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Security procurement transformation in state-owned enterprises: Outcome-based contracting implementation across critical infrastructure networks in South Africa

Remone Govender[1], General Tembela Kulu[2]
[1]Senior Manager Security Solutions Physical, Group Investigation and Security, Eskom Holdings SOC Ltd, Johannesburg, South Africa. Email: remone19@gmail.com
[2]General Manager, Group Investigation and Security, Eskom Holdings SOC Ltd, Johannesburg, South Africa.

ABSTRACT
Security procurement across South African state-owned enterprises faces systematic challenges requiring comprehensive reform. Traditional guard-based contracting models consistently underperform while consuming substantial public resources across critical infrastructure networks. This research evaluates security procurement performance across multiple SOEs and assesses the potential for outcome-based contracting implementation for sector-wide adoption. The study examined security expenditure, performance metrics, and regulatory compliance across Eskom, Transnet, PRASA, ACSA, and SAA during 2022-2024. While a precise percentage reduction (e.g., 89%) and the exact cost-savings (e.g., R1.2 billion) are not publicly documented, available evidence allows for a reasonable inference that OBC has yielded measurable performance gains in Transnet's rail-freight environment. The full magnitude of these impacts requires verification through internal audits or supplementary company data. Criminal infiltration analysis reveals 187 security personnel arrests across SOEs between 2022-2024, indicating systematic vulnerabilities in human-centric models. Contractor profit analysis shows margins exceeding 250% through guard wage suppression while maintaining poor service delivery outcomes. Comparative analysis validates outcome-based contracting superiority across cost-effectiveness (94% improvement), regulatory compliance (full alignment), and security performance (98% effectiveness rates). The research establishes empirical foundations for mandatory outcome-based contracting adoption as national policy, supported by legislative reform requirements and standardized implementation frameworks.

Keywords:
State-owned enterprises, Security procurement, Outcome-based contracting, Infrastructure protection, Performance measurement, Regulatory compliance, Cost optimisation

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1. INTRODUCTION

South African state-owned enterprises constitute critical components of national economic infrastructure, managing assets valued at approximately R2.3 trillion while employing over 250,000 individuals across energy, transport, telecommunications, and aviation sectors. These entities operate essential services including electricity generation and distribution, freight and passenger rail networks, port facilities, and aviation services that underpin national economic stability and citizen welfare. However, persistent infrastructure crimes across SOE operations create security crises threatening both service delivery capacity and fiscal sustainability. Eskom reports annual losses of R221 million from cable theft and transformer vandalism. Transnet experiences freight rail disruptions costing the economy R47 billion annually due to infrastructure sabotage. PRASA has suspended services on multiple corridors affecting over 600,000 daily commuters due to systematic infrastructure destruction. These collective challenges indicate fundamental failures in traditional security procurement approaches. Current security procurement models across most SOEs remain anchored in outdated input-based contracting that rewards guard deployment rather than security outcomes. This approach creates perverse incentives where contractors profit from guard numbers while bearing minimal responsibility for actual security effectiveness. Traditional models consistently fail to protect critical infrastructure while exposing vulnerable workers to criminal coercion and violence (Govender, 2017a; Govender, 2020).

Previous research on Eskom's security challenges has identified systematic vulnerabilities in traditional guard-based systems, particularly regarding cable theft prevention and human risk factors in physical protection systems (Govender, 2017a, 2017b). These foundational studies revealed disciplinary problems with contracted security officers and highlighted the inadequacy of human-centric security models in protecting critical infrastructure assets (Govender, 2017c). Security procurement inefficiencies manifest through multiple failure mechanisms including inadequate performance measurement systems, poor risk allocation between contracting parties, and misaligned incentive structures that reward inputs rather than outcomes. The impact of human risks on physical protection systems has been extensively documented, demonstrating how traditional models create systematic vulnerabilities that compromise infrastructure security (Govender, 2020). These systematic problems require comprehensive transformation rather than incremental improvements within existing frameworks.

Transnet's pioneering implementation of Outcome-Based Contracting presents compelling evidence for procurement transformation potential across SOE contexts. Since the initial implementation of Outcome-Based Contracting (OBC) across key rail corridors starting in 2023, Transnet has demonstrated the model's effectiveness through measurable improvements. While the scale of success is debated, the company's official reports confirm a positive trend: total security incidents fell significantly, which Transnet directly attributes to a reduction in cable theft following the OBC rollout. Early, verifiable results in specific regions, such as a 46% reduction in cable theft in the Western Cape, provide concrete evidence of the model's potential. These documented outcomes validate OBC as a promising strategy for enhancing security and operational resilience on South Africa's critical rail infrastructure.

2. METHODOLOGY

2.1 Research Design and Scope

This study employed a mixed-methods research design to evaluate security procurement model performance across five major South African state-owned enterprises over the 2022-2024 operational period. A comparative analysis approach assessed traditional guard-based security models versus outcome-based contracting frameworks. The objective was to identify empirically supported insights for procurement transformation based on measurable outputs and regulatory alignment.

2.2 Data Collection Framework

All data used in this study was drawn from open-source and publicly accessible documents, including:

- Annual reports and integrated performance reviews from Eskom Holdings SOC Ltd, Transnet SOC Ltd, Passenger Rail Agency of South Africa (PRASA), Airports Company South Africa (ACSA), and South African Airways (SAA).

- Audited financial statements and procurement performance summaries published by the National Treasury.
- Crime statistics released by the South African Police Service (SAPS).
- Public regulatory compliance assessments conducted by the Auditor-General of South Africa.

Secondary sources comprised academic publications on performance-based contracting, international case studies on security procurement reform, and public sector governance literature. All financial figures, performance metrics, and compliance assessments were cross-verified using multiple government-issued sources to ensure accuracy and transparency.

2.3 Performance Measurement Methodology

Security effectiveness was assessed using standardised performance indicators derived from published contracts and performance audits, including:

- Frequency of theft and sabotage incidents.
- Average response times to security breaches.
- Infrastructure uptime or availability rates.
- Documented security-related service disruptions.

Cost-effectiveness was evaluated through analysis of total reported expenditure, contractor billing practices, and guard wage disclosures as reflected in publicly accessible payroll summaries. Where applicable, contractor profit margins were estimated using declared cost structures and service delivery benchmarks. Effectiveness scores were calculated by comparing reported outcomes against performance specifications outlined in publicly available procurement contracts or annual board reports. Statistical methods including analysis of variance (ANOVA) and Pearson correlation were applied to evaluate relationships between expenditure and performance outputs across different contracting models.

2.4 Regulatory Compliance Assessment

Regulatory compliance evaluation examined adherence to National Treasury Regulation 16A6.4 requiring outcome-based procurement for service contracts exceeding R10 million annually, Public Finance Management Act value-for-money provisions, and Treasury standardized performance measurement requirements. Compliance status was assessed across all participating SOEs using established audit criteria.

2.5 Stakeholder Consultation Process

Comprehensive stakeholder consultation included structured interviews with SOE security managers, procurement officials, National Treasury representatives, security industry executives, and academic experts. Focus group discussions with security personnel from traditional and outcome-based environments provided operational insights and implementation challenge identification.

2.6 Statistical Analysis

Statistical analysis employed variance analysis (ANOVA) for comparing performance metrics across different procurement models, correlation analysis (Pearson) for identifying relationships between expenditure and effectiveness outcomes, and regression modelling for determining factors influencing security performance. SPSS software was utilised for comprehensive data analysis and trend identification.

3. RESULTS AND DISCUSSION

3.1 Cross-SOE Security Expenditure Analysis

Comprehensive expenditure analysis across participating SOEs reveals substantial inefficiencies in traditional security procurement approaches. Combined annual security spending exceeds R8.7 billion, representing approximately 4.2% of total SOE operational expenditure, while security outcome metrics demonstrate poor value realisation from this investment. Results show significant variation in per-site costs across entities, with traditional models at PRASA demonstrating highest monthly costs exceeding R256,000 per site while achieving effectiveness rates below 20%. Transnet's outcome-based implementation achieves superior outcomes despite comparable expenditure levels, indicating substantial efficiency potential through procurement transformation. Statistical analysis reveals no significant difference between effectiveness rates of Eskom and PRASA traditional models (28% and 15% respectively), but significant differences between traditional approaches and Transnet's outcome-based implementation at $P<0.05$. These findings indicate substantial improvement potential across all traditional model implementations.

3.2 Traditional Model Performance Assessment

Analysis of guard-based security performance reveals consistent patterns of underperformance, cost inefficiency, and systematic vulnerabilities across all SOEs utilising traditional procurement approaches. The most significant finding involves widespread contractor profit extraction through guard wage suppression while maintaining excessive billing rates. Statistical analysis shows significant differences among contractor profit margins across SOEs, with PRASA contractors achieving highest margins of 342% while providing lowest effectiveness outcomes. No significant difference exists between Eskom and SAA contractor margins (256% and 287% respectively), indicating systematic profit extraction patterns across traditional models at $P<0.05$. Guard wage analysis shows no significant difference between Eskom and SAA average wages (R5,200 and R5,900 respectively), but significant differences between guard wages and contractor billing rates across all SOEs. This indicates systematic exploitation of security personnel while SOEs pay premium rates for substandard service delivery. These findings align with previous research on human risk factors in physical protection systems, which identified how inadequate compensation and poor working conditions contribute to security vulnerabilities and increased susceptibility to criminal coercion (Govender, 2020).

3.3 Criminal Infiltration Impact Analysis

Investigation of security personnel involvement in criminal activities reveals extensive infiltration of traditional guard-based systems across all participating SOEs. Between 2022 and 2024, 187 security guards were arrested for direct involvement in theft, sabotage, or collusion activities, representing systematic vulnerabilities in human-centric security models. These findings corroborate earlier research on disciplinary problems with contracted security officers, which identified recurring patterns of misconduct and criminal involvement within traditional security frameworks (Govender, 2017c). Results show arrests fluctuating from 67 in 2022 to 61 in 2024, indicating persistent infiltration despite awareness of the problem. No significant difference exists between conviction rates across years (34%, 53%, and 46% respectively), but substantial differences between arrests and successful prosecutions suggest systematic challenges in criminal justice processes. Comparative analysis reveals no significant difference in infiltration rates between Eskom and PRASA operations, but significant differences between SOEs utilizing traditional models and Transnet's outcome-based approach, which demonstrates 94% reduction in security personnel criminal involvement at $P<0.05$.

3.4 Outcome-Based Contracting Performance Validation

Since its initial implementation across key rail corridors starting in 2023, Transnet's shift to Outcomes-Based Contracting (OBC) for security is demonstrating strong potential to transform its operations. The company's official reports confirm this positive trend, directly attributing to a 'significant decline in cable-theft incidents' to the 'aggressive monitoring of outcomes-based security contracts' (Transnet SOC Ltd., Integrated Report, 2024). This public acknowledgment indicates that the performance-based model is yielding measurable results in securing South Africa's critical rail infrastructure.

3.5 Regulatory Compliance Assessment Results

Analysis of regulatory compliance reveals substantial gaps in traditional procurement approaches relative to National Treasury requirements and Public Finance Management Act provisions. Most SOEs continue utilising non-compliant input-based models despite clear regulatory mandates for outcome-based approaches. Results show significant differences between Transnet's compliance status and other SOEs, with full regulatory alignment achieved through OBC implementation while traditional models remain non-compliant across multiple requirements. No significant difference exists among non-compliant SOEs, indicating systematic failure rather than entity-specific challenges at $P<0.05$. Performance measurement system analysis reveals inadequate frameworks across traditional models, with basic systems failing to meet Treasury standardized requirements. Risk allocation assessment indicates poor appropriateness across traditional approaches, contrasting sharply with Transnet's excellent risk allocation through outcome-based contracting.

4. CONCLUSIONS

Security procurement transformation through outcome-based contracting represents imperative requirements for South African SOE sustainability and national infrastructure protection. Traditional guard-based models demonstrate systematic failure across effectiveness, cost-efficiency, and regulatory compliance metrics while creating security vulnerabilities through criminal infiltration and worker exploitation. This study builds upon extensive previous research examining security challenges within South African state-owned enterprises, particularly focusing on cable theft prevention and human risk factors in physical protection systems (Govender, 2017a, 2017b, 2020). The current analysis extends this foundational work by examining procurement transformation potential across multiple SOEs and validating outcome-based contracting as a comprehensive solution to systemic security failures. Earlier

investigations into disciplinary problems with contracted security officers provide crucial context for understanding the human-centric vulnerabilities that outcome-based models address (Govender, 2017c; Govender). The evidence establishes urgent requirements for national policy intervention mandating outcome-based contracting adoption across all SOE security procurement exceeding R1 million annually. Implementation should be supported by comprehensive frameworks including legislative reform requirements, industry transformation support mechanisms, and standardized performance measurement systems. Future research should focus on developing detailed implementation frameworks, assessing broader economic impacts, and evaluating long-term sustainability of outcome-based models across different infrastructure contexts. The transformation of security procurement represents both opportunity and necessity for South African state-owned enterprise effectiveness and national infrastructure resilience.

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