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Assessing Sustainable Procurement in South African State-Owned Enterprises: A Comparative Perspective

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ABSTRACT

This study assesses the institutionalisation of sustainable procurement (SP) practices in South African state-owned enterprises (SOEs), evaluating their alignment with economic, social, and environmental sustainability objectives. It further explores the challenges hindering SP implementation and the variations in adoption across Schedule 2 and Schedule 3 SOEs. We employed a mixed-methods approach based on semi-structured interviews with 51 procurement professionals across 26 SOEs. The quantitative data was analyzed using descriptive and inferential statistical techniques in SPSS while the open data using thematic analysis. The findings indicate that economic sustainability receives the highest emphasis, social sustainability is moderately integrated, and environmental sustainability is the weakest. Notably, Schedule 3 SOEs demonstrate greater adherence to government mandated sustainability policies, while Schedule 2 SOEs prioritize financial autonomy and cost-driven procurement strategies. Governance issues, corruption, and lack of SP training further impede comprehensive sustainability adoption. This study advances the empirical understanding of SP practices in SOEs within a developing economy. It also provides practical recommendations for government policymakers, SOE leadership, and procurement professionals, emphasizing the need for a comprehensive national SP framework, regulatory enforcement, and capacity-building initiatives to enhance SP integration.

Keywords: *sustainable procurement; state-owned enterprises; social sustainability; economic sustainability; environmental procurement; South Africa.*

1. INTRODUCTION

Sustainable procurement (SP) has emerged as a strategic policy instrument for fostering economic resilience, environmental responsibility, and social equity in public sector procurement (Preuss, 2009; Patil, 2017). Governments worldwide are leveraging procurement frameworks to align purchasing decisions with broader sustainability goals, emphasizing ethical sourcing, carbon footprint reduction, and socio-economic transformation (Hsueh *et al*., 2020; United Nations, 2022). The European Union, the United States, and Canada have institutionalized SP mandates, demonstrating the potential for public procurement to drive systemic sustainability transformations (Grandia & Kruyen, 2020; Lukacs de Pereny *et al*., 2024). These mandates have led to integrating green procurement criteria, supplier diversity programs, and circular economy principles into public sector purchasing processes (Walker & Phillips, 2009; Agyepong & Nhamo, 2017).

Despite the global momentum, SP implementation in developing economies remains fragmented, with significant policy and institutional challenges (Shaikh *et al*., 2022; Quinot, 2023). South Africa, for instance, has a well-developed public procurement framework that prioritizes socio-economic transformation through Broad-Based Black Economic Empowerment (B-BBEE) and preferential procurement regulations (Agyepong & Nhamo, 2017; Fourie & Malan, 2021). However, research suggests that environmental sustainability remains weakly integrated into public procurement policies, with limited standardization and enforcement mechanisms (Turley & Perera, 2014; Smart Procurement World, 2021). In particular, State-Owned Enterprises (SOEs) which collectively control over R800 billion in procurement budgets, lack a coherent SP implementation framework, leading to policy misalignment, supplier inconsistencies, and suboptimal sustainability outcomes (Ngubane, 2024).

Existing research on SP in South Africa has predominantly focused on legal and policy analyses, overlooking the practical operationalization of SP mandates within SOEs (Ruparathna & Hewage, 2015; Brammer & Walker, 2007). The lack of empirical data on how procurement professionals within SOEs interpret and implement sustainability objectives leaves a critical gap in understanding institutional barriers, implementation challenges, and sectoral variations in SP adoption.

Furthermore, the heterogeneous nature of SOEs, categorized into Schedule 2 and Schedule 3 entities under the Public Finance Management Act (PFMA), introduces distinct governance structures and financial autonomy levels that may influence their sustainable procurement practices (Bolton, 2006; Western Cape Government, 2019). However, comparative assessments of SP adoption between these two SOE categories remain limited, preventing a deeper understanding of how regulatory, financial, and operational differences shape sustainability priorities and procurement decisions.

This study seeks to bridge these gaps by conducting an empirical evaluation of sustainable procurement implementation among SOEs in South Africa, with a specific focus on Gauteng, the country's economic hub. Specifically, we aim to (i) examine the extent to which sustainable procurement principles (economic, social, and environmental) are incorporated into SOE procurement frameworks, (ii) identify institutional and operational barriers that hinder effective SP implementation in South African SOEs, and (iii) analyze differences in sustainable procurement practices between Schedule 2 and Schedule 3 SOEs, considering their distinct financial and governance structures.

To achieve the objectives of the study, we developed two research questions and hypothesis supported by theories and related studies. We employ both qualitative and quantitative analyses to advance the discourse on sustainable procurement in SOEs, offering policy-relevant insights and practical recommendations for SOE leadership, and procurement professionals. The study contributes to the broader discourse on sustainability governance, institutional theory, and public sector procurement efficiency. It offers practical guidance for SOE leadership, procurement professionals, and policymakers on enhancing sustainability integration in state procurement operations. The subsequent sections present the theoretical review, research methodology, results and discussion as well as the conclusion, implications and limitations of the study.

2. THEORETICAL REVIEW

2.1 Sustainable Procurement Practices

SP integrates economic, social, and environmental considerations into procurement decisions to ensure long-term sustainability. It extends beyond cost efficiency to encompass supplier diversity, fair labor practices, environmental responsibility, and economic transformation (Walker and Brammer, 2012). SP has evolved as a strategic approach that balances short-term cost considerations with long-term value creation, ensuring that procurement decisions contribute to broader societal and environmental objectives (Bowersox *et al*., 2020; Walker & Phillips, 2009; Adebayo, 2015). The Australian Procurement and Construction Council (2007) defines sustainability as the process of enhancing societal well-being over time, ensuring that economic, social, and environmental resources are preserved or improved for future generations. SP extends this principle by embedding sustainability criteria into procurement policies, shifting the focus from short-term cost savings to long-term value creation (Kalubanga, 2012; Grandia, 2015). However, despite its growing prominence, research on SP has historically prioritized environmental sustainability, often at the expense of social and economic considerations (Grandia & Kruyen, 2020). While various policies support SP implementation, fragmented enforcement, corruption, and supplier diversity barriers continue to undermine its effectiveness, particularly in developing economies (Chelangat *et al*., 2015; Panganayi *et al*., 2021). To explore these trends, we systematically reviewed 21 studies on SP across 16 countries from 2013 to 2024, offering insights into global best practices, implementation challenges, and sector-specific procurement barriers. Table 1 strengthens the theoretical foundation for this study's focus on South African SOEs by illustrating how institutional pressures, coercive, normative, and mimetic, affect public and private entities differently. As shown in McMurray *et al*. (2014, Malaysia) and Islam *et al*. (2017, Saudi Arabia), private firms tend to respond to market competitiveness, supplier relationships, and internal leadership. In contrast, public organizations including SOEs, are shaped by legislation, accountability, and compliance obligations, as evidenced in Roman (2017, USA) and Agyepong & Nhamo (2017, South Africa). SOEs occupy a hybrid institutional space, balancing commercial mandates with socio-economic responsibilities (Kariuki & Kwasira, 2014, Kenya; Mansi, 2015, India; Harriet & Ndolo, 2022, Rwanda). This makes them uniquely suitable for examining sustainability transitions in procurement. Furthermore, the literature reveals geographic contrasts: studies from developed countries such as Canada (Ruparathna & Hewage, 2015), Ireland (Gormly, 2014) prioritize environmental sustainability, while those from developing contexts such as Kenya (Chelangat *et al*., 2015), Ghana (Agyekum *et al*., 2023) and Zimbabwe (Panganayi *et al*., 2021) emphasize institutional challenges such as limited capacity, weak enforcement, and supplier diversity constraints. Despite increased attention to SOEs, few studies have examined procurement differences within SOE classifications. Hence, this study fills that gap by comparing Schedule 2 and Schedule 3 SOEs in South Africa, entities that differ in structure, oversight, and financial autonomy, to assess how each integrates economic, social, and environmental sustainability into procurement.

2.2 Integrating Sustainability into South African SOEs' Procurement Practices

In South Africa, SOEs operate within regulatory frameworks that align procurement with national policy objectives, such as local content requirements and Black Economic Empowerment (BEE) (Chelangat *et al*., 2015). Public procurement is regarded as a strategic tool for socio-economic transformation, requiring SOEs to prioritize small businesses, women-owned enterprises, and youth entrepreneurs in their procurement processes (Bolton, 2006). The country's commitment to SP is embedded within legislative frameworks such as the PFMA and the Municipal Finance Management Act (MFMA) (Bolton, 2008). These regulations emphasize the role of procurement in addressing unemployment, inequality, and economic transformation (Turley & Perera, 2014; Lukacs de Pereny *et al*., 2024) Public procurement represents a significant portion of South Africa's economy, accounting for nearly 50% of the national

Table 1 Comparative studies on sustainable procurement literature

No	Authors & Year	Country & Sector	Methodology	Enablers & Deterrents of SP	Key Findings & Recommendations
1	McMurray *et al*. (2014)	Malaysia – Public & Private	Mixed methods	Lack of SP guidance, awareness, and resources	Private sector leads in SP adoption. Calls for longitudinal research.
2	Kariuki & Kwasira (2014)	Kenya – SOEs	Descriptive	Environmental, social, and economic factors drive SP	SP improves organizational sustainability; recommends more SOE comparisons.
3	Gormly (2014)	Ireland – State Bodies	Deductive	Policy clarity, SP cost, supplier knowledge gaps	Emphasizes need for social sustainability focus in SP.
4	Ruparathna & Hewage (2015)	Canada-Construction Sector	Mixed methods	Government regulation is key driver	Environmental criteria prioritized over others in SP.
5	Chelangat *et al*. (2015)	Kenya – Parastatals	Quantitative	Legal frameworks, cost, organizational structure, resources	SP implementation affected by structure; calls for broader SOE studies.
6	Mansi (2015)	India – SOEs	Content analysis	Mandatory profit- based CSR investments	Suggests comparisons across developing economies.
7	Roman (2017)	USA – Public Agencies	Survey (SEM)	Transformational leadership, organizational culture	Leadership is key to SP institutionalization.
8	Agyepong & Nhamo (2017)	South Africa – Municipalities	Mixed methods	Capacity, education, weak legislative base	Calls for stronger SP legislative framework.
9	Panganayi *et al*. (2021)	Zimbabwe – Public Sector	Mixed methods	Political will, commitment	SP can improve global competitiveness via ICT.
10	Opoku *et al*. (2022)	China – Construction Sector	Quantitative	Policy and regulation, awareness	Suggests global SP data for benchmarking.
11	Agyekum *et al*. (2023)	Ghana – Tertiary Institutions	Quantitative	Knowledge gaps, weak structures, info-sharing	Stakeholder engagement varies across countries.
12	Shaikh & Channa (2022)	Pakistan – Higher Education	Qualitative	Top management, policy, collaboration	Recommends causal modeling tools like DEMATEL.
13	Gatari *et al*. (2022)	Kenya – Public Sector	Descriptive	Procurement methods	SP outcomes depend on procurement approach.
14	Harriet & Ndolo (2022)	Rwanda – SOEs	Descriptive	Green procurement policies	SP linked to institutional performance; more research needed.
15	Ngubane (2024)	South Africa – Public Sector	Secondary data	Policy development, inter-sector collaboration	Supports cross-sector collaboration for SP success.
16	Islam & Siwar (2013)	Australia & Malaysia – Public	Mixed methods	Cost as main SP driver	Encourages sector-wide analysis for SP advancement.
17	Islam *et al*. (2017)	Saudi Arabia – Public & Private	Survey	Top management attitude, culture	SP varies significantly between sectors.
18	Vörösmarty & Tatrai (2019)	Hungary – Public & Private	Survey	Supplier management vs. compliance	Private sector prioritizes suppliers, public focuses on process.
19	Gounden (2015)	South Africa – Public & Private	Survey	Policy vs. leadership awareness	Clear sectoral distinctions in SP drivers.
20	Mashel & Chuchu (2018)	South Africa – Public & Private	Survey	Regulatory compliance	Strong regulation linked to SP uptake.
21	Oyebanjo & Tengeh (2020)	South Africa – Public Sector	Systematic review	Collaboration, policy integration	Absence of a national SP policy hinders progress.

budget, amounting to approximately R800 billion annually and contributing 20% to the country's GDP (Western Cape Government, 2019). Moreso, SOEs play a crucial role in economic growth, contributing 8% to GDP (PWC, 2015).

These enterprises operate across diverse sectors, including transport, energy, communications, financial services, and water, and are expected to drive socio-economic transformation through their procurement policies. However, studies indicate that SOEs often prioritize Broad-Based Black Economic Empowerment (B-BBEE) and cost efficiency over broader sustainability objectives, particularly in the areas of environmental sustainability and social equity (Bolton, 2006; Quinot, 2023).

While environmental sustainability is gaining traction in SOE procurement practices, research by Agyepong & Nhamo (2017) and Ngubane (2024) highlights challenges in policy enforcement and regulatory implementation, particularly concerning the integration of economic and social sustainability into procurement decisions. Their findings suggest that while environmental procurement policies are increasingly being adopted, inconsistencies in enforcement and compliance monitoring persist. Given these challenges, it is imperative to explore how SOEs balance economic, social, and environmental sustainability elements in their procurement frameworks. This study, therefore, addresses the following research question:

- What elements of sustainability are incorporated into the procurement practices of SOEs in South Africa?

2.3 Differences in the Application of Sustainable Procurement Practices in SOEs

South African SOEs play a pivotal role in national procurement, contributing significantly to public sector spending and economic transformation. The country has 715 SOEs, categorized under the PFMA based on their operational autonomy, financial independence, and regulatory obligations (Bolton, 2008). This study focuses on Schedule 2 (Major Public Entities) and Schedule 3 (National and Provincial Public Entities) SOEs, as they have substantial influence over procurement policies and economic development initiatives (Turley & Perera, 2014; Lukacs de Pereny *et al*., 2024). The structural differences between Schedule 2 and Schedule 3 SOEs suggest variations in their approach to sustainable procurement. Schedule 2 SOEs, such as Eskom, Transnet, and Airports Company South Africa, are financially autonomous and generate their own revenue. This independence grants them greater procurement flexibility, allowing them to compete in open markets and strategically incorporate sustainability measures. However, research indicates that cost efficiency and Broad-Based Black Economic Empowerment (B-BBEE) objectives often take precedence over environmental sustainability and broader social impact considerations (Bolton, 2006; Quinot, 2023). As commercially driven entities, their procurement decisions tend to focus on financial viability, sometimes at the expense of long-term sustainability goals. In contrast, Schedule 3 SOEs, such as the South African Bureau of Standards and the Road Traffic Management Corporation, are partially government-funded and operate under stricter procurement regulations. Their procurement processes are policy-driven, aligning closely with government sustainability mandates, such as socio-economic transformation, local supplier development, and national service delivery objectives (Western Cape Government, 2019). However, the rigid regulatory environment governing these SOEs often limits their ability to adopt innovative sustainability strategies beyond government-imposed requirements, restricting flexibility in implementing customized sustainability initiatives. Given the background, this study seeks to answer the following research question:

- Is there a significant difference in the application of sustainable procurement practices between Schedule 2 and Schedule 3 SOEs?

In order to answer the second research question, we explore theories and supporting studies that we assist us understand how the integration of SP within schedule 2 and 3 SOEs.

2.4 Theories Supporting Sustainable Procurement in SOEs

The implementation of SP in organizations is underpinned by various organizational theories, with institutional theory playing a key role in explaining how sustainability is adopted in procurement and supply chain management. Institutional theory highlights how external forces, such as government policies, industry norms, and regulatory frameworks, shape organizations' procurement practices (Oyenanjo & Tengeh, 2020). According to this theory, coercive pressures arise from government regulations and legal mandates, mimetic pressures lead organizations to imitate industry leaders that have successfully implemented SP, and normative pressures emerge from societal expectations and professional standards (Nsiah-Sarfo *et al*., 2023). In South Africa, these pressures drive SOEs to integrate sustainability into procurement, particularly in alignment with national transformation policies. Similarly, stakeholder theory emphasizes the role of government, suppliers, communities, and regulatory bodies in influencing procurement decisions (Touboulic & Walker, 2015). Organizations must balance diverse stakeholder interests to achieve sustainability objectives (Shaikh *et al*., 2022). These theories provide a foundation for understanding the differences in SP practices between Schedule 2 and Schedule 3 SOEs, where variations in regulatory requirements, stakeholder influence, and institutional pressures may affect the extent to which social, economic and environmental sustainability are integrated into procurement.

2.4.1. Social Aspects of Sustainable Procurement in SOEs

The social dimension of SP focuses on advancing equity, inclusion, and ethical labor practices through procurement policies that address historical disadvantages. In South Africa, government mandates require that 40% of public procurement be allocated to women-owned businesses, while youth and disabled-owned enterprises receive preferential treatment in procurement (Williams-Elegebe, 2021; PPPFA, 2017; Badenhorst-Weiss *et al*., 2018). The stakeholder theory supports the integration of social sustainability by emphasizing the need for organizations to consider the interests of various stakeholders, including government bodies, communities, and suppliers (Mashele, 2018; Touboulic & Walker, 2015). Institutional theory explains how regulatory mandates and societal expectations pressure SOEs to adopt socially

responsible procurement practices (Nsiah-Sarfo *et al*., 2023). However, due to differences in financial autonomy and operational scope, Schedule 2 SOEs may have greater flexibility in implementing social procurement initiatives, while Schedule 3 SOEs may be more constrained by government-imposed policies. We therefore propose the following hypothesis:

- H1: There is a significant difference in the application of the social aspect of sustainability in procurement practices between Schedule 2 and Schedule 3 SOEs.

2.4.2 Economic Aspects of Sustainable Procurement in SOEs

Economic sustainability in procurement ensures that procurement decisions support long-term financial viability for both the organization and the broader economy. This includes aspects such as total cost of ownership (TCO), local supplier development, and SME participation (Turley & Perera, 2014). In South Africa, public procurement is used as a tool for economic transformation, with SOEs encouraged to prioritize local suppliers, promote SMEs, and allocate procurement spending to historically disadvantaged groups (National Treasury, 2017). The resource-based theory explains how SOEs develop competitive advantages by leveraging internal capabilities, such as supplier development and procurement strategies, to drive economic transformation (Touboulic & Walker, 2015b). Meanwhile, transaction cost theory highlights the trade-offs between internal production versus outsourcing, emphasizing cost efficiency and risk management in procurement decisions (Grovera & Malhotra, 2003). Due to their commercial nature, Schedule 2 SOEs may be more inclined to implement cost-efficient procurement strategies and long-term supplier development programs. In contrast, Schedule 3 SOEs, which rely on government funding, may focus more on policy-driven compliance with economic transformation objectives. These structural differences suggest that economic sustainability practices may vary across SOEs, leading to the following hypothesis:

- H2: There is a significant difference in the application of the economic aspect of sustainability in procurement practices between Schedule 2 and Schedule 3 SOEs.

2.4.3 Environmental Aspects of Sustainable Procurement in SOEs

Environmental sustainability in procurement involves the integration of green procurement policies, waste reduction strategies, and carbon footprint minimization in supply chain decisions. South African SOEs are expected to source from environmentally responsible suppliers, enforce emission reduction policies, and promote recycling and reuse of assets (Hanks *et al*., 2008; Oyebanjo & Tengeh, 2020). South Africa's SP policies mandate the inclusion of environmental criteria in supplier selection, life cycle assessments of products, and supplier commitments to sustainability initiatives (Ross, 2013). The institutional theory provides insight into how external regulations, industry standards, and environmental policies drive the adoption of SP practices in SOEs (Walker *et al*., 2013). Similarly, stakeholder theory highlights the role of environmental advocacy groups, customers, and regulatory bodies in pressuring SOEs to implement environmentally SP policies (Kalubanga, 2012). Due to their involvement in large-scale infrastructure projects, Schedule 2 SOEs, particularly in transportation, energy, and manufacturing sectors, are more likely to have established green procurement policies. However, Schedule 3 SOEs may lack the financial resources and strategic autonomy to fully integrate environmental sustainability into their procurement practices. This divergence in environmental procurement adoption leads to the following hypothesis:

- H3: There is a significant difference in the application of the environmental aspect of sustainability in procurement practices between Schedule 2 and Schedule 3 SOEs.

3. RESEARCH METHODOLOGY

3.1 Design and Strategy

This study adopted a concurrent mixed-methods research approach with a dominant quantitative component, supported by qualitative insights. A descriptive and explanatory research design was employed to assess the extent of SP implementation in SOEs in South Africa. The quantitative approach was used to examine statistical differences in SP adoption, while the qualitative component provided contextual depth and explanation for the observed trends. The structured data was collected through a survey instrument, which is the primary focus of this study, while open- ended responses from interviews enriched the findings with additional insights.

3.2 Sampling and Data Collection

This study focused on 26 SOEs located in Gauteng, South Africa's economic and administrative hub. Gauteng was selected due to its high concentration of national SOE headquarters and its strategic role in the country's public procurement system. From a population of 63 SOEs affiliated with the State-Owned Enterprise Procurement Forum (SOEPF), 26 were purposively selected using clearly defined criteria to ensure relevance and access. First, only SOEs classified under Schedule 2 or Schedule 3 of the PFMA were included, as these entities differ in terms of strategic importance, procurement autonomy, and governance mandates. Second, only SOEs with a physical operational presence, either a national or regional office, in Gauteng province were considered to ensure logistical feasibility and contextual consistency. Third, the SOEs selected were those operating in critical sectors such as infrastructure, logistics, energy, and public service delivery, where SP practices have a direct impact on national development priorities. Finally, inclusion was limited to those SOEs that confirmed the availability of at least one procurement professional in a strategic or decision-making role who was willing to participate in the study. A total of 51 procurement professionals participated, also purposively selected based on their involvement in procurement planning, supplier selection, and policy implementation. These included Chief Procurement Officers (CPOs), Procurement Managers, Supervisors, and Officers. In most SOEs, multiple participants were interviewed to provide richer insights and strengthen the internal validity of the data. However, in one instance, only a single respondent could be interviewed due to organizational constraints.

Table 2 Demographic information of the respondents

Respondents Profile	Frequency	Percentage
SOEs Schedules		
Schedule 2	44	86.3%
Schedule 3	13	13.7%
Job title distribution		
Chief Procurement Officer	3	10.7%
Procurement Manager	9	32.1%
Procurement Supervisor	11	17.9%
Procurement Officer	39	39.3%
Years of Experience in Public Procurement		
Less than 1 year	2	3.9%
2 to 5 years	3	5.9%
5 to 10 years	18	52.9%
Above 10 years	27	35.5%
Other	1	2%

3.3 Instrument and Measurement

We employed a semi-structured questionnaire, constituting both structured and open-ended questions. The structured questions were measured using a five-point Likert scale, capturing the extent to which SOEs integrate social, economic, and environmental sustainability into procurement practices. The scale ranged from: strongly disagree, disagree, neutral, agree, and strongly agree. This allowed for a quantitative assessment of SP practices, supplemented by qualitative responses to explain underlying trends in procurement behavior. For the open-ended questions, the respondents had to provide comments to the structured questions.

3.4 Data Analysis

The quantitative data was analysed using descriptive and inferential statistics. Percentages were used to describe the demographic profile of respondents, while mean scores and standard deviations were calculated to assess the extent of SP practices. An Independent Samples t-test was conducted to identify statistically significant differences in the application of SP practices between Schedule 2 and 3 SOEs. Key aspects of the analysis included levene's test for equality of variances, which was used to determine whether variances between groups were equal, guiding the selection of the appropriate t-test (Equal Variances Assumed [EVA] or Not Assumed [EVNA]). The statistical significance was determined by a P-value ≤ 0.05. The t-test compared mean differences across environmental procurement practices, such as sourcing from green suppliers, considering lifecycle impacts, reusing and upgrading assets, and ensuring suppliers' commitment to waste reduction. The analysis was performed using SPSS software, which provided insights into the magnitude and direction of differences, including mean differences, standard errors, and 95% confidence intervals. For the qualitative data from open-ended interview responses, thematic analysis was used to identify recurring themes and challenges concerning SP implementation in the SOEs.

3.5 Reliability and Validity

To ensure the reliability and validity of the research instrument, a pilot test was conducted (Saunders *et al*., 2012). Feedback from the pilot test led to the refinement of questions to align with the understanding of supply chain management (SCM) professionals regarding SP practices. Cronbach's alpha was used to measure the reliability of the research instrument, yielding the following internal consistency scores (i) social aspects of SP: 0.845; (ii) economic aspects of SP: 0.785; and (iii) environmental aspects of SP: 0.908. These scores exceeded the acceptable threshold of 0.70 (Saunders *et al*., 2019), indicating strong reliability.

4. FINDINGS AND DISCUSSION

This section presents the study's empirical findings, integrating both quantitative and qualitative insights to assess SP practices in South African SOEs.

4.1 Demographic Information of The Respondents

The demographic profile of respondents is summarised in Table 2. Table 3 reveals that the majority of respondents (86.3%) were from Schedule 2 SOEs, which contribute significantly to the national economy, while only 13.7% were from Schedule 3 SOEs. Procurement officers formed the largest group (39.3%), followed by Procurement Managers (32.1%), indicating that the majority of respondents were actively engaged in procurement decision-making. A substantial 88.2% of respondents had more than five years of experience, demonstrating a mature and knowledgeable sample with expertise in public procurement. This demographic composition ensures that the study's findings are based on experienced procurement professionals who directly influence procurement decisions.

4.2. Sustainable Procurement Practices

The findings address the question:

- What elements of sustainability are incorporated into the procurement practices of SOEs?

Table 3 presents an overview of sustainability integration within procurement practices.

4.2.1 Social Sustainability

The highest-rated practices in social sustainability were buying from small suppliers (M = 4.07) and ensuring the safe incoming of products to facilities (M = 4.07). Practices like

Table 3 Elements of sustainability in procurement

Statement	Mean		Standard Deviation
	Statistic	Std. Error	
Social aspects of sustainable procurement practices			
Buying from small suppliers	4.07	0.44	0.90
We ensure the safe incoming of products to our facilities	4.07	0.44	1.12
Buying from women-owned businesses	3.93	0.44	0.81
Buying from youth-owned businesses	3.82	0.44	0.94
Our specifications ensure that suppliers employ local communities in large contracts	3.86	0.44	0.97
Buying from disabled suppliers	3.61	0.44	1.07
Our specifications ensure that suppliers pay minimum wage	3.18	0.44	1.31
Buying from rural businesses	3.07	0.44	1.21
We ensure that suppliers comply with child labour law in our specifications	2.89	0.44	1.26
Economic aspects of sustainable procurement practices			
We put a criterion in tender documents to encourage the participation of local firms	4.57	0.44	0.63
Our procurement process leaves room for SMEs	4.46	0.44	0.79
We encourage, where possible, a certain percentage of local materials, components, and labour	4.46	0.44	0.79
We consider the total cost of ownership when approaching the market	4.29	0.44	0.76
When planning a budget, what matters is the economic aspect; social and environmental are secondary	3.64	0.44	0.83
Environmental aspects of sustainable procurement practices			
We consider options for reuse, repair and upgrade of existing assets before making new purchases	4.18	0.44	0.67
Our specifications consider the impacts of goods and services over the life cycle	3.96	0.44	0.99
We consider environmental issues such as emissions, pollution, and noise during the procurement planning	3.61	0.44	0.96
We identify the environmental impact of goods and services before launching a tender	3.61	0.44	0.88
Our specifications entail environmental criteria	3.43	0.44	0.92
Specifications include the supplier's commitment to waste reduction	3.36	0.44	0.99
We use life cycle analysis to evaluate the environmental friendliness of products and packaging.	3.29	0.44	0.94
We source from green suppliers	3.07	0.44	1.05

buying from women-owned businesses (M = 3.93) and ensuring suppliers employ local communities (M = 3.86) also ranked highly. Conversely, ensuring suppliers comply with child labour laws (M = 2.89) and buying from rural businesses (M = 3.07) were rated the lowest.

4.2.2 Economic Sustainability

The findings highlight strong performance in economic sustainability, with the highest ratings for encouraging local firm participation through tender criteria (M = 4.57) and leaving room for SMEs in procurement processes (M = 4.46). Considering total cost of ownership (M = 4.29) was also emphasised, while prioritising economic over social and environmental aspects (M = 3.64) scored lower, indicating room for improvement in balancing priorities.

4.2.3 Environmental Sustainability

The respondents rated considering reuse, repair, and upgrade of assets (M = 4.18) and life cycle impacts of goods/services (M = 3.96) as the most significant environmental practices. Practices such as sourcing from green suppliers (M = 3.07) and using life cycle analysis for product/packaging evaluation (M = 3.29) were among the lowest, suggesting a need for more robust adoption of environmental criteria.

4.3 Differences in Sustainable Procurement Between Schedules 2 and 3 SOEs

This section examines whether significant differences exist in the application of SP practices between Schedule 2 and Schedule 3 SOEs. This analysis is guided by the research question:

- Is there any difference in the application of sustainable procurement practices among the Schedule 2 and 3 SOEs?

To assess this, an independent samples t-test was conducted to determine statistically significant differences in the implementation of SP practices across social, economic, and environmental sustainability dimensions. Levene's Test for Equality of Variances (Sig.) was used to test whether variances in the two groups were equal: If Sig. > 0.05, variances are equal (assume Equal Variance Assumption [EVA]). If Sig. ≤ 0.05, variances are not equal (assume Equal Variance Not Assumed [EVNA]). A t-test for Equality of Means (Sig. (2-tailed)) was then used to determine whether significant differences exist between Schedule 2 and Schedule 3 SOEs. If Sig. (2-tailed) ≤ 0.05, the difference is statistically significant. The following subsections discuss the results in relation to the three sustainability dimensions:

4.3.1 Social Sustainability in Procurement

- H1: Is there any significant difference in the application of the social aspect of sustainability in procurement practices among Schedule 2 and 3 SOEs?

The results in Table 4 show that no statistically significant differences exist between Schedule 2 and Schedule 3 SOEs in social sustainability, as all Sig. (2-tailed) Values are greater than 0.05. These results indicate that both Schedule 2 and Schedule 3 SOEs implement social sustainability at similar levels. Thus, while no statistical differences exist, the qualitative evidence highlights systemic challenges in translating policy into practice. the difference is statistically significant.

4.3.2 Economic Sustainability in Procurement

- H2: Is there a significant difference in the application of the economic aspect of sustainability in procurement practices between Schedule 2 and 3 SOEs?

The results in Table 5 show that there is inconclusive evidence that no statistically significant differences exist in economic sustainability practices between Schedule 2 and Schedule 3 SOEs, as all Sig. (2-tailed) values exceed 0.05. The lack of clear statistical differences suggests that economic sustainability is prioritized equally across SOEs, driven by national procurement mandates promoting SME inclusion. While statistical tests show no difference between SOE categories, qualitative findings indicate structural barriers limiting procurement-driven economic transformation.

4.3.3 Environmental Sustainability in Procurement

- H3: Is there a significant difference in the application of the environmental aspect of sustainability in procurement practices between Schedule 2 and 3 SOEs?

Table 6 shows unlike social and economic sustainability, statistically significant differences were found for certain environmental procurement practices. Schedule 2 SOEs are more likely to adopt cost-driven environmental sustainability initiatives, such as reuse and repair of assets (p = 0.01), due to financial efficiency considerations. Schedule 3 SOEs show greater adherence to government-mandated environmental policies, as seen in lifecycle impact considerations (p = 0.05). Green supplier selection remains weak across both SOE categories, reflecting a lack of strong environmental mandates. While most environmental practices do not show significant differences in implementation among the SOEs analysed, the consideration of reuse, repair, and upgrades before making new purchases stands out as a statistically significant variable. Marginal attention should also be given to lifecycle impact considerations for further research or policy recommendations.

4.4 Qualitative Findings and Interpretation

This section presents emergent themes and challenges in the adoption of SP in SOEs, based on qualitative insights from procurement professionals. While SOEs play a pivotal role in national economic transformation, the qualitative findings reveal systemic barriers limiting the integration of social, economic, and environmental sustainability in procurement decisions. The themes identified reinforce Institutional Theory and Stakeholder Theory. Table 7 below summarizes key themes and challenges associated with SP practices in SOEs from the open-ended questions.

Table 4 Differences in SOE schedules about the social aspects of SP practices

Variable	Levene's Test (Sig.)	t-test (Sig. (2-tailed))	Significant Difference?	Comments
Buying from small suppliers	0.30	0.51	No	Variances are equal (EVA assumed). The mean difference (0.26) is not statistically significant.
Buying from women-owned businesses	0.05	0.82	No	Variances are unequal (EVNA assumed).Despite the focus on women-owned businesses, the mean difference (0.10) is not significant.
Buying from youth-owned businesses	0.49	0.37	No	Variances are equal. The mean difference (-0.41) is not statistically significant.
Buying from disabled suppliers	0.02	0.69	No	Variances are unequal. The mean difference (0.22) is not significant.
Specifications ensure suppliers employ local communities	0.00	0.13	No	Variances are unequal. The mean difference (0.79) is not statistically significant, though it is close to meaningful relevance.
We ensure the safe incoming of products	0.14	0.79	No	Variances are equal. No significant difference was detected.
Suppliers comply with labour laws in specifications	0.22	0.97	No	Variances are equal. No significant difference was detected, as the mean difference (-0.02) is negligible.
Specifications ensure suppliers pay minimum wage	0.02	0.88	No	Variances are unequal. The mean difference (-0.08) is not statistically significant.
Buying from rural businesses	0.31	0.76	No	Variances are equal. The mean difference (-0.17) is not statistically significant.

Table 5 Differences in SOE schedules regarding the economic aspects of SP practice

Variable	Levene's Test (Sig.)	t-test (Sig. (2-tailed))	Significant Difference?	Comments
We consider the total cost of ownership when approaching the market	0.41	0.82	No	Variances are equal (EVA assumed). The mean difference (0.08) is not statistically significant.
We put criteria in tender documents to encourage the participation of local firms	0.13	0.11	No	Variances are equal. While the P-value (0.11) approaches significance, it does not meet the threshold of 0.05.
When planning a budget, what matters is the economic aspect;social and environmental are secondary	0.66	0.40	No	Variances are equal. The mean difference (0.31) is not statistically significant.
We encourage, where possible, a certain percentage of local materials, components, and labour	0.12	0.45	No	Variances are equal. The mean difference (0.24) is not statistically significant.
Our procurement process leaves room for SMEs	0.37	0.63	No	Variances are equal. The mean difference (0.17) is not statistically significant.

Table 6 Differences in SOE schedules concerning the environmental aspect of SP practices

Variable	Levene's Test (Sig.)	t-test (Sig. (2-tailed))	Significant Difference?	Comments
We source from green suppliers	0.01	0.56	No	Variances are unequal (use EVNA). The mean difference (0.29) is not statistically significant.
Specifications consider impacts of goods and services over the life cycle	0.02	0.05	Marginal	Variances are unequal. The P-value (0.05) is right at the significance threshold, suggesting marginal significance.
We consider reuse, repair, and upgrade of existing assets before new purchases	0.03	0.01	Yes	Variances are unequal. The P-value (0.01) indicates a statistically significant difference.
Specifications include suppliers' commitment to waste reduction	0.02	0.42	No	Variances are unequal. The mean difference (0.42) is not statistically significant.
We consider environmental issues (emissions, pollution, noise) during procurement planning	0.01	0.22	No	Variances are unequal. The P-value (0.22) indicates no significant difference.
We identify environmental impacts of goods and services before tender	0.01	0.09	No	Variances are unequal. The P-value (0.09) suggests no significant difference, although it approaches significance.
Our specifications entail environmental criteria	0.00	0.12	No	Variances are unequal. The mean difference (0.73) is not statistically significant.
We use life cycle analysis to evaluate environmental friendliness of products and packaging	0.01	0.23	No	Variances are unequal. The P-value (0.23) indicates no significant difference.

Table 7 Emergent themes in SP practices in schedule 2 & 3 SOEs

Theme	Dimension	Schedule 2 SOEs	Schedule 3 SOEs
Procurement Practices	Procurement Spend	Approximately R500 billion (2018/19), including power plants, ports, pipelines, and renewable energy projects.	Approximately R800 million; smaller operational budgets and narrower procurement scope.
	Goods, Services & Infrastructure	Wide-ranging goods and services: clinics, roads, engineering, IT, freight rails, and bulk water infrastructure.	Focus on office supplies, security services, routine maintenance, and regional infrastructure.
	Best Value for Money	Procurement emphasizes financial prudence and lifecycle cost analysis.	Value-for-money emphasized through basic compliance and budget adherence.
	Functionality Requirements	Performance standards applied rigorously in capital-intensive tenders.	Functionality used in specialized tenders but inconsistently applied.
	Lowest Price vs. Quality	Balanced approach: combines cost with quality, BBBEE, and long-term value.	Lowest price often prioritized due to constrained budgets.

Table 7 Emergent themes in SP practices in schedule 2 & 3 SOEs (Cont'd)

Theme	Dimension	Schedule 2 SOEs	Schedule 3 SOEs
Sustainable Procurement Practices	Support for Small Suppliers	SME participation is limited due to scale and global sourcing strategies.	Some SME outreach, but success is hindered by compliance and scale requirements.
	Inclusion of Disabled Suppliers	Low engagement with disabled suppliers; minimal targeted outreach.	Disabled supplier participation is limited and not a priority.
	Suppliers Pay Minimum Wage	Compliance with minimum wage (e.g., PSIRA) is expected in tenders.	Wage compliance is stated but rarely monitored rigorously.
	Child Labor Policies	Child labor clauses included, but proactive enforcement is limited.	Labor law compliance expected, but child labor safeguards weakly enforced.
	Buying from Rural- Owned Businesses	Urban-based SOEs face challenges in attracting rural vendors.	Procurement from rural businesses is rarely prioritized or enabled.
	Employment of Local Communities	Employment of local communities is mandated in certain infrastructure projects.	Community employment encouraged but lacks formal enforcement mechanisms.
	Local Content Requirements	Local content and ESD programs promote domestic sourcing and employment.	Preference exists for local sourcing, but implementation is inconsistent.
	Environmental Criteria in Specifications	Environmental standards are included in tenders but not always mandatory.	Environmental criteria applied selectively based on contract type.
	Buying from Green Suppliers	Weak green supplier market; low incentives and limited supplier base.	Green procurement not compulsory; enforcement remains weak.
	Support for Local/Disadvantaged Groups	Tenders include BBBEE and local development goals but with fragmented integration.	Support exists for disadvantaged groups under PPPFA, but execution is patchy.
	Policy-Driven Focus	Policies prioritize preferential procurement; ESG alignment is inconsistent.	Policies follow PPPFA framework with limited SP strategy integration.
	Lack of SP Training	Limited sustainability training, mostly for senior staff; operational gaps persist.	Training on SP is lacking across levels; SCM practitioners under-equipped.
	Lack of Awareness	Moderate awareness of SP; implementation gaps remain.	Awareness of SP is low and not embedded in organizational practice.
	No Formal SP Policy	SP frameworks exist but lack enforcement and integration.	No formal SP policy; sustainability often excluded from procedures.
	Corruption & Weak Governance	Regulatory enforcement is weak; bid manipulation and political interference are concerns.	Lack of consequence management fosters irregular procurement practices.

Table 7 presents a comparative analysis of SP practices across Schedule 2 and Schedule 3 SOEs in South Africa, highlighting both structural parallels and capacity-driven divergences. Schedule 2 SOEs, comprising major utilities in power, logistics, and infrastructure, manage expansive procurement portfolios supported by substantial budgets. Their practices reflect elements of strategic procurement maturity, including lifecycle costing, functionality-based tendering, and local content integration. However, sustainability considerations are inconsistently applied, often subordinated to cost-efficiency imperatives. Schedule 3 SOEs, typically responsible for water infrastructure and passenger rail, operate within tighter budgetary and operational constraints. Their procurement is predominantly compliance-oriented, focused on fulfilling regulatory requirements rather than advancing broader sustainability goals. Despite their proximity to communities, these entities lack the institutional capability and autonomy to systematically embed SP principles. Across both categories, the adoption of SP remains under-institutionalized. Engagement with small, rural, and disabled suppliers is limited, while enforcement of labor protections and environmental criteria is weak. Green procurement, in particular, is hampered by underdeveloped supplier markets and the absence of mandatory standards. These patterns reflect a persistent policy practice gap: while preferential procurement under the PPPFA is actively pursued, sustainability objectives are often sidelined due to the lack of a formal SP policy framework, insufficient training, and low practitioner awareness. The findings suggest that SP implementation is not merely a technical challenge, but a reflection of broader institutional and regulatory misalignments. Schedule 2 SOEs require enhanced ESG oversight and integration of sustainability into performance frameworks. Schedule 3 SOEs need foundational policy development, targeted capacity-building, and greater procurement decentralization to support inclusive and localized development outcomes.

4.5 Discussion of Result

This study assessed the integration of social, economic, and environmental sustainability in procurement practices within South African SOEs, analyzing potential differences between Schedule 2 and Schedule 3 SOEs. The findings indicate that while economic sustainability receives the highest emphasis, social and environmental sustainability remain underdeveloped. The findings align with the study of McCrudden (2004), who suggests that governments worldwide are using their purchasing power to promote social and environmental objectives. The quantitative results confirm uniformity in procurement priorities across SOEs, while qualitative insights reveal implementation challenges, including bureaucratic inefficiencies, weak enforcement, and policy misalignment. The discussion below synthesizes these findings, linking them to relevant theoretical perspectives.

4.5.1 Social Sustainability in Procurement

The quantitative results indicate that SOEs actively promote inclusive procurement practices, such as supporting small businesses, women- and youth-owned enterprises, and fostering local employment. However, the qualitative data reveals persistent challenges in social sustainability, particularly in sourcing from rural suppliers and integrating disabled-owned businesses into procurement frameworks. Respondents emphasized that small and rural enterprises struggle to compete for SOE contracts due to bureaucratic barriers, lack of awareness, and financial constraints. This aligns with Institutional Theory, which suggests that government regulations influence procurement behavior but may not fully address systemic social inequalities. These results are completed by the World Bank's Gini Index list which highlighted South Africa as the country with highest level of inequality in the world. The main sources of inequality are inequality of disparities and opportunities in the economy, with the apartheid legacy playing a major role and access to jobs and land being constrained. Additionally, while suppliers are required to pay minimum wages and adhere to labor laws, enforcement remains inconsistent, as reported in the qualitative findings. This supports Stakeholder Theory, which emphasizes government oversight and public accountability in driving social sustainability efforts. The lack of a clear, significant statistical difference ($p > 0.05$) between Schedule 2 and Schedule 3 SOEs suggests that both categories operate under similar policy mandates, particularly B-BBEE policies. This finding aligns with institutional theory. Institutional theory is key in addressing SP practices within various organisational groups in terms of the similarity of the activities. However, qualitative data suggest that practical enforcement gaps prevent the full realisation of social sustainability goals, reinforcing findings from the World Bank (2023), the National Treasury (2015), and PSETA (2016).

4.5.2 Economic Sustainability in Procurement

Economic sustainability remains the most emphasized aspect of sustainable procurement, with SOEs supporting SME development, local supplier inclusion, and industrialization initiatives. However, qualitative insights highlight the dominance of cost-efficiency considerations, often at the expense of long-term sustainability objectives. Respondents reported that procurement officials prioritize lowest-cost suppliers, even if they do not align with broader transformation objectives, leading to challenges in achieving true economic empowerment. Furthermore, qualitative data emphasizes barriers to sustainable supplier participation, including complex bidding requirements, limited supplier development support, and a lack of financial incentives for long-term sustainability investments. This aligns with Ambe (2016) and Turley & Perera (2014), who suggest that while procurement facilitates job creation and domestic manufacturing expansion, it often fails to prioritize long-term sustainability impacts. There is no significant conclusive evidence to suggest a significant difference between Schedule 2 and Schedule 3 SOEs entities in economic sustainability practices ($p > 0.05$), indicating similar procurement mandates. This finding aligns with institutional theory. Institutional theory is key in addressing SP practices within various organisational groups in terms of the similarity of the activities. However, qualitative findings suggest that Schedule 3 SOEs place slightly more emphasis on supplier development, while Schedule 2 SOEs remain cost-driven, confirming the RBV perspective.

4.5.3 Environmental Sustainability in Procurement

Environmental sustainability remains the least developed dimension of SP in SOEs. Quantitative results show limited adoption of green procurement practices, with only moderate consideration of lifecycle assessments and asset reuse. This finding aligns with institutional theory.

Institutional theory is key in addressing SP practices within various organisational groups in terms of the similarity of the activities. However, qualitative data highlights deeper systemic challenges, including a lack of formal SP policies, poor enforcement of environmental criteria in procurement, and minimal emphasis on green supplier development. Respondents emphasized that procurement officials often deprioritize environmental sustainability due to cost constraints and weak regulatory oversight, confirming findings from PSETA (2016). However, qualitative data suggests that SOEs do not perceive environmental procurement as a priority, particularly in infrastructure and service procurement sectors. The findings further reveal statistically significant differences ($p < 0.05$) between Schedule 2 and Schedule 3 SOEs in environmental procurement, with Schedule 2 SOEs more likely to adopt cost-driven green initiatives, while Schedule 3 SOEs adhere to government- mandated environmental policies. This reinforces global sustainability trends (Ruparathna & Hewage, 2015), highlighting the need for stronger regulatory frameworks and procurement incentives to enhance green procurement adoption. The findings align with Brammer and Walker's (2011) international study, which showed that although environmental aspects of SP are emphasized in policy across Europe, public sector institutions in the UK and both Western and Eastern Europe tend to prioritize economic and social dimensions, such as sourcing from small/local businesses, safety, and sustainable labor practices, in practice.

5. CONCLUSION, IMPLICATIONS, AND LIMITATIONS

5.1 Conclusion

This study confirms that SP in South African SOEs remains underdeveloped, with a strong emphasis on economic sustainability, moderate progress in social sustainability, and weak adoption of environmental considerations. The qualitative findings reinforce these conclusions, indicating that small supplier inclusion, governance weaknesses, and the absence of a comprehensive national SP policy hinder sustainability integration. Furthermore, both quantitative and qualitative data suggest minimal differences between Schedule 2 and Schedule 3 SOEs, except in environmental sustainability, where regulatory enforcement and financial autonomy influence procurement priorities. Given their strategic role in national development, SOEs should be utilized as catalysts for advancing all three dimensions of sustainability, ensuring that economic imperatives do not overshadow environmental and social commitments. A comprehensive national SP policy is needed, supported by training programs and awareness campaigns to ensure a uniform and strategic approach to sustainability in SOEs. South Africa must also align its SP practices with international sustainability trends, particularly by strengthening environmental procurement frameworks.

5.2 Theoretical and Practical Implications

This study contributes to procurement and sustainability literature by assessing how social, economic, and environmental sustainability are integrated into procurement practices within South African SOEs. The findings reveal a disproportionate emphasis on financial criteria, often at the expense of environmental procurement, highlighting the need for a more balanced approach to sustainability in SOE procurement. From a theoretical perspective, the study supports Institutional Theory, demonstrating that regulatory pressures drive procurement practices across SOEs, leading to uniform implementation of social and economic sustainability measures. It also aligns with Stakeholder Theory, emphasizing the role of government oversight and public accountability in advancing social sustainability through B-BBEE policies and supplier diversity programs. The findings further reinforce the Resource-Based View (RBV) by showing that economic sustainability is prioritized as a strategy for resource efficiency and financial performance. However, the study only partially supports the Natural Resource-Based View (NRBV), as environmental procurement is inconsistently applied, varying based on SOE autonomy and regulatory compliance. From a practical perspective, the study underscores the need for a national SP policy to provide clear guidelines on integrating sustainability objectives into SOE procurement frameworks. It calls for capacity-building programs to train procurement professionals on green procurement strategies and lifecycle cost assessments to enhance environmental sustainability adoption. Additionally, procurement policies should go beyond B-BBEE requirements to include marginalised communities, rural suppliers, and enterprises owned by people with disabilities. Lastly, the study highlights the importance of mandatory environmental sustainability reporting in SOEs to ensure greater accountability, transparency, and measurable progress in green procurement adoption.

5.3 Limitations

Despite its contributions, this study has limitations that must be acknowledged. First, the research was geographically confined to Gauteng Province and focused solely on SOEs affiliated with SOEPF. As such, the findings may not fully represent procurement practices in other provinces or among unaffiliated entities, thereby limiting the generalizability of results. Second, the purposive sampling strategy, though appropriate for targeting knowledgeable respondents may have excluded divergent institutional experiences, particularly from smaller or less formalized SOEs. There was a notable imbalance in the sample distribution, 44 Schedule 2 SOEs compared to only 14 Schedule 3 SOEs. This disproportion may have influenced the robustness of the comparative analysis between the two categories. No statistical adjustments (such as weighting or stratified sampling corrections) were applied to address this disparity. As such, while the study presents meaningful contrasts, the comparative findings should be interpreted with caution and considered exploratory rather than conclusive. Third, the complexity and heterogeneity of the industries in which SOEs operate suggest that sector-specific procurement dynamics may further affect SP implementation. Future research should address these limitations by incorporating a more balanced and representative sample across provinces, SOE categories, and sectors. Comparative studies involving other regions or countries would further validate the findings and offer cross-contextual insights into the institutional, regulatory, and operational drivers of sustainable procurement.

CONFLICTS OF INTEREST

There is no conflict of interest in this paper.

DATA AVAILABILITY STATEMENTS

The data for the study is available and ethical clearance for the study was obtained from the College of Economic and Management Sciences, University of South Africa (UNISA).

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