

Process-Based Management Practices and the Performance of Ministry of Health Projects in Nairobi City County, Kenya

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DOI: <https://doi.org/10.5281/zenodo.22338435>

Published Date: 05-September-2026

Abstract: Kenya's devolved health system has not translated increased project activity into consistently better service delivery, and the management practices adopted by implementing agencies remain an under-examined explanation. This study examined the influence of four process-based management practices; total quality management (TQM), business process re-engineering (BPR), enterprise resource planning (ERP) and entrepreneurial orientation (EO) on the performance of Ministry of Health projects in Nairobi City County. The study was anchored on Deming's quality theory, the Motwani et al. process re-engineering framework, Barney's resource-based view and the Lumpkin and Dess entrepreneurial orientation model. A descriptive design was adopted and a census conducted on 121 heads of department across four projects: the Nairobi City County primary healthcare facilities, the KEMRI stem cell and regenerative medicine laboratory, the Dishu na County school feeding kitchens and the Pharmacy and Poisons Board Pill Scan project. One hundred usable responses were returned (83 per cent); Cronbach's alpha was 0.850 or above for all five constructs. Multiple linear regression was estimated after tests for linearity, multicollinearity, normality and homoscedasticity. The model was significant, $F(4, 95) = 9.618$, $p < .001$, explaining 28.8 per cent of the variance in performance. TQM had a positive and significant effect ($B = .381$, $p = .020$) and EO a positive and significant effect with the largest standardised coefficient ($B = .367$, $\beta = .299$, $p = .020$). BPR was positive but not significant ($B = .215$, $p = .161$) and ERP negative and not significant ($B = -.106$, $p = .500$), despite both being rated highly descriptively. The study concludes that behavioural practices delivered measurable performance gains while technical practices did not, and attributes the divergence to implementation conditions such as skills, infrastructure, leadership commitment and change management rather than to weakness in the practices themselves.

Keywords: process-based management; total quality management; business process re-engineering; enterprise resource planning; entrepreneurial orientation; project performance; public health projects; Kenya.

1. INTRODUCTION

Process-based management treats a project as a network of interrelated activities that must be performed in sequence to achieve a defined objective, proceeding through three movements: documenting the process, measuring how it performs against project goals, and implementing the improvements the measurement indicates. Its appeal to project managers is practical. Understanding how processes interact reduces costly wrong decisions, process analysis makes it possible to anticipate weak points before they materialise, and continuous improvement keeps the process adaptable to shifting demand. Its difficulties are equally practical: without knowledge, training and commitment on the part of management and project teams, the discipline consumes time and money without delivering the control it promises.

Healthcare systems worldwide are contending with rising costs, workforce shortages, inequity of access and financial strain, and the pressure is more acute in sub-Saharan Africa. Oleribe et al. (2019) report that more than 5,000 Nigerians travel abroad for treatment each month, at an estimated cost of USD 1.2 billion annually, and conclude that Africa's health

systems require radical rather than incremental solutions. Kenya's position is comparable. The doctor-to-population ratio is approximately 1:16,000 against a reference ratio of 1:1,000, a shortfall that overburdens the workforce and depresses the quality of specialised care. Many facilities operate without essential equipment, and where equipment exists, weak maintenance and thin operating budgets leave capacity under-exploited. Most patients cannot access electronic health records and facilities are largely unable to exchange clinical information, so diagnostic tests are repeated unnecessarily. Out-of-pocket payments still account for roughly 26 per cent of total health expenditure, pushing timely care out of reach for many households. Devolution was intended to make services more locally responsive, but administrative inefficiency and uneven resource distribution persist across counties.

Nairobi City County presents a distinct version of these challenges: its population density raises both demand for health resources and exposure to communicable disease, which makes the effectiveness of implementing agencies' management practices a question of direct public consequence. Four Ministry of Health initiatives form the setting for this study. Nineteen primary healthcare centres were constructed and equipped in Nairobi's informal settlements under a KES 869.4 million procurement agency contract with the African Medical and Research Foundation, serving 925,941 outpatient cases and supporting 5,763 deliveries between 2021 and July 2023. The KES 77.2 million stem cell and regenerative medicine laboratory at the Kenya Medical Research Institute opened in July 2023 as the first facility of its kind in the sub-region. The Dishu na County school feeding programme operates seventeen central kitchens and has served more than 310,000 pupils. The Pharmacy and Poisons Board Pill Scan project introduced near-infrared screening for substandard and falsified medical products in July 2024.

Existing scholarship on these management practices has largely been conducted outside the public health sector or with methodological limitations that constrain transfer. Jilani (2014) examined enterprise resource planning and procurement efficiency exclusively within manufacturing, leaving the service sector untested. Milanoi (2016) collected data only from managers, so the findings do not represent the wider workforce whose behaviour determines whether a practice is implemented. Choo and Lee (2020) sampled by convenience from a single investment club, and Bhaskar and Singh (2016) relied on secondary sources that may not reflect current conditions. A sectoral, contextual and methodological gap therefore remains: no reviewed study has examined the four practices jointly, with primary data, among the operating staff of public health projects in a Kenyan county. This study addresses that gap by estimating the four effects simultaneously, so that their relative magnitudes can be observed.

The study's specific objectives were to establish the influence of total quality management, to determine the influence of business process re-engineering, to assess the influence of enterprise resource planning integration, and to analyse the influence of entrepreneurial orientation on the performance of Ministry of Health projects in Nairobi City County. Each was operationalised as a null hypothesis tested at the 5 per cent level.

2. THEORETICAL FRAMEWORK

Deming's Quality Theory. Deming (1986) argued that an emphasis on quality lowers costs, while an emphasis on cost lowers quality and ultimately raises costs: an organisation working to deliver the best quality at the best price protects its margin and avoids paying twice for work that must be redone. The framework maps directly onto the TQM constructs measured here. Deming's insistence on continually improving systems corresponds to continuous improvement; his argument that quality improvement exists to satisfy the customer to customer focus; his emphasis on enabling staff to participate in quality initiatives to employee engagement; and his fourteen points depend throughout on top management commitment. Its recognised weaknesses are that organisations sometimes reduce its data orientation to a numbers game, and that its emphasis on system-wide causes makes individual accountability difficult to establish.

The Process Re-engineering Framework. Business process re-engineering originates with Hammer and Champy (1993), who defined it as a fundamental rethinking and radical redesign of processes aimed at dramatic improvement in cost, quality and duration. Motwani, Jiang, Kumar and Youssef (1998) operationalised it in six phases: understanding the need for change and committing to it; initiation, in which a vision is set and a redesign team formed; programming, in which the new process is designed; transformation, in which it is piloted at small scale; implementation across the organisation through leadership, staff education, structural alignment and resource reallocation; and evaluation against the intended goals. Critics observe that the framework may under-specify the change management the transition requires, and that few organisations can absorb the cost and dedicated team a full re-engineering project demands.

The Resource-Based View. Barney (1991) holds that organisations differ because they command different resources, and that resources yield sustained advantage when they are valuable, rare, difficult to imitate and non-substitutable. The framework grounds the ERP variable: an ERP platform is a mechanism for organising and leveraging an institution's resources personnel data and skills, inventory, financial information and supplier relationships across functional boundaries (Morrisson, 2020). The view is largely internal, however, saying little about market change or technological shift, and it offers criteria for evaluating resources with limited guidance on developing them.

The Lumpkin and Dess Entrepreneurial Orientation Model. Lumpkin and Dess (1996) extended Miller's (1983) conception of entrepreneurship by specifying five dimensions: autonomy, the latitude teams have to make independent decisions; innovativeness, the use of creativity and experimentation; pro-activeness, a forward-looking posture that captures opportunities before competitors; competitive aggressiveness, the intensity with which an organisation seeks to outperform rivals; and risk-taking, the willingness to commit resources to uncertain ventures. The model treats the five as independent and equally weighted, which does not capture their interaction in practice; and in the health sector one further caution applies, since excessive risk-taking carries consequences that do not arise in commercial settings (Rastoka, Petkovic, & Radicic, 2022).

The study accordingly modelled project performance as a function of four independent variables. TQM was measured through quality planning and control, continuous improvement, customer focus, employee engagement and leadership; BPR through strategic alignment of processes, governance and accountability, tools and techniques, information technology integration and organisational culture; ERP through the integration of project management, financial management, human resource management and supply chain management; and EO through the five Lumpkin and Dess dimensions. Performance was measured through the dimensions proposed by Shenhar and Dvir (2007): project efficiency against schedule, budget and scope; team satisfaction; impact on the customer; business results; and preparation for the future.

3. EMPIRICAL LITERATURE REVIEW

Total quality management. Quality in health services is not discretionary: Erkan and Unal (2022) observe that health care quality directly involves human life, so diagnostic and nursing services must comply with contemporary medical standards and meet client needs. Oloo (2017) related quality control procedures to organisational performance among mobile telephone communication firms in Nairobi County and found that they accounted for 72 per cent of the variation in performance, though the setting — few firms serving a particular market — limits transfer to public service delivery. Closer to the present case, Laboso (2016) examined how customer focus, supplier relationships, management involvement and continuous improvement influenced the effectiveness of project management at Moi Teaching and Referral Hospital, and found each factor directly related to project effectiveness.

Business process re-engineering. Phiphopsuthipai boon and Boonsiri (2016) re-engineered the service processes of a computer centre in Bangkok and reported measurable gains: working time fell from 172 to 166 hours on identical infrastructure, service cycle time from 2.57 to 1.36 days per sample, and rework from 10.47 per cent to 1.2 per cent. Chutri, Chisoro and Karodia (2014) found that 77.97 per cent of respondents at a South African electrical utility reported increased customer satisfaction after an asset control division was re-engineered, though the study was localised with a low response rate. Evidence from health settings is more mixed: Olajide, Lawal and Alaka (2019) found business process renovation positively correlated with operational effectiveness at two Lagos health centres, while cautioning that hospitals require approaches specific to their own service delivery.

Enterprise resource planning. Fiaz, Ikram and Ilyas (2018) and Morrisson (2020) report that ERP systems improve system quality, organisational data quality and individual outcomes in healthcare services, and that a properly implemented system helps medical personnel deliver higher-quality care. Evidence on performance effects is inconsistent. Buleje (2014) evaluated ERP adoption among small and medium enterprises in Florida using Tobin's Q, labour productivity and profit margin, and found no statistically significant differences four years after implementation. Jilani (2014) found that variation in system control explained 36.6 per cent of procurement efficiency in Nairobi manufacturing firms and system speed 83.2 per cent, but examined only manufacturing. Wambui and Tumuti (2021) found that integrating finance, procurement, human resource and customer service modules positively affected the performance of Safaricom PLC.

Entrepreneurial orientation. Rezaei and Ortt (2018) found that the EO dimensions operate differently: innovativeness improved research and development performance, pro-activeness improved marketing and sales outcomes, and risk-taking had a negative effect on production; the study did not address autonomy or competitive aggressiveness. Kivuitu (2021) reports that 84 per cent of small and medium enterprise respondents in Nairobi City County held that innovation affected performance, 70 per cent that pro-activeness did and 59 per cent that risk-taking did. Nwankwo, Eze and Kanyangale (2022), using a descriptive design and multiple regression on 400 managers of agro-processing enterprises in Anambra State, Nigeria, found all four examined dimensions positively related to performance.

The reviewed studies establish that the four practices are generally, though not uniformly, associated with organisational performance, and they share limitations relevant to the present enquiry: several were conducted in manufacturing or telecommunications rather than in health or the wider public service, several drew on managers alone or on secondary data, and none examined the four practices together in a single model, so their relative contributions cannot be compared from the existing evidence.

4. METHODOLOGY

A descriptive research design was adopted. Descriptive designs examine the characteristics of a population or phenomenon and support the systematic description of patterns and frequencies that can then be organised, tabulated and presented (Cooper & Schindler, 2011). The design suited a study whose object was to establish which management practices are in use across the four projects and how they relate to performance.

The unit of analysis was the project and the unit of observation the head of department. Four Ministry of Health projects formed the study population — the KEMRI stem cell and regenerative medicine laboratory, thirteen Nairobi City County primary healthcare facilities, eleven Dishi na County kitchens and the Pharmacy and Poisons Board Pill Scan project — across which 121 heads of department were enumerated: seven at KEMRI, sixty-five across the primary healthcare facilities, forty-five across the Dishi na County kitchens and four at the Pharmacy and Poisons Board. A census was adopted rather than a sample. Cooper and Schindler (2011) hold that a census is preferable where the population is small enough to permit complete coverage and high accuracy is required, and Mugenda and Mugenda (2009) recommend census surveys for populations below 200 respondents. Complete enumeration eliminated sampling bias.

Primary data were collected using a structured questionnaire administered through a drop-and-collect procedure, with items scored from 1 (complete disagreement) to 5 (complete agreement). Content validity was established by developing the instrument in consultation with university supervisors and pilot testing it on 16 individuals drawn at random from the target population; the pilot identified no ambiguity (Creswell & Creswell, 2017). Reliability was assessed using Cronbach's alpha, following Hair, Black, Babin and Anderson (2020) in treating values at or above 0.7 as satisfactory, 0.8 as good and above 0.9 as excellent. The coefficients obtained were 0.939 for total quality management, 0.856 for business process re-engineering, 0.943 for enterprise resource planning, 0.892 for entrepreneurial orientation and 0.850 for project performance, so all five constructs were retained for inferential analysis.

Data were analysed in SPSS. Mean scores were interpreted using an equal-interval classification in which the scale range was divided by the five response categories to yield an interval width of 0.8, giving five bands from complete disagreement (1.00–1.80) to complete agreement (4.21–5.00). Standard deviations were read as indicating similar responses below 0.5, moderate variation between 0.5 and 1.0, and high variation above 1.0. Inferential analysis used multiple linear regression of the form $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$, where Y is project performance and X_1 to X_4 are the composite indices for TQM, BPR, ERP and EO respectively. Unstandardised estimates are reported as B and standardised estimates as β . Linearity was assessed by scatter plot, multicollinearity by tolerance and the variance inflation factor, normality by the Kolmogorov–Smirnov and Shapiro–Wilk tests, and homoscedasticity by a plot of standardised residuals against standardised predicted values.

Authorisation was obtained from the School of Business, Economics and Tourism at Kenyatta University and a research licence from the National Commission for Science, Technology and Innovation before data collection. Participation was voluntary, respondents were informed of the purpose of the study, and personal details were not disclosed to third parties.

5. RESULTS AND DISCUSSION

5.1 Response rate and respondent characteristics

Of the 121 questionnaires administered, 100 were completed and returned, a response rate of 83 per cent, which reduces non-response bias and supports generalisation to the staff of these four projects. Women formed 58 per cent of respondents, consistent with the composition of Kenya's health workforce. Eighty-three per cent were under 35 and 60 per

cent had fewer than five years of experience, so the study largely captured the perspectives of staff in the early to middle stages of their careers, who are typically receptive to new management practices; the correspondingly small number of long-serving respondents limits the historical perspective available in the data. All respondents held a tertiary qualification — 62 per cent a diploma, 26 per cent an undergraduate degree, 10 per cent a postgraduate degree and 2 per cent a postgraduate diploma — which supports the assumption that the questionnaire was understood as intended.

5.2 Descriptive statistics

Respondents were first asked whether they considered each practice to influence project performance. Ninety-six per cent affirmed this for total quality management, 85 per cent for business process re-engineering, 91 per cent for enterprise resource planning and 89 per cent for entrepreneurial orientation. They were then asked to rate their agreement with statements describing each construct. Table 1 reports the item means and standard deviations for the four practices and for project performance.

Table 1: Descriptive statistics for the study variables (n = 100)

Statement	Mean	Std. dev.
Total quality management		
Quality planning and control sets objectives, strategies and measures	4.60	0.696
Continuous improvement keeps the project relevant over time	4.54	0.797
Customer focus clarifies customer expectations	4.35	0.757
Engaging staff at all levels boosts morale and job satisfaction	4.51	0.825
Effective leadership guides employees towards a common objective	4.69	0.692
Overall	4.54	0.753
Business process re-engineering		
Procedures are aligned to the project's strategic objectives	4.39	0.931
Good governance improves accountability for roles	4.45	0.812
BPR tools and techniques are specified and followed through	4.26	0.960
Re-engineering processes requires IT-based solutions	4.18	0.850
Organisational culture supports successful BPR implementation	4.38	0.896
Overall	4.33	0.890
Enterprise resource planning		
Project management integration organises workflows	4.30	0.882
Financial integration enhances timely and accurate reporting	4.35	0.892
Human resource integration focuses staff on high-value tasks	4.29	0.946
Supply chain integration improves inventory and procurement	4.40	0.804
Overall	4.34	0.881
Entrepreneurial orientation		
Pro-activeness: anticipating challenges and opportunities	4.26	0.949
Risk-taking: growth opportunities are missed without it	4.13	0.991
Autonomy: teams pursue new problem-solving ideas	4.16	0.861
Competitive aggressiveness: creating superior customer value	4.09	1.006
Innovation raises productivity and keeps the project competitive	4.37	0.884
Overall	4.20	0.938
Project performance		
The project was completed on time, within budget and as per the scope	3.71	1.175
Project teams were contented with their work	3.82	0.978
Project customers are satisfied with the outcomes	3.83	1.025
Net returns on investment in the projects are positive	3.83	1.055
Strategies are in place to adapt to long-term dynamic trends	3.93	1.094
Overall	3.82	1.065

Source: Survey data (2026). Items scored 1 (complete disagreement) to 5 (complete agreement).

Three of the four independent variables were rated within the complete-agreement band, and the fourth, entrepreneurial orientation, at the upper boundary of the agreement band. Total quality management recorded the highest overall mean (4.54) and the lowest dispersion ($SD = 0.753$), indicating both strong endorsement and broad consensus; effective leadership was the single most highly rated item in the study (4.69), followed by quality planning and control (4.60). Business process re-engineering recorded 4.33 with greater dispersion ($SD = 0.890$), with accountability through good governance most strongly supported (4.45), the use of IT-based solutions lowest (4.18) and the tools-and-techniques item most variable ($SD = 0.960$) — a pattern that suggests uneven technical capability and resourcing across the four projects rather than disagreement about the value of the practice. Enterprise resource planning recorded a comparable 4.34, with supply chain integration most strongly endorsed (4.40). Entrepreneurial orientation recorded the lowest overall mean of the four (4.20) and the highest dispersion ($SD = 0.938$), with innovation most endorsed (4.37) and competitive aggressiveness least (4.09) — an expected pattern in a public health setting.

Project performance itself recorded an overall mean of 3.82 with the highest dispersion in the study ($SD = 1.065$), placing it in the agreement rather than the complete-agreement band. Adaptability to long-term trends was the best-rated dimension (3.93), while completion on time, within budget and to scope was the weakest (3.71) and the most variable ($SD = 1.175$), indicating that the classic triple constraint remains the least consistently achieved aspect of performance. This is consistent with Ahmed (2023), who observes that time, cost and scope are frequently not precisely achieved because of project-environment challenges and external constraints.

5.3 Diagnostic tests

The scatter plot of the dependent against the independent variables showed a general upward trend with no curvilinear pattern, satisfying the linearity assumption, and standardised residuals were randomly distributed around the zero line without a cone shape, satisfying homoscedasticity. Tolerance values were 0.655 for TQM, 0.557 for BPR, 0.449 for ERP and 0.467 for EO, with corresponding variance inflation factors of 1.526, 1.796, 2.225 and 2.139 — all above the 0.1 tolerance floor and below the critical VIF value of 5, so all four variables were retained. Both normality tests returned significance values below 0.05 for every variable, indicating that the data were not normally distributed. The study proceeded on the basis of the central limit theorem, under which parametric tests remain defensible for samples above 30; with $n = 100$ the departure from normality was not treated as invalidating the regression, though it is noted as a limitation rather than a resolution.

5.4 Regression results

The four practices were regressed jointly on project performance. Table 2 reports the coefficients, together with the model summary and analysis of variance.

Table 2: Regression coefficients (n = 100)

Model	B	Std. error	Standardised β	t	Sig.
(Constant)	0.080	0.646	—	0.124	0.902
Total quality management	0.381	0.161	0.253	2.361	0.020
Business process re-engineering	0.215	0.152	0.164	1.414	0.161
Enterprise resource planning	−0.106	0.156	−0.088	−0.678	0.500
Entrepreneurial orientation	0.367	0.155	0.299	2.364	0.020

Source: Survey data (2026). Dependent variable: performance of Ministry of Health projects. Model summary: $R = .537$, $R^2 = .288$, adjusted $R^2 = .258$, std. error of the estimate = .71711. ANOVA: $F(4, 95) = 9.618$, $p < .001$; regression sum of squares 19.783, residual 48.854, total 68.637.

The multiple correlation coefficient of 0.537 indicates a moderate relationship between the four practices taken together and project performance, and the coefficient of determination shows that 28.8 per cent of the variance is explained by the model, leaving 71.2 per cent attributable to variables outside it. The small difference between R^2 and adjusted R^2 indicates a stable model with no evidence that redundant predictors are inflating the fit. The model was statistically significant, $F(4, 95) = 9.618$, $p < .001$, with the calculated F statistic well above the critical value of approximately 2.47 at the 5 per cent level. The estimated model is: Project performance = $0.080 + 0.381$ (TQM) + 0.215 (BPR) − 0.106 (ERP) + 0.367 (EO).

Total quality management had a positive and statistically significant effect ($B = 0.381$, $\beta = 0.253$, $t = 2.361$, $p = .020$), so the first null hypothesis is rejected. Holding the other variables constant, a one-unit increase in TQM practices is

associated with a 0.381-unit improvement in performance. The result is consistent with the descriptive data, in which leadership and quality planning attracted the highest mean scores in the study, and it indicates that projects prioritising quality assurance procedures are better placed to complete tasks efficiently, reduce errors and satisfy stakeholders. The finding aligns with Owino and Muturi (2022), who report that quality management activities improve the performance of public health projects in Kenya by strengthening process consistency, and with Ibrahim et al. (2023), who identify leadership commitment, process control and continuous improvement as the TQM dimensions that most improve organisational and project outcomes.

Business process re-engineering carried a positive coefficient but was not statistically significant ($B = 0.215$, $\beta = 0.164$, $t = 1.414$, $p = .161$), so the second null hypothesis is not rejected. The direction suggests that improvements in re-engineering are associated with improvements in performance, but the relationship cannot be distinguished from chance in this sample. The result is notable precisely because it diverges from the descriptive findings, in which respondents agreed strongly on the importance of governance, accountability, process alignment and supportive culture. The most economical reading is that respondents recognise BPR as valuable but that it has not been implemented far enough in these projects to produce measurable gains. Njuguna and Omwenga (2020) attribute the failure of BPR initiatives in the Kenyan public sector to limited resources, employee resistance, bureaucracy and lengthy approval processes; the high dispersion recorded on the tools-and-techniques item, and the comparatively low mean returned on IT integration, are consistent with that reading, as is Obialor (2024), who finds that BPR improves service quality only where the necessary resources and willingness to accept change are present.

Enterprise resource planning carried a negative coefficient and was not statistically significant ($B = -0.106$, $\beta = -0.088$, $t = -0.678$, $p = .500$), so the third null hypothesis is not rejected. This should not be read as evidence that ERP systems are detrimental to project success. ERP implementation is expensive, requires substantial technological investment, skilled staff and structural adjustment, and is routinely accompanied during roll-out by disruption, reduced output and resistance from staff unfamiliar with the new system — short-run costs that can plausibly overshadow the expected gains within the observation period. Kiptoo and Were (2023) identify inadequate skills development, system complexity and high financial requirements as the principal barriers to successful ERP implementation in Kenyan public institutions, and Talo and Rahardjo (2025) report integration difficulty, cost and employee resistance as recurrent obstacles across settings. The divergence between the descriptive results — in which respondents endorsed the integration of project, financial, human resource and supply chain management — and the regression result is best explained as a gap between the recognised potential of ERP and its realised benefit under present implementation conditions.

Entrepreneurial orientation had a positive and statistically significant effect ($B = 0.367$, $\beta = 0.299$, $t = 2.364$, $p = .020$), so the fourth null hypothesis is rejected, and with the largest standardised coefficient in the model EO emerges as the strongest single determinant of performance among the four practices. The descriptive data locate the source of the effect in innovation, the most highly rated EO dimension, followed by pro-activeness. Health projects operate under shifting regulatory frameworks, resource constraints, divergent stakeholder expectations and rapid technological change; organisations that innovate and anticipate absorb those conditions better than those that respond only after the fact. The finding is consistent with Mwangi and Ngugi (2022), who report that entrepreneurial orientation significantly improves the performance of public sector projects in Kenya by encouraging adaptive strategies and innovative problem-solving.

5.5 Behavioural and technical practices compared

The four practices divide cleanly along a behavioural–technical line. The two behavioural practices, total quality management and entrepreneurial orientation, both produced positive and statistically significant effects. The two technical practices did not: BPR was positive but insignificant and ERP was negative and insignificant. Institutional culture, leadership commitment, innovation and continuous improvement therefore contributed more to the performance of these health projects than structural process change or technological systems did.

The pattern is consistent with Wales, Filser, Covin, Kraus and Stockmann (2021), who argue that behavioural and strategic capabilities tend to produce more immediate performance improvement than technical systems, particularly in resource-limited and implementation-constrained environments. It suggests a sequencing implication rather than a preference: technical interventions require supportive conditions — skills development, management support, staff endorsement and adequate resourcing — before they can deliver, and where those conditions are absent the investment registers as cost rather than benefit. A related caution applies to instruments frequently mistaken for explanatory frameworks: SERVQUAL (Parasuraman, Zeithaml, & Berry, 1988) specifies how service quality is measured but supplies

no mechanism connecting it to an outcome, which must be drawn from a theory such as social exchange (Blau, 1964). The 71.2 per cent of variance left unexplained by the model is a reminder that factors beyond these four practices — funding adequacy, procurement cycles, political and administrative stability and stakeholder coordination — carry substantial weight in this setting.

6. CONCLUSIONS AND RECOMMENDATIONS

Process-based management practices influence the performance of Ministry of Health projects in Nairobi City County, but to markedly different degrees. Total quality management significantly improves performance: quality planning and control, leadership support, customer focus, continuous improvement and engagement of staff at all levels together increase value delivery, eliminate redundant operations and strengthen team coordination. Entrepreneurial orientation had a positive and significant effect and was the strongest predictor in the model; projects that innovate, act proactively, grant autonomy and take calculated risks are more likely to succeed.

Business process re-engineering influenced performance positively but not significantly, so there is insufficient evidence to confirm an effect in this population. BPR demands substantial organisational transformation, technological investment and cultural adaptation; in public organisations these demands meet staff resistance, limited technical expertise, bureaucratic procedure and constrained funding, with the result that its theoretical value is recognised without being practically realised. Enterprise resource planning showed a negative and non-significant association, attributable to implementation conditions rather than to the systems themselves: limited system familiarity among staff, incomplete integration, under-funding and resistance to change. Where adequate infrastructure, technical support and management commitment are secured, benefits can reasonably be expected — but in the longer term rather than immediately.

Performance itself was rated moderately. The projects were judged to deliver value to customers and teams and to have established strategies for long-term adaptability, but adherence to schedule, budget and scope was the weakest dimension, consistent with the bureaucratic procedure, budgetary constraint and contractual difficulty characteristic of the public sector. Taken together, both behavioural and technical practices matter, but behavioural practices delivered the measurable gains in this setting; technical practices are more conditional, their success depending on support systems, staff expertise and institutional capability. The appropriate conclusion is not to choose between them but to establish the implementation frameworks under which a balanced approach becomes possible.

6.1 Recommendations

1. Strengthen total quality management through continuous development initiatives, stronger management support and quality tools for quality planning. The Ministry should institutionalise regular employee training, customer-oriented processes, quality assurance frameworks, clear accountability and a culture of superior service.
2. Promote entrepreneurial orientation by encouraging innovation and proactive problem-solving within project teams. Teams should be permitted to advance new ideas and to participate in decision-making, supported by training programmes centred on creativity, innovation and strategic thinking.
3. Implement business process re-engineering more effectively by investing in skills development, process automation and structured change management, with clear communication channels established to reduce staff resistance and build organisational acceptance of redesigned processes.
4. Realise the value of enterprise resource planning by first securing sufficient ICT infrastructure, technical support and employee training. Cross-departmental collaboration is needed to improve coordination, data management, financial reporting and supply chain operations, and ERP benefits should be planned for and evaluated over a multi-year horizon rather than expected immediately.
5. Strengthen monitoring and evaluation mechanisms so that project progress is continuously assessed, implementation challenges identified early and public resources used accountably.

6.2 Limitations and further research

Four limitations bound these findings. The study was confined to Ministry of Health projects within Nairobi City County, and the results may not hold in rural and semi-urban counties; replication across a wider geography would improve generalisability and reveal regional variation. The design was cross-sectional, with data collected at a single point in time, which cannot separate short-run implementation disruption from long-run benefit — a distinction that matters particularly

for the ERP result and that a longitudinal design would resolve. The four practices explained 28.8 per cent of the variance, leaving the larger share unaccounted for; further research should examine additional determinants such as funding adequacy, procurement systems, stakeholder coordination and administrative stability. Finally, the residuals departed from normality on both tests applied and the study relied on the central limit theorem rather than on transformation or non-parametric estimation, so robustness checks would strengthen confidence in the coefficients; the respondent profile was also weighted towards younger and less experienced staff, so the perspectives of long-serving personnel are under-represented.

Declarations. Authorisation was granted by the School of Business, Economics and Tourism, Kenyatta University, and a research licence issued by the National Commission for Science, Technology and Innovation; participation was voluntary and informed consent obtained from all respondents. The authors declare no competing interests. The research received no specific grant from any funding agency. The dataset is available from the corresponding author on reasonable request.

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