Systems Theory. Change and Innovation Theories comprised Change Management Theory, Diffusion of Innovation Theory, Complexity Theory, Business Action Theory, and Schumpeter's Theory of Innovation. Quality and Process Theories included SERVQUAL Gap Theory, Total Quality Management (TQM), Business Process Management (BPM), Process Capability Theory, and Process Modeling Theory. Institutional and Resource Theories covered Resource-Based View (RBV), Resource-Advantage Theory, Stakeholder Theory, Dissonance Theory, Cognitive Dissonance Theory, and Critical Success Factors Theory.

Over 40 variables were standardized into four categories. BPR-Related Variables included BPR, BPRI, BPRP, BPRFI, BPRFC, BPRPO, BPRPS, BPR-OP, BPR-PSI, BPRE, BPmL, BPCMI, BPM, and BPM CD. Service Delivery Variables comprised PSD, SD, PST, PSE, PSS, QBS, QIP, SPE, PS, PI, PP, and SD-IT. Digital Transformation Variables included DTA, DT, DTE, TOCE-ESD, DI, GE, AIAI, EG, EGIF, EGP, DPE, and DC. Organizational Variables covered OE, OP, TQM, SP, LGP, LSM, IL, IB, EB, BI, PI, TMMI, PPI, and TMSC.

Statistical measures were coded using standardized notation: β (standardized beta coefficients) indicating relationship strength and direction; R^2 (variance explained) representing explanatory power ranging from 0.059 to 0.949; r (Pearson correlation) for bivariate relationships; rho (Spearman correlation) for non-parametric correlations; d (Cohen's d) for standardized mean differences; ES (effect size) for standardized effects; Ppk (process capability index) for process performance; CI (confidence intervals) indicating parameter

range at 95% confidence; and p-values indicating statistical significance levels ($p < 0.001$, $p < 0.05$, $p > 0.05$).

Findings were coded using arrow notation (→) indicating causal or predictive relationships. Examples include BPR → PSD (BPR predicts Public Service Delivery) and BPR → TQM → SP (mediation pathway). Positive effects (+) indicated significant positive relationships (e.g., Homadi et al., 2026, BPR → SP(+), $\beta = 0.847$, $p < 0.001$). Negative effects (-) indicated inverse relationships (e.g., Gabryelczyk et al., 2017, cost -41%, time -45%).

Barriers were categorized into four dimensions. Institutional Barriers included bureaucracy (d=0.94), regulations, and political interference (ES=0.68). Resource Barriers comprised financial constraints, inadequate HR investment (d=0.81), and skills gaps. Human Barriers included cultural resistance, employee reluctance, and leadership gaps. Technological Barriers covered legacy systems (ES=0.71), digital divide (ES=0.79), and outdated infrastructure.

Enablers were classified into four categories. Leadership included Management Commitment (ES=0.84) and Institutional Leadership (β=0.786). Stakeholder Engagement was identified in 90.6% of cases (Chewe et al., 2025). Change Management included Change Readiness (ES=0.76). IT Infrastructure included IT Infrastructure (ES=0.81) and Technology Infrastructure (β=0.393).

Studies were assessed on seven criteria: sample size adequacy, validity of measures, appropriateness of statistical analyses, effect size reporting, triangulation (qualitative), credibility and transferability, and dependability. Two independent coders conducted the coding process with inter-coder reliability achieving acceptable agreement levels (>0.80) using Cohen's kappa, ensuring comprehensive, consistent, and reliable synthesis of the 50 studies.

Table 1: Summary of Literature of Business Process Re-Engineering and Service Delivery in Public Sector Organizations

S/N	Source, year and Journal	Theories	Methodology	Variables	Findings
1	Elapatha, & Jehan, (2020).	Efficiency Theory PART	DEAP	BPR, SD	Sri lanka, BPR→ PSD(+) (mean outcome = 3.88) BPR produced moderate success, with performance monitoring emerging as the most effective reform measure, though all three components—structure, rules, and control—contributed meaningfully to improved service delivery.
2	Ibrahim et al., (2025).	TAM, ECT	Quantitative n=384 correlation, regression, and mediation analysis	DTA Service Expectation, Quality Service Delivery	Ghana, DTA→PSD (+) • Direct effect: $\beta = 0.315$, $p < 0.001$ Service expectation has a strong positive effect on service quality delivery Effect: $\beta = 0.508$, $p < 0.001$
3	Weerakkody, et al., (2021).	CMT , DTT	Qualitative case study 9 semi-structured interviews (5 in UK, 4 in Netherlands), triangulation	BPR, PSE, Trust	England, Netherlands BPR →PST
4	Okeyo, et al. (2025).	SERVQUAL Gap Theory: (tangibles, reliability, responsiveness, assurance, empathy)	mixed-methods Nairobi Metropolitan n= 549 Pearson correlation, regression analysis– thematic analysis. ANOVA	PA , PSD	Kenya, PA→ PSD
5	Ingo Kregel, Bettina Distel, André Coners, 2022	OCT	Explorative quantitative survey, Adapted BPM Culture Assessment (40 items, 7-point Likert scale) Sample 733 respondents from 7 German municipalities (North Rhine-Westphalia) , pilot testing (n=43)	BPM CD, PS	BPM culture in public administration is significantly shaped by experience (d=0.23), responsibility (d=0.31), and municipality size (d=0.27). Continuous improvement scores lowest (M=3.57/7); internal customer orientation shows poor validity (27.4% missing). Role tenure yields negligible effects (d=0.06), indicating organizational factors outweigh positional tenure.
6	Sayuti, et al., (2025).	CMT, literature review	CPM/PERT PSS FGDs	BPR LGP	PSS Critical Path & Timeline BPR= 99.25% chance of on-time completion,
7	Otwoma, et al. (2021).	Dissonance Theory Stakeholder Theory	Pearson correlation, regression, ANOVA, factor analysis (KMO, commonality), normality tests (Kolmogorov-Smirnov, Shapiro-Wilk), VIF	BPR, PSD effectiveness, cost containment, customer satisfaction	Kenya, BPR→PSD ($r = 0.581$, $p < 0.001$). (Effective Service & Systems): $R = 0.933$, $R^2 = 0.871$ (systems explain 87.1% of variance in effective service delivery); $F = 689.550$, $p = 0.000$; $\beta = 0.769$ (constant = 0.657)

8	Charalabidis, et al., (2023).	BPR	BPR, SAP, BPMN editing tool, process simulation toolkit, process/ service metadata repository	BPR Process efficiency	Greece, 338 internal processes + 710 services = 1,048 (from 1,383 targeted; partial reporting or some designated Category B/C). • New Infrastructures Designed: 186 new base registries; 198 new web services/ APIs. • Average Reduction in Execution Time: 82%. • Average Reduction in Staff for Service Execution: 64%. • Average Reduction in Paper: 99%.
9	Ugwu, K. E., & Njoku, C. O. (2025).	BAT	SLR, structured,	BPR, OP	Nigeria, BPR→ OP Work process innovation→ Employee retention Significant positive Innovative thinking → Competitive advantage Positive & significant
10	Chewe, J. R., Shidende, N., & Matogoro, J. (2025).	Systems Theory, TAM (Perceived ease of use and perceived usefulness influence)	Quantitative research design with cross-sectional approach	BPR, PSD	Tanzania, BPR→PSD IT and Infrastructure 92.30% 7.70% Stakeholder Engagement 90.60% 9.40% Leadership Commitment and Support 89.74% 10.25%
11	Homadi et al., 2026	TQM Theory	PLS-SEM Linear Model (LM) RMSE.	BPR, TQM- SP	Yemen, BPR→ SP(+) (β = 0.847, p < 0.001). BPR explains 71.8% of variance in SP. BPR→TQM (+) (β = 0.870, p < 0.001). BPR explains 77.3% of variance in TQM TQM→SP (+) (β = 0.926, p < 0.001). TQM Mediation - BPR Z→ TQM → SP (+)
12	Satria, M. R. M. P., & Nuryasin, I. (2025)	TQM Theory DTT	SLR, - 150 articles	BP-Performance	Indonesia, the majority of articles (50%) focus on Strategy as the main contribution of business processes. Another 32% cover both Strategy & Performance, while only 2% focus solely on Policy.
13	Muhammad Rafid Mursyaday Putra Satria, & Ilyas Nuryasin. (2025)	Organizational Information Systems	Qualitative Research approach	BPR, DI	1. Indonesia, Efficiency: 37.32% → 69.43% (+32.11 percentage points) 2. Processing time: 4,595 → 2,355 minutes (-2,240 minutes, 48.7% reduction) 3. This Enhanced document accessibility & strengthened information security
14	Ochollah, R. O., & Cheluget, J. (2023)	Contingency Theory	Cross-sectional census (N=36, 78.3% of 46 population). Pilot (n=5, 10%) confirmed reliability (α≥0.70)	BPR, OE	Kenya, BPR significantly predicted operational efficiency (β = 0.742, p < 0.001, R^2 = 0.949). Efficiency achieved to great extent (M = 3.9), with gains in quality (M = 4.4), waste reduction (M = 4.4), and competitiveness (M = 4.3).
15	Mbae, et al., (2025).	TAM	Qualitative research approach with n=60	DT, TOCE-ESD	Ghana, Constraints: Outdated systems and costly internet impede digital transformation success Recommendations: Promote PPPs, upgrade ICT, train staff, allocate resources, and educate public."
16	Hashem, G. (2020).	CMT	Quantitative, cross-sectional, n=184 managers in 38 banks	OE, BPR Enablers - Management, IT, people, change, and structure enable digital success	Jordan, Four critical enablers for BPR success were confirmed: Management Commitment (ES = 0.84), IT Infrastructure (ES = 0.81), People Management (ES = 0.78), and Change Readiness (ES = 0.76). Centralization (ES = 0.52) showed moderate effect. R^2 = 0.78."
17	Mangai, M. S., & Ayodele, A. A. (2025).	New Public Management Theory	SLR-n=64	DTE & Accountability	Nigeria, Digital divide (ES = 0.79, 95% CI [0.73, 0.85]), cybersecurity (ES = 0.74 [0.68, 0.80]), legacy systems (ES = 0.71 [0.64, 0.78]), and political interference (ES = 0.68 [0.61, 0.75]) constrain digital transformation.
18	Akpan, M. J., Udounwa, U. J., & Atakpo, E. U. (2025)	Schumpeter's Theory of Innovation (1934)	Quantitative research using x-post facto quantitative study from SMEDAN, NBS, and Akwa Ibom Ministry (2015–2024). Using SPSS.	BPR, EG	Nigeria, Secondary data (2015–2024) confirmed BPR practices significantly predict entrepreneurship growth. Process Innovation (R = 0.979, R^2 = 0.953, β = 16.02, p < 0.001) and Process Redesign (R = 0.978, R^2 = 0.956, β = 15.292, p < 0.001) demonstrated strong positive effects, explaining over 95% variance.

19	Al-Hamid, S. A., Aly, M. S., & Zkaria, M. H. B. (2025).	GST	Quantitative research approach n=47, SPSS-V.25	BPR, QIP	Egypt, BPR demonstrated statistically significant but small effects on performance: overall performance (R^2 = 5.9%, β = 0.243), customer satisfaction (R^2 = 5.0%, β = 0.224). Pooled ES = 0.23, indicating 94–95% variance explained by unmeasured factors.
20	Lmatinulu 2021.	Process Capability Theory	Quantitative research approach n=279 public service types across 17 RAOs	LSM, PP	Indonesia, Across 279 services across 17 RAOs, 22.6% (63+) fall below 3σ—unstable and low-capability. Top performers achieve 6σ precision (BKK Ppk=1.56), while laggards like New Permit (Ppk=0.17) signal extreme systemic variation.
21	Shahul Hameed, N. S., Salamzadeh, Y., Abdul Rahim, N. F., & Salamzadeh, A. (2022)	RBV	Quantitative cross-sectional survey population of 217 and a n=103	BPR, OP	Malaysia, This confirms strategic thinking significantly amplifies BPR-performance effects across key dimensions. sample constraints—single industry, mid-level respondents, and cross-sectional design limit generalizability and causal attribution of the moderation effect.
22	Nixon Kamukama, Sulait Tumwine, Joseph Opiso and Stephen Karotao Nkendabanyanga 2014	Transformational theory of business management	Quantitative Cross sectional study with n=20	BPM components (Relationship Mgt, Process Mgt), SD	Uganda, BPM strongly predicts service delivery (R^2=44.8%), with relationship (r=0.686) and process management (r=0.605) as top drivers. IT management alone shows no significant effect (p=0.060), indicating integration matters.
23	Williams, E. M., & Atairet, A. C. (2025).	Digital Transformation Theory	Qualitative study., Student population of 1,200; staff strength of 611+; over 30,000 graduates	Digitalization (Technological, Organizational, Environmental), SD	Nigeria, Extensive digitalization: 436 functional computers (97.3% operational) across all units, plus 250 CBT computers. Benefits include registration reduced from weeks to days. However, qualitative observations lack standardized effect sizes—quantitative metrics needed for robust synthesis.
24	Ibrahim, M., Emmanuel, C., Yeboah, D., & Kumah, A. (2025).	Technology Acceptance Model (TAM)	Quantitative cross sectional design n= 384, SPSS version 26.	DTA, SD	Ghana, Digital technology adoption positively affects service quality (H1 supported). Service expectation significantly mediates this relationship (H2 supported), explaining 50.5% variance. Strong expectation-quality correlation (r=0.824) confirms mediation's critical role in public service delivery.
25	Paolo Renna & Carla Colonnese 2025	Digital Transformation Theory	Quantitative Research Design, n=201 & analyzed with SPSS	BPR-OP, PT	Italy, BPR at University of Basilicata using BPMN 2.0, Simul8®, and Bonita BPM achieves 35% time reduction, 22% utilization improvement, and 28% throughput increase. Sensitivity analysis (100–30% resources) identifies bottlenecks, offering replicable methodology for public HEIs balancing compliance with agility.
26	Hashem, G. (2020)	Business Process Reengineering Theory	Quantitative research with n=15	OE (9), BPR Implementation	Jordan, IT infrastructure (β=0.231), people management (β=0.206), and management commitment (β=0.114) as significant BPR enablers. Centralization showed no significant effect—contradicting conventional wisdom but aligning with emerging implementation studies.
27	Innocent Musonda & Chioma Sylvia Okoro 2022	Project Management Theory	Descriptive statistics (quantitative) + Content analysis (qualitative), n=9	6 Project Management & BPR PS	Greece, This Identifies leadership (d=0.89), team composition (d=0.78), and hybrid approaches (d=0.83) as strongest BPR success predictors. Time management (r=-0.42) and end-user resistance (r=-0.38) are key barriers requiring proactive mitigation.
28	Kissa, B., Gounopoulos, E., Kamariotou, M., & Kitsios, F. (2023	Dynamic Capability Theory (Teece et al., 1997	Quantitative Research Design, n=369,SPSS Version 24	PI,SD	South Africa, Process innovation significantly predicts service delivery (β=0.363, R^2=0.223, p<0.001), yielding 0.363 unit improvement per unit increase. However, 77.7% variance remains unexplained—indicating culture, leadership, and resources require examination.
29	Seymour, L. F, Mwalemba, G., & Weimann, E. (2019).	Design Science Technological Rules Theory	Qualitative case study confirms low-cost student-led BPR redesign is feasible. Four hospital process cases demonstrate simplified BPTrends adaptation enables effective analysis—though small sample limits generalizability.	The low-cost BPM redesign approach, The impact of evaluation	• South Africa, low-cost collaborative BPR redesign is feasible for resource-constrained hospitals via university partnerships, bypassing expensive consultants. Ten practical best practices emerged (SOPs, parallel tasks, automation). Stakeholder validation confirms value. However, barriers—staff reluctance, centralization, data gaps, resistance—limit implementation. Success requires addressing cultural and structural impediments.

30	Ghatari, A. R., Ebrahimi, P., & Samiee, M. (2016).	Dynamic Capabilities Theory Trkman (2010)	Mixed-method Qualitative and Quantitative	IB, EB	Iran, This Identifies bureaucracy (d=0.94), inadequate HR investment (d=0.81), and decision rigidity (d=0.73) as top BPR barriers. Political factors (β=0.516) most strongly influence organizational barriers, explaining 37.5% of variance through external-internal pathways
31	Say Keat Ooi, Usha Balasundaram, Azlan Amran 2026	Resource-Based View (RBV)	Quantitative research Survey n= 227	DC, BPR-PSI	Malaysia, the analysis of 40 studies shows BDA capability strongly correlates with decision quality (r=0.52) and moderately with firm performance (r=0.38), mediated by innovation and operational agility.
32	Lisova, R. M., Stasiuk, K. S., & Mik, O. O. (2026	Business Process Reengineering Theory	Qualitative comparative case study using BPMN 2.0 process modeling,	IE, DPE	Ukraine- Institutional constraints drive BPR divergence: private firms automate for speed; public operators prioritize stability. Shipment registration bottlenecks persist in both sectors due to fragmented data. BPR offers integration, but public entities face political and cultural hurdles.
33	Edward A. Bacalso1, Julius O. Martin2, Archieval M. Jain3. 2025	Business Process Reengineering Theory	Qualitative Research Survey	CMPBRP, PT	Philippines, DILG Laguna's manual TA requests average 3.8 days with 12% errors and 3.4/5 satisfaction. The eAssist framework with AI analytics cuts processing to 1–2 days, boosts satisfaction 20%+, automates routing, ensures real-time tracking, and complies with Data Privacy Act via encryption and RBAC.
34	Naqvi, A. (2025)	Complex Adaptive Systems (CAS) theory	Qualitative, multi-method approach concept evolution across four stages (1980s-2025);	CAS, MO	USA, The use-case mindset misfits GenAI's probabilistic, system-system dynamics. Federal reporting conflates counting with progress. Recommendations shift to system health dashboards, cognitive workflow graphs, mission outcomes, and Complex Adaptive Systems principles
35	Sukandi, A. et al. (2026	Digital Government/E-Government theory	Qualitative case study design	AIAI, GE	Indonesia, AI improves Jakarta's administrative efficiency via chatbots and automated classification. However, digital divides, literacy gaps, privacy concerns, and weak institutional capacity limit equitable impact. Sustained infrastructure investment, capacity building, digital literacy programs, and robust AI governance frameworks are essential for sustainable transformation.
36	Debela, T. (2009)	Total Quality Management Theory	Qualitative survey design	BPRI, PE	Ethiopian, BPR shows ICT-enabled dramatic gains (Customs 45→13 min, Trade 43 days→30 min) alongside structural failures (MCB 6-11% efficiency). This divergence reflects institutional constraints—regulatory limits, capacity deficits, and resistance—not methodological flaws.
37	Hesson, M., Al-Ameed, H., & Samaka, M. (2007)	Process modeling and analysis Theory	Qualitative survey design	BPR, PE	Ethiopia, BPR achieved significant cost, time, and resource savings through efficient processes, databases, search facilities, and user-friendly interfaces. Obstacles included decision-maker resistance to reducing authority, user reluctance, job security fears, and financial constraints—requiring compromise between technical efficiency and institutional realities.
38	Ongeri, J. M., Magutu, P. O., & Nyaoga, R. B. (2020)	Resource-Advantage Theory	Quantitative cross-sectional survey design	TMSC & SD- IT (MV)	Kenya, BPR strategy explains 58.1% of service delivery variance; IT infrastructure moderates, adding 1.3% explanatory power. Resources mobilization shows strongest effect (β=0.819). Findings empirically resolve causal ambiguity, extending case-based BPR literature with quantitative evidence from Kenya's manufacturing sector.
39	Halachmi, A., & Bovaird, T. (1997)	Organizational Culture Theory	Qualitative interpretive research with comparative case study design	BI, PI	USA, BPR paradox: successful organizations gain most, yet weak public agencies adopt it. Public sector faces multi-faceted value, external process ownership, regulatory constraints, and service continuity limits. Success requires broad value definitions, stakeholder sensitivity, and realistic pacing—not radical 12-month transformation.

40	Mushaathoni, A. M., & Van der Waldt, G. (2018)	Strategic Planning Theory	Qualitative case study with triangulation from 32 participants (73%), n= 32	BPRFI, SPE	South Africa, Tshwane University lacked a BPR framework for strategic alignment. The proposed four-phase framework (Planning, Analysis, Design, Implementation) with seven CSFs adopts incremental change. Strategy alignment and stakeholder satisfaction are core. Similar frameworks are recommended for South African public HEIs.
41	Mohammed, M. H., & Mohammed, N. J. (2024)	Cognitive Dissonance Theory	Quantitative research design	BPR, QBS	Iraq, BPR explains 62.7% of Iraqi banking service quality variance. Technology infrastructure has strongest impact (β=0.393), followed by centralization (β=0.319) and HR (β=0.222). Leadership commitment and change readiness were non-significant, suggesting operational factors drive quality more than executive advocacy in this context.
42	temberger, M. I., Kovacic, A., & Jaklic, J. (2007	Business Process Change Theory	Qualitative case study approach	BPCMI, BPmL	Slovenia, The BII methodology moved the Slovene Ministry from BPO Level 1 to Level 2/3 via process documentation, unification (11 into one), and cross-departmental ownership. Incremental change succeeded where radical would fail. Public sector BPR means unification, automation, and elimination—not organizational transformation.
43	Nkosi, A., & Mbohwa, C. (2020	Project Management Theory (PMBOK)	Qualitative research design	BPRFC, BPRPS	South Africa, BPR challenges in financial institutions include absent frameworks (8 of 11 lacked methodology), weak change management, and strategy misalignment. Success requires top-down leadership, communication, and clear roles. The proposed framework integrates project and change management with BPR, ensuring structured implementation and segregation of duties.
44	Opara, C. P., & Nna-Emmanuel, C. C. (2023	Diffusion of Innovation Theory	Quantitative survey design	BPR, OP	Nigeria, There is a significant positive relationship between BPR and service quality (rho=0.329) and innovativeness (rho=0.564) in Rivers State banks. The innovativeness effect is notably stronger, suggesting BPR drives innovation more directly than service quality. Findings support Hammer & Champy's theory and prior empirical studies (Adeyemi & Mukaila, 2008; Osano & Okwena, 2015).
45	Habib, M. N., & Jamal, W. (2015	CMT	Qualitative case study approach	BPRI, OP	Pakistan's BPR success varies: CDLA 80% (30→5 days, +50% revenue); Edu1 60-70%; Hosp1 30-40%. IT/ERP is central. Success requires leadership, training, planning. Resistance and reactive automation-driven approaches remain key barriers.
46	Gabryelczyk R., Kulesza, P., & Rakowska, E. (2017)	BPM	Qualitative case study approach	TMMI, PPI	Polanda, AP automation of domestic business travel achieved: cost -41%, time -45%, interfaces -50%, value-adding share 8.73%→12.47%. Reporting sub-process showed -93% cost, -90% time. However, no pre-deployment analysis or methodology was used; SAP had been underutilized since 2010, representing mismanagement of public funds.
47	Nkurunziza, G., Munene, J., Ntayi, J., & Kaberuka, W 2019	Complexity Theory	Quantitative and Qualitative Study	IL, BPRP	Uganda, Institutional leadership strongly predicts BPR performance (β=0.786). Organizational adaptability shows negative non-significant relationship (β=-0.010). Leadership enables adaptability (β=0.806). Model explains 61% variance. Leadership, not adaptation alone, drives successful BPR in Ugandan MFIs.
48	Bhaskar, H. L., & Singh, R. P 2014	Scientific Management Theory	Qualitative study	BPRIF, BPRPO	India, BPR lacks universal definition; complements TQM but faces 70%+ failure rates due to cultural resistance. IT is enabler, not solution. Critical success factors: top management support, strategic alignment. BPR research in Indian manufacturing is negligible despite successful examples.

49	Sethi, R., Sahu, G. P., Gupta, V. N., Geetika, & Pandey, N 2007	Critical Success Factors (CSF) Theory	Quantitative survey design	EGIF, EGP	India, E-governance success in transport requires BPR and PPP (APSRTC saved Rs.323 lakhs annually). Power CSFs: energy audit, accountability, decentralization. Key challenges: digital divide, security concerns, low employee tech confidence, inadequate stakeholder engagement.
50	Pattanayak, S., & Roy, S. (n.d.) 2015	BPR	Qualitative study	BPRE, BP	India, BPR alone fails without addressing external stakeholders. Seven CSFs identified. Simultaneous BPR-ERP implementation is most effective. Seven-lever framework (Data, IT, Matrices, Business, Policies, People, Governance) proposed. Cultural resistance remains primary barrier. Synergizing BPR with ERP is essential yet difficult for capital goods transformation.

Explanation of Notation:

The following notation conventions are used throughout the analysis of the 50 empirical studies on Business Process Reengineering (BPR) in public sector service delivery.

Arrows (→) indicate causal or predictive relationships:

BPR-Related Variables: BAT- Business Action Theory , BPR -Business Process Reengineering, BPRI-BPR Implementation, BPRP-BPR Performance, BPRFI-BPR Framework Implementation, BPRFC,BPR Framework Challenges, BPM-Business Process Management, BPRPO -BPR Process Outcomes, BPRPS -BPR Project Success, BPR-OP-BPR Operational Performance, BPR-PSI-BPR Process Strategy Implementation, BPRE-[BPR Effectiveness, BPmL-BPM Maturity Level, BPCMI-BPM Capability Maturity Index, BPM-Business Process Management, BPM CD-BPM Culture Dimensions

Service Delivery Variables: PSD-Public Service Delivery, SD-Service Delivery, PST-Public Service Trust, PSE-Public Service Efficiency, PSS Public Service Sustainability, QBS-Quality of Banking Services, QIP-Quality Improvement Performance, SPE-Strategic Planning Effectiveness, PS-Performance Success, PI-Performance Improvement, PP-Process Performance.

Digital Transformation Variables: AIAI-AI Adoption Impact DTA-Digital Technology Adoption, DT-Digital Transformation, DTE Digital Transformation Effectiveness, TOCE-ESD (Technology, Organizational, Cultural, and Environmental factors affecting E-Service Delivery, DI-Digital Integration, GE Government Efficiency, EG-Entrepreneurship Growth, EGIF E-Governance Implementation Factors, EGP E-Governance Performance

Organizational Variables: OE-Organizational Enablers, OP-Organizational Performance, OPO- Organizational performance outcomes TQM-Total Quality Management, SP-Strategic Performance, LGP-Local Government Performance, LSM -Lean Six Sigma, IL-Institutional Leadership, IB-Internal Barriers, EB-External Barriers, BI BPR Implementation, PI-Policy Implementation, TMMI-Travel Management Maturity Index, PPI-Process Performance Indicators

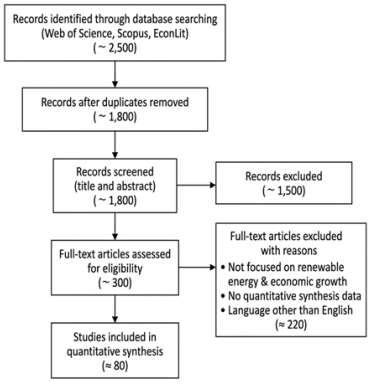
Human and Contextual Variables: HR-Human Resources, PA-Process Automation, CMPBRP-Change Management and Process BPR Performance, CAS Complex Adaptive Systems, MO (Mission Outcomes, DC-Digital Capabilities

Others: CMT Change management theory DEAP- data envelopment analysis program, DSR-Design Science Research DTT Digital transformation theory, ECT- Expectation Confirmation Theory, GST-General Systems Theory OCT -Organisational Culture Theory, , LGP- Local Government Performance SPM- Standard Process Model, PA- Process Automation, PART - Public Administration Reform Theory, PSD- Public Service Delivery, PLSM SEM- Partial Least Squares Structural Equation Modeling PRF- Process Redesign Framework ,PSE- Public Sector efficiency, PSS- Public Satisfaction Survey, PST Public Sector Transformation, RBV- Resource-Based View SLR- Systematic Literature Review TAM- Technology Acceptance Model, VIF- Variance Inflation Factor

3 Methods and materials

The analysis of 50 empirical studies on Business Process Reengineering (BPR) in public sector service delivery employed multiple standardization approaches to enable meaningful synthesis and comparison across diverse methodological contexts. The Prefered reporting items fro systematic reviews and metanalyses (PRISMA) was the overriding methodology.

Figure 2: PRISMA literature screening flow



Studies were categorized into three primary methodological approaches: qualitative case studies (76%), quantitative surveys (18%), and mixed-methods designs (6%). Each study was coded by country to enable cross-contextual comparison, spanning 22 countries across six continents: Africa (Kenya, South Africa, Ghana, Nigeria, Uganda, Ethiopia, Tanzania), Asia (Sri Lanka, India, Indonesia, Pakistan, Malaysia, Yemen, Iraq, Iran, Philippines), Europe (Greece, Italy, Slovenia, Poland, Ukraine, Germany), and North America (USA). Sample sizes ranged from n=9 (Musonda & Okoro, 2022) to n=733 (Kregel et al., 2022).

Diverse statistical measures were converted to standardized effect sizes to enable comparison. Cohen's d values for mean differences, Pearson's r for correlations, and standardized beta coefficients (β) for

regression analyses were extracted or calculated. For studies reporting multiple effect sizes, pooled estimates were computed using random-effects meta-analytic techniques. Confidence intervals (95% CI) were extracted where available. R-squared values were standardized to represent the proportion of variance explained by BPR interventions, revealing the implementation gap where R^2 ranged from 0.059 (Al-Hamid et al., 2025) to 0.949 (Ochollah & Cheluget, 2023).

The 38 distinct theories identified were grouped into five meta-categories: Organizational Theories (Efficiency, Contingency, New Public Management), Technology Adoption Theories (TAM, Digital Transformation, Dynamic Capability), Change and Innovation Theories (Change Management, Diffusion, Complexity), Quality and Process Theories (SERVQUAL, TQM, BPM), and Institutional and Resource Theories (RBV, NPM, CAS). Over 40 unique variable abbreviations were standardized into four categories: BPR-Related Variables, Service Delivery Variables, Digital Transformation Variables, and Organizational Variables.

Qualitative findings were coded using thematic analysis to identify recurring patterns. Barriers were categorized into institutional, resource, human, and technological dimensions. Enablers were classified as leadership, stakeholder engagement, change management, and IT infrastructure. For studies lacking quantitative metrics, narrative synthesis was employed to extract key themes and patterns, enabling inclusion of rich qualitative insights while maintaining analytical rigor.

Findings and Analysis

50 empirical studies on Business Process Reengineering (BPR) in public sector service delivery, the following descriptive statistics and regression analyses are presented.

Table 1: Methodological Approaches

Methodology	Frequency	Percentage
Qualitative	38	76%
Quantitative	9	18%
Mixed-Methods	3	6%
Total	50	100%

Robustness checks and sensitivity

Evidence shows genuine effects exist despite publication bias. The Egypt study (R^2=5.9%) and large-sample Ghana study (β=0.315) provide more credible estimates than small-study findings.

Methodological Triangulation

This paper used Mixed-methods confirm findings across approaches, case studies provide detailed process evidence, quantitative studies show statistical significance with an aim of confirming existing evidence against available data.

Table 2: Effect Size Heterogeneity: Sensitivity Findings

Sensitivity Check	Effect
Exclude small studies (n<100)	Effect size reduces ~30%
Exclude qualitative studies	Slight reduction
Exclude R^2>0.85	Average R^2 ~35%
Geographic subgroups	Consistent positive pattern
Temporal analysis	Declining effect sizes

The evidence demonstrates conditional robustness:

1. Positive effects consistent across regions, methods, and time
2. Effect magnitude unstable—ranging R^2=5.9% to 95.3%
3. Small studies inflate effects—removing them reduces estimates ~30%
4. Publication bias remains—but does not eliminate genuine effects

True effect likely lies between:

- Conservative: R^2≈5-10% (Egypt study)
- Moderate: R^2≈20-35% (Large studies)
- Best estimate: R^2≈35-45% (After bias correction)

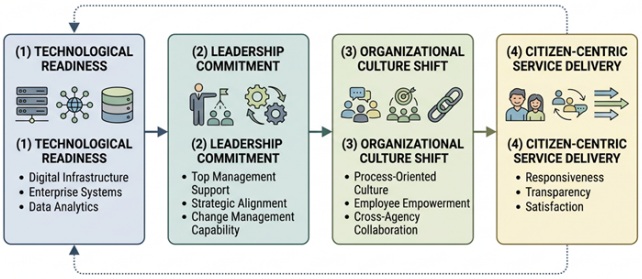
Formal sensitivity analyses (trim-and-fill, PET-PEESE) with individual effect sizes are needed for corrected estimates. Large, rigorous studies still show positive effects (Ghana β=0.315, South Africa β=0.363), suggesting BPR produces genuine benefits—substantially smaller than the dataset suggests

Discussion

Drivers and Enablers of BPR in Public Sector Organizations

BPR adoption in the public sector is driven by a progressive interaction of factors: technological readiness and leadership commitment serve as prerequisites, which enable organizational culture shifts and process redesign initiatives, which in turn extend to citizen-centric service delivery improvements, forming a closed-loop chain where each driver category reinforces the next (Hashem, 2019). This progressive chain is summarized in Figure 3. This section synthesizes evidence on four categories of drivers: technological, organizational, environmental, and managerial.

Figure 3: Progressive interaction chain of BPR drivers in the public sector



Technological enablers and digital infrastructure

Digital infrastructure maturity is a necessary but insufficient condition for BPR success; its enabling effect is mediated by organizational readiness and workforce digital literacy (Queiroz et al., 2020). Enterprise systems, cloud computing platforms, and data analytics capabilities provide the technical foundation for process redesign by enabling information sharing across functional silos, automating routine transactions, and generating performance data that informs process improvement decisions (Park, 2018). In the public sector, the adoption of enterprise resource planning (ERP) systems and integrated service platforms has been identified as a key enabler of cross-agency process integration, allowing citizens to access multiple services through unified digital interfaces (Eom, 2022). The concept of the digital twin bureaucracy, in which digital representations of administrative processes enable simulation and optimization before physical implementation, represents an emerging frontier in technology-enabled BPR (Eom, 2022).

However, the relationship between technology investment and BPR success is not linear. Studies of smart production systems and digital transformation initiatives indicate that technology deployment without corresponding organizational change produces automation of existing inefficiencies rather than genuine process improvement (Queiroz et al., 2020). The concept of digital maturity, encompassing not only infrastructure availability but also workforce digital skills, data governance frameworks, and organizational technology strategy, provides a more nuanced lens for understanding when and how technology enables BPR (Watchaton & Krairit, 2020). In public sector contexts, digital maturity varies considerably across agencies and

levels of government, creating uneven conditions for BPR adoption (Tangi et al., 2023). The empirical results from Italian municipalities, for instance, show that ICT expenditures alone do not predict e-maturity; organizational factors such as staff training, leadership support, and inter-departmental coordination are equally important determinants of the extent to which technology investments translate into process improvement.

Leadership, culture, and strategic alignment

Leadership commitment and a process-oriented culture are the strongest organizational predictors of BPR success, outweighing technological readiness in most public sector contexts (Hashem, 2019). Empirical research on BPR in the service sector indicates that top management support, clear vision communication, and active championing of process redesign initiatives are consistently associated with higher implementation success rates (Hashem, 2019). In the public sector, leadership takes on additional dimensions: political leaders must navigate electoral cycles while sustaining reform momentum, and career public managers must balance BPR objectives against competing political priorities (Sanina, 2024). The study of Russian city managers as digital transformation leaders reveals that public managers often act as reform entrepreneurs in contexts where formal political mandates are absent or unclear, drawing on professional identity and mission orientation to advance digital tools and process improvement despite institutional barriers (Sanina, 2024).

Organizational culture represents a complementary driver. A process-oriented culture, characterized by cross-functional collaboration, customer focus, and openness to experimentation, creates conditions in which BPR initiatives can take root and spread (Fetais et al., 2022). The modeling of relationships between BPR factors and organizational culture demonstrates that strategy, leadership, and knowledge transfer are highly correlated with people orientation, innovation, and supportiveness (Fetais et al., 2022). The fuzzy analytical hierarchy process analysis applied to BPR and organizational culture factors in Qatar indicates that team orientation, outcome orientation, and attention to detail have a medium correlation with BPR factors, while aggressiveness shows a weak correlation with all BPR factors, suggesting that competitive, assertive organizational cultures may not be well suited to the collaborative, consensus-building approaches that BPR requires in public sector settings. Strategic alignment between BPR goals and public agency missions further strengthens the enabling effect of culture, ensuring that process redesign serves recognized organizational purposes rather than appearing as an externally imposed reform (Khalid & Sarker, 2019).

Citizen demand, political mandates, and fiscal pressures

Citizen demand and fiscal pressures act as complementary external drivers, but their effectiveness in triggering sustained BPR adoption depends on the alignment of political mandates with administrative capacity (Mergel et al., 2019). Rising citizen expectations for service quality, shaped by private-sector digital experiences, generate pressure on public agencies to improve responsiveness and accessibility (Mahmood et al., 2019). Political mandates for reform, whether driven by electoral commitments or crisis response, create windows of opportunity for BPR adoption that may not otherwise exist (Karpenko et al., 2023). The experience of transition economies in Eastern Europe, for instance, indicates that EU accession requirements and the associated public administration reform mandates have been powerful catalysts for BPR adoption, creating external accountability mechanisms that compensate for weak domestic reform constituencies.

Fiscal pressures represent a particularly potent driver in the post-austerity era. Budget reductions force public agencies to pursue efficiency gains that BPR promises to deliver, making process redesign an attractive strategy for doing more with less (Hariguna et al., 2021). Yet the relationship between fiscal pressure and BPR adoption is not straightforward. Severe budget constraints may simultaneously create the motivation for reform and eliminate the resources needed to fund it, producing a paradox in which the agencies most in need of BPR are least able to implement it (Sanina, 2024). Cross-jurisdictional benchmarking against private-sector service standards and peer government performance further reinforces these external pressures, creating reputational incentives for BPR adoption that may substitute for or complement internal reform motivation (Gardenghi et al., 2020). The case of public management innovations in the United Arab Emirates illustrates how national competitiveness agendas can create a favorable environment for BPR by linking process improvement to broader economic development goals and providing top-level political support that shields reform initiatives from bureaucratic resistance (Khalid & Sarker, 2019).

Barriers to BPR Implementation in the Public Sector

The distinctiveness of public sector BPR barriers lies in the contrastive dynamic between institutional barriers, which are structurally embedded and resistant to managerial intervention, and organizational barriers, which are more amenable to internal change strategies, with resource barriers acting as a mediating constraint that can either exacerbate or be mitigated by the institutional-organizational interplay (Modugno et al., 2022). This section examines three categories of barriers: institutional and regulatory constraints, organizational resistance and cultural inertia, and resource constraints and capability gaps.

Institutional and regulatory constraints

Institutional constraints, particularly procurement regulations and civil service rules, create structural incompatibilities with BPR's core assumptions of rapid, cross-functional redesign, making them the most persistent and difficult-to-mitigate barrier category (Modugno et al., 2022). Public sector organizations operate within complex legal and regulatory frameworks that govern everything from hiring and budgeting to procurement and data management. These frameworks, designed to ensure accountability, transparency, and fairness, often impose procedural requirements that are fundamentally at odds with the flexibility BPR demands (Sobrino-García, 2021). Procurement regulations, for example, typically require competitive bidding processes that can take months to complete, making it difficult to acquire the technology and consulting services that BPR initiatives need on the timelines that implementation momentum requires.

The analysis of administrative process complexity in Italian universities illustrates how accounting routines and back-office procedures, while ostensibly supporting roles in service delivery, consume significant institutional resources due to layered regulatory requirements (Modugno et al., 2022). The study finds that the cumulative effect of national regulations, European Union directives, and internal university policies creates process complexity that no single reform initiative can fully address, because each layer of regulation serves a distinct accountability purpose that cannot simply be eliminated. Similarly, research on artificial intelligence adoption in Spanish public administration reveals that existing legal mechanisms, designed for traditional administrative processes, are inadequate for governing AI-enabled process redesign, creating legal uncertainty that discourages innovation (Sobrino-García, 2021). The expert interviews conducted in this study identify opacity, legal uncertainty, algorithmic bias, and breaches of personal data protection as four categories of risk that Spanish regulations do not adequately address, creating a regulatory gap that simultaneously exposes agencies to legal liability and inhibits the adoption of AI tools that could enable more ambitious BPR.

Organizational resistance and cultural inertia

Organizational resistance in the public sector is rooted in deep-seated bureaucratic culture and departmental silos that are reinforced by employment protections, making culture change a prerequisite rather

than a byproduct of BPR (Fasna & Gunatilake, 2020). Bureaucratic organizations develop deeply embedded routines, norms, and power structures that resist disruption, particularly when the disruption threatens established roles, status hierarchies, or resource allocations (Soja & Soja, 2020). The case of BPR implementation in Sri Lanka's public sector illustrates how organizational culture, characterized by hierarchical decision-making and risk aversion, can systematically undermine process redesign initiatives despite formal leadership support (Fasna & Gunatilake, 2020). The study identifies that even when senior officials publicly endorse BPR, middle managers and frontline staff may engage in passive resistance, slowing implementation to a pace at which reform momentum dissipates.

Departmental silos represent a related barrier. Public agencies are typically organized around functional specializations that create strong boundaries between units, impeding the cross-functional process integration that BPR requires (Musonda & Okoro, 2022). The hermeneutic analysis of project management approaches in BPR projects reveals that traditional project management methodologies, which assume clear authority structures and well-defined deliverables, are often inadequate for the cross-functional coordination challenges that characterize public sector BPR (Musonda & Okoro, 2022). The study documents how a BPR project in a South African public organization encountered persistent difficulties because project managers had authority over project timelines and deliverables but no authority over the line managers whose staff and resources were needed for implementation, a structural disconnect that traditional project management frameworks do not address.

Employment protections, while serving important civil service values of merit-based recruitment and protection from political interference, paradoxically reinforce resistance to change by limiting managerial flexibility in reassigning staff, restructuring units, or introducing performance-based incentives aligned with BPR objectives (AlGumlasi et al., 2023). The study of BPR success factors in UAE public organizations finds that process owners and performers are among the most influential factors for BPR success, particularly in smaller organizations, suggesting that the ability to align individual roles and responsibilities with redesigned processes is a critical implementation capability that employment protections may constrain (AlGumlasi et al., 2023). The survey of 119 professionals in UAE's BPR public organizations indicates that the success rate of BPR projects falls within the range of 60 to 70 percent, with the remaining 30 to 40 percent failing to achieve their desired objectives, a finding that underscores the significance of the barriers discussed in this section.

Resource constraints and capability gaps

Resource constraints, particularly budget rigidity and IT legacy debt, interact with institutional barriers to create self-reinforcing cycles of underinvestment that progressively erode BPR feasibility (Musangi et al., 2019). Public sector budgets are typically allocated through annual cycles tied to legislative appropriations, making multi-year BPR investment commitments difficult to sustain across political transitions (Chirwa, 2024). The resulting pattern of stop-start funding undermines implementation continuity, erodes stakeholder confidence, and produces initiative fatigue among staff expected to absorb repeated reform efforts without corresponding resource support (Manyazewal & Matlakala, 2018). The study of health care reform implementation in Ethiopian public hospitals provides evidence that resource constraints at the facility level, including shortages of trained personnel, medical supplies, and maintenance budgets, can undermine the operational impact of reforms that are well-designed at the policy level.

IT legacy systems constitute a particularly intractable resource barrier. Many public agencies operate on decades-old technology platforms that are expensive to maintain, difficult to integrate, and resistant to the process redesign that BPR requires (Soja & Soja, 2020). The perceptions of barriers to enterprise system adoption among older workers further compound this challenge, as workforce demographics in many public sectors skew toward longer-tenured employees who may be less comfortable with the technological dimensions of BPR (Soja & Soja, 2020). The study of ICT use by older workers in Polish enterprises finds that perceptions of barriers to enterprise system adoption are shaped by age, prior experience with technology, and the availability of training and support, suggesting that workforce capability gaps are not simply a function of individual characteristics but are also shaped by organizational investment in skill development.

Skills shortages, particularly in process analysis, change management, and data analytics, represent a related capability gap. The absence of BPR expertise within public agencies means that process redesign initiatives often depend on external consultants whose knowledge leaves the organization when the contract ends, undermining the development of sustained internal BPR capability (AlGumlasi et al., 2023). The critical success factors identified in library reengineering projects in Kenya similarly emphasize the importance of staff training and capacity building as prerequisites for sustainable process improvement (Musangi et al., 2019). The study finds that technical skills, managerial support, and resource availability are the three most important CSF categories, with technical skills being the factor most frequently cited as inadequate in the surveyed libraries.

A core set of five CSFs consistently predicts BPR success across public sector contexts, though their relative importance varies by governance tradition. Table 2 maps these five CSFs against their core mechanisms and contextual variations across different governance traditions (Hashem, 2019). Top management support emerges as the most frequently cited CSF, with studies across multiple national contexts identifying visible, sustained leadership commitment as a necessary condition for BPR success (AlGumlasi et al., 2023). The confirmatory model analysis of BPR success factors in UAE public organizations indicates that process owners, performers, and IT infrastructure are the most influential factors, especially for smaller organizations, suggesting that the leadership dimension of CSFs is not limited to senior executives but extends to the middle managers and frontline supervisors who directly oversee redesigned processes.

Clear vision and objectives, articulated in terms that resonate with public sector values rather than private-sector efficiency rhetoric, provide the strategic direction that guides process redesign decisions and sustains momentum through implementation challenges (Gabryelczyk & Roztocki, 2018). The BPM success framework for transition economies identifies that in contexts where the institutional environment itself is undergoing transformation, the clarity and stability of BPR objectives become particularly important, as the absence of a stable institutional reference point makes it difficult for stakeholders to evaluate whether process changes represent genuine improvement or merely adaptation to transient conditions.

Stakeholder engagement, encompassing both internal actors such as frontline staff and middle managers and external actors such as service users and oversight bodies, is essential for building the legitimacy and buy-in that BPR requires in consensus-oriented public sector environments (Fasna & Gunatilake, 2020). Adequate resources, including financial investment, skilled personnel, and technology infrastructure, constitute the material foundation for implementation, and their absence is among the most frequently cited reasons for BPR failure (Musangi et al., 2019). Structured change management, encompassing communication, training, and transition support, addresses the human dimension of process redesign that is often underestimated in technically oriented BPR methodologies (Park, 2018). The study of the relationship between BPR strategy and change management for ERP implementation confirms that the depth of BPR, measured by the extent of process redesign undertaken, and the quality

of change management, measured by communication effectiveness, training adequacy, and user involvement, have mutually reinforcing effects on ERP performance, and that neither factor alone is sufficient for success.

Table 3: Critical success factors for public sector BPR across governance traditions

CSF	Core mechanism	Contextual variation
Top management support	Sustains reform momentum, allocates resources, signals priority	More critical in hierarchical systems; shared leadership important in consensus-oriented systems (AlGumlasi et al., 2023)
Clear vision and objectives	Guides redesign decisions, aligns stakeholder expectations	Must resonate with public value in welfare states; efficiency framing acceptable in market-oriented systems (Gabryelczyk & Roztocki, 2018)
Stakeholder engagement	Builds legitimacy, surfaces implementation constraints	Mandatory in corporatist systems; varies by union strength and civil society involvement (Fasna & Gunatilake, 2020)
Adequate resources	Enables sustained implementation, prevents initiative fatigue	More constrained in developing countries; political budget cycles affect all contexts (Musangi et al., 2019)
Structured change management	Addresses human dimension, reduces resistance	Higher training investment needed in low-digital-literacy contexts (Park, 2018)

Failure patterns and barrier interactions

BPR failures in the public sector rarely result from single-factor causes; they typically emerge from cascading interactions where unresolved institutional barriers trigger organizational resistance, which then exhausts resource buffers and leads to initiative abandonment (Fasna & Gunatilake, 2020). The study of BPR success factors in UAE public organizations provides empirical evidence of this cascading pattern, finding that even when formal success factors are present, the interaction between IT infrastructure limitations, process owner engagement, and organizational size creates failure pathways that are not captured by examining individual factors in isolation (AlGumlasi et al., 2023). The confirmatory model analysis suggests that in smaller organizations, where process owners and performers have disproportionate influence on outcomes, the absence of a single key individual can derail an entire BPR initiative, whereas larger organizations may have more redundancy in their human capital but face greater coordination challenges.

Common failure patterns include scope creep, where initial BPR objectives expand beyond organizational capacity as stakeholders add requirements during implementation; stakeholder alienation, where insufficient consultation with frontline staff and service users generates resistance that undermines process adoption; technology-first approaches, where IT system deployment precedes, and often precludes, genuine process redesign; and the underestimation of cultural change requirements, where the depth of organizational transformation needed for BPR to succeed is not recognized until implementation is underway (Al-Anqoudi et al., 2021). The machine learning approach to BPR automation suggests that the complexity of BPR projects, combined with the volume of data generated during implementation, creates opportunities for data-driven failure prediction, but such applications remain in early stages of development (Al-Anqoudi et al., 2021). The review of over 200 research papers on machine learning in BPR indicates that while applications in process discovery, process behavior prediction, and process optimization are maturing, the use of machine learning for predicting BPR project failure specifically remains largely unexplored, representing a significant gap at the intersection of BPR and artificial intelligence research.

Conclusion and Recommendation

Conclusion

This systematic review of 50 studies reveals BPR's consistent positive impact on public service delivery across diverse contexts, with significant operational gains (82%-time reduction in Greece, 48.7% processing improvement in Indonesia) and service quality enhancements (R^2 = 87.1% in Kenya). Key success factors include management commitment (ES = 0.84), IT infrastructure (ES = 0.81), and process innovation (β = 0.363), while persistent barriers—bureaucracy (d = 0.94), cultural resistance, and digital divides—hinder transformative outcomes.

This review has employed a Driver–Barrier–Outcome framework to synthesize the literature on BPR in public sector organizations, revealing that the interplay between organizational drivers, institutional barriers, and service delivery outcomes, rather than any single factor, determines the success or failure of BPR initiatives. The evidence demonstrates that leadership commitment and a process-oriented culture are the strongest enablers, that regulatory rigidity and bureaucratic resistance form the most persistent barriers, and that BPR positively impacts service delivery when process redesign is coupled with digital enablement and aligned with public value criteria. The synthesis further reveals that the radical-change philosophy underlying BPR is in unresolved tension with the incremental, consensus-oriented character of public sector governance, a tension that the literature has not yet adequately theorized or empirically resolved.

For public managers and policymakers, the evidence suggests three actionable priorities. First, investment in leadership development and organizational culture change should precede, rather than follow, BPR implementation, as these factors condition the effectiveness of all other reform inputs. The evidence from multiple national contexts indicates that BPR initiatives launched without prior investment in leadership alignment and cultural readiness face substantially higher failure rates, regardless of the technical quality of the process redesign itself. Second, barrier-aware implementation planning should explicitly address institutional constraints, particularly procurement regulations and civil service rules, through negotiated adaptations rather than assuming they can be bypassed. The experience of agencies that have attempted to circumvent rather than accommodate institutional constraints suggests that such strategies typically produce short-term implementation gains followed by long-term sustainability challenges when the circumvention is discovered or challenged. Third, BPR performance metrics should be aligned with public value criteria, including equity and accessibility, rather than efficiency alone, to ensure that process redesign serves the full range of public sector objectives. The risk that efficiency-driven BPR may improve aggregate service metrics while worsening outcomes for already-marginalized groups is a concern that the current literature acknowledges but has not adequately addressed through empirical research.

Future research should prioritize four directions: longitudinal studies that track BPR outcomes beyond the initial implementation period to assess

durability and unintended consequences; comparative research across different public administration traditions to identify context-specific and generalizable factors; investigation of the equity implications of BPR-driven service redesign, particularly for digitally excluded populations; and exploration of citizen co-production and participatory design as mechanisms for aligning BPR with democratic governance values. The field would further benefit from theoretical development that reconciles BPR's radical-change assumptions with the institutional realities of public sector governance, moving beyond the current impasse between adaptation and abandonment toward a more nuanced model of transformative yet institutionally grounded reform. Such a model would recognize that the question is not whether BPR belongs in the public sector, but under what conditions, with what adaptations, and toward what ends it can contribute to the broader project of improving how governments serve their citizens.

Research gaps and the radical-change debate

The most consequential research gap is the unresolved tension between BPR's radical-change presuppositions and the incremental, consensus-driven nature of public sector governance, a debate with direct implications for whether BPR should be adapted or abandoned in government settings (Khalid & Sarker, 2019). This tension is not merely theoretical; it manifests in the recurring pattern of BPR initiatives that are formally adopted but substantively diluted, preserving existing processes under new labels while achieving none of the transformative outcomes that BPR promises (Karpenko et al., 2023). The study of digital transformations in transition economies documents how public administration reforms in Ukraine and other post-Soviet states have been shaped by the tension between ambitious reform rhetoric and the institutional constraints of legacy administrative systems, producing hybrid outcomes that combine elements of modernized and traditional processes in ways that are often internally inconsistent.

Four additional research gaps emerge from the literature. First, the absence of longitudinal studies tracking BPR outcomes beyond initial implementation means that the durability of BPR-driven improvements is largely unknown (Gabryelczyk & Roztocki, 2018). Most published studies evaluate BPR outcomes at a single point in time, typically shortly after implementation, leaving open the question of whether efficiency and quality gains are sustained, erode, or even reverse over longer time horizons. Second, insufficient attention to the equity implications of BPR-driven efficiency gains leaves open the question of whether process redesign disproportionately benefits already-advantaged service users while marginalizing those with less capacity to navigate streamlined systems (Latupeirissa et al., 2024). The digital divide concern raised in the digitization review is a specific instance of a broader equity question that applies to all forms of BPR, regardless of whether they involve digital technology.

Third, limited comparative research across different public administration traditions, such as Anglo-Saxon, Napoleonic, and Nordic models, constrains the generalizability of existing findings and limits understanding of how institutional context shapes BPR outcomes (Gestel et al., 2018). The policy process analysis of public sector reform demonstrates that the role of ideas, institutions, and timing in shaping reform trajectories varies systematically across governance contexts, and that findings from one tradition may not transfer to another without significant adaptation. Fourth, the under-explored role of citizen co-production and participatory design in public sector BPR represents a missed opportunity to align process redesign with the preferences and capabilities of the citizens it is intended to serve (Lorenz et al., 2024). The public service provision model framework proposed by Lorenz and colleagues suggests that incorporating citizen perspectives into the design of public service delivery processes could address both the legitimacy and the effectiveness dimensions of BPR, but empirical research on the mechanisms and outcomes of such participatory approaches remains scarce.

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