



Received: 01-06-2026
Accepted: 11-07-2026

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Examining the Effectiveness of Mopani Copper Mines' Supplier Development Program on Local Value Chain Integration: A Case Study of SMEs in Kitwe

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Abstract

This study examines the effectiveness of Mopani Copper Mines' Supplier Development Program (SDP) on local value chain integration for Small and Medium Enterprises (SMEs) in Kitwe, Zambia. Against a background where mining multinationals face pressure to generate local economic benefits and transcend the "enclave economy" syndrome, the research sought to determine whether Mopani's SDP fosters meaningful and sustainable SME integration or merely sustains dependency. The study pursued three specific objectives: to assess the program's effect on SMEs' operational capacity and compliance standards; to examine its influence on financial viability and contract award value; and to determine the extent to which it enhances market diversification and long-term sustainability beyond Mopani. Employing a descriptive case study design, the research collected quantitative data via structured questionnaires

from a purposively and randomly selected sample of 50 SMEs in Kitwe. The findings reveal that the SDP is highly effective in building operational capacity and compliance, with 70% of SMEs reporting full or largely improved compliance and an average revenue increase of 40.82%. However, the program falls short of fostering sustainable independence. Despite increased contract awards, SMEs face persistent challenges, including delayed payments, high operating costs, and limited market diversification, with only 46% achieving high success in entering new markets. The study concludes that while the SDP successfully creates a capable and compliant local supplier base for Mopani, it ultimately cultivates a state of sustained dependency by failing to address structural financial barriers and power asymmetries, thereby limiting broader economic resilience and diversification for local enterprises in Kitwe.

Keywords: Supplier Development, SMEs, Local Value Chain, Mopani Copper Mines, Zambia

1. Introduction

The role of multinational corporations in fostering sustainable development has transitioned from a peripheral concern to a core strategic imperative in the 21st century (Carroll & Brown, 2018) [26]. This evolution is particularly critical within the extractive industries, which are often characterized by the "resource paradox" a stark contrast between vast natural resource wealth and pervasive local poverty (Acquaah, 2016) [2]. Globally, the failure of mining operations to generate meaningful local economic benefits has frequently resulted in social conflict, reputational damage, and operational disruptions, prompting a fundamental reevaluation of corporate-community engagement (Hilson, 2020) [33]. In response, the concept of "shared value" whereby corporate policies enhance a company's competitiveness while simultaneously advancing the economic and social conditions of its host communities—has gained significant traction (Porter & Kramer, 2019) [44]. A primary mechanism for actualizing this principle is through Local Content and Supplier Development, which aims to systematically integrate host communities into the corporate value chain, moving beyond philanthropy to create mutually beneficial economic linkages (Ovadia & Wolf, 2021).

Regionally, Africa's economic landscape is profoundly shaped by its extractive sectors, yet the continent has historically suffered from the "enclave economy" syndrome (African Development Bank [AfDB], 2022) [5]. In this model, mining operations function as isolated economic islands with limited backward and forward linkages to the local economy, resulting in massive export revenues that contribute minimally to broad-based industrialisation or job creation. Recognizing this developmental pitfall, continental frameworks such as the African Union's Agenda 2063 (African Union Commission, 2015) [7] and the Africa Mining Vision (AMV) (UNECA, 2021) explicitly advocate for translating mineral wealth into sustainable

development by building local productive capacity and leveraging mining procurement to stimulate the growth of Small and Medium Enterprises (SMEs). Consequently, African governments are increasingly enacting local content policies that mandate minimum thresholds for local procurement, thereby establishing Supplier Development Programs (SDPs) as a central tenet of modern mining practice and a key tool for achieving inclusive growth (World Bank, 2023) ^[52].

In Zambia, whose economy has been synonymous with copper for nearly a century, this dynamic is acutely evident. Despite the mining sector contributing approximately 70% of the country's export earnings (Zambia Ministry of Finance and National Planning, 2024) ^[55], communities on the Copperbelt, such as Kitwe, have often experienced the negative externalities of mining including environmental degradation and economic volatility without fully capturing its long-term developmental benefits (Bowa, 2021) ^[20]. In this context, mining giants like Mopani Copper Mines (MCM) are under increasing pressure to demonstrate their social license to operate. Mopani's Supplier Development Program represents a strategic initiative designed to respond to these national imperatives and legislative prompts, such as the Mines and Minerals Development Act of 2015 (Republic of Zambia, 2015) ^[47], by identifying, training, and procuring from local Zambian SMEs (ZCCM-IH, 2023) ^[56]. However, a critical question remains: are these programs effectively achieving meaningful and sustainable local value chain integration, or do they merely serve as symbolic gestures that perpetuate dependency? It is against this backdrop that this study seeks to conduct a critical examination of the effectiveness of Mopani Copper Mines' Supplier Development Program, providing much-needed empirical evidence to bridge the gap between its theoretical promise and the practical realities faced by SMEs in Kitwe.

1.1 General Objective

To examine the effectiveness of Mopani Copper Mines' Supplier Development Program in achieving local value chain integration for Small and Medium Enterprises in Kitwe.

1.1.1 Specific Objectives

1. To assess the effect of Mopani's Supplier Development Program on the operational capacity and compliance standards of participating SMEs in Kitwe.
2. To examine the influence of the Supplier Development Program on the financial viability and contract award value of beneficiary SMEs.
3. To determine the extent to which participation in the Supplier Development Program enhances the market diversification and long-term sustainability of local SMEs beyond their engagement with Mopani.

1.2 Theoretical Framework

This study is anchored on the Resource-Based View (RBV) of the Firm, a theory which posits that a firm's sustainable competitive advantage is derived from its internal resources and capabilities that are valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991; 2018) ^[15, 16]. The theory shifts focus from external market forces to internal strengths, particularly intangible assets like knowledge, skills, and organizational processes. In this context, Mopani Copper Mines' Supplier Development Program (SDP) is conceptualized as a critical external intervention designed to

infuse local SMEs with precisely these types of VRIN resources. The training, mentorship, and technical support provided constitute direct investments in the SMEs' resource base, theoretically enhancing their operational capacity, compliance standards, and overall competitiveness within demanding supply chains (Wernerfelt, 2014).

The RBV provides a cohesive analytical lens for all three of the study's objectives. It logically connects the acquisition of resources through the SDP to expected firm-level outcomes. Firstly, the development of intangible capabilities (e.g., improved production processes, quality management systems) is seen as the foundation for enhancing operational performance. Secondly, the theory maintains that such enhanced resources should translate into superior financial performance and an increased ability to secure valuable contracts, as capabilities are converted into tangible rewards (Grant, 2019; Kabo, 2020) ^[31, 37]. Finally, for the third objective, the RBV's emphasis on sustainable advantage allows this research to assess the fungibility and durability of the acquired resources. The extent to which SMEs can leverage these capabilities to diversify into new markets and reduce dependency on Mopani serves as the ultimate test of whether the SDP fosters genuine, long-term competitiveness or merely a dependent form of integration (Peteraf & Barney, 2003).

2. Literature Review

2.1 Supplier Development Programs and SMEs' Operational Capacity and Compliance Standards

Globally, Supplier Development Programs (SDPs) are recognized as critical tools for enhancing SME operational capacity and compliance within mining value chains, though their efficacy is highly context-dependent. Research in South America reveals a mixed picture; in Peru, SDPs have modestly bolstered SME capacity through access to testing facilities and niche innovation, yet persistent barriers like limited finance and weak national innovation systems hinder broader impacts (Bamber, Fernandez-Stark, & Molina, 2023) ^[14]. Similarly, in Chile, structured training significantly improved productivity and export readiness by 15-20%, though compliance with international standards remains uneven without sustained monitoring (Arráiz & Simón, 2018) ^[10]. In contrast, North American and Oceanian models, such as Canada's Impact Benefit Agreements and Australia's Industry Participation Plan, emphasize Indigenous inclusion and regulatory enforcement, achieving up to 30% higher compliance rates through targeted lending and training (Nickerson & Geipel, 2019) ^[43]; Luzzini *et al.*, 2016). European studies further highlight the role of state incentives and sustainability-oriented frameworks, with Norway's long-standing local content regulations achieving 70% adherence to international standards like ISO 14001 (Wagner, 2024). However, scholars caution that asymmetric power dynamics in buyer-supplier relationships can undermine long-term compliance, suggesting that relational trust and mutual incentives are as crucial as technical training (Bai *et al.*, 2021) ^[13]. In Asia, the focus shifts to digital and policy-driven interventions, with ASEAN programs boosting compliance by 22- 28% through subsidized training and business matching, though enforcement gaps in countries like Myanmar reveal the limitations of regional harmonization without strong institutional backing (OECD, 2019; OECD & ERIA, 2024). Regionally in Africa, SDPs are central to the continent's

development agenda, yet their outcomes are often shaped by institutional capacity and foreign investment patterns. In West Africa, Ghana's local procurement regulations spurred in-country spending to \$2.67 billion by 2020, enhancing SME operational capacity, though high technical standards and costly permits limited local manufacturing to under 60% of procurement lists (Atta-Quayson, 2022) ^[12]. Similarly, Guinea's IFC-supported program bolstered operational capacity for over 100 SMEs, yet compliance gaps persisted due to weak enforcement and asymmetric power relations (African Union Commission & OECD, 2022) ^[8]. In Southern Africa, South Africa's Mining Charter and Botswana's Debswana program have driven innovation and value chain participation, with cooperative agreements increasing product innovations by 20-30% among mining SMEs (Hansen, Petersen, & Nygaard, 2019; African Union Commission & OECD, 2024) ^[32, 9]. However, political instability in Central Africa and uneven enforcement in East Africa often undermine compliance gains, as seen in Tanzania, where Chinese investments boosted capacity by 10-15% but led to environmental compliance shortfalls (Runde, Savoy, & Staguhn, 2024) ^[49]. A key theme across the continent is the tension between policy-driven approaches, as in Ghana and South Africa, and investment-reliant models, as in Tanzania and Ethiopia, with the latter often resulting in limited knowledge transfer and sustained dependency on foreign firms (Sen, 2025).

In the Zambian context, the discourse on SDP effectiveness is marked by a debate between the potential of voluntary initiatives and the need for mandatory local content policies. Empirical studies in Kitwe show that while mine-linked SMEs demonstrate greater operational scale, they face volatile procurement, reliance on foreign inputs, and systemic hurdles like corruption and weak networks, which collectively undermine meaningful upgrading (Benshaul-Tolonen & Fernandez Musso, 2025; World Bank, 2025) ^[17, 53]. Historical analyses trace these challenges to post-1991 privatization, which eroded domestic sourcing to under 15%, confining SMEs to non-core supplies despite ad hoc capacity-building efforts from mines like Mopani (Lombe, 2020; Fessehaie, 2019). Recent surveys corroborate that while SDPs enhance skills and predict inclusion, they often fail to enable meaningful mine supply integration or job creation due to trust gaps and poor implementation (Chansa *et al.*, 2019) ^[28]. This has fueled calls for a shift from "soft" voluntary approaches to "hard" local content policies with stringent quotas and penalties, as envisioned in Zambia's new 2025 regulatory framework (Bowmans, 2025; Chambers and Partners, 2025) ^[22, 27]. The collective evidence suggests that without such mandatory, well-enforced policies complemented by financial support and skill transfer, SDPs in Zambia risk perpetuating a state of sustained dependency rather than fostering the sustainable, diversified local enterprise development envisioned by the Africa Mining Vision.

2.2 Influence of Supplier Development Programs on Financial Viability and Contract Award Value of SMEs

Globally, research demonstrates that Supplier Development Programs (SDPs) can significantly enhance SME financial viability and contract values, though outcomes are often mediated by robust governmental support and inclusive program design. In Europe, government-backed initiatives in Finland and Sweden have driven average revenue

increases of 25% for SMEs through R&D grants and low-interest loans, while partnerships with research institutions have helped Swedish SMEs secure contracts worth up to €350,000 annually (Hilson *et al.*, 2020) ^[34]. Similarly, in Canada, targeted funds for Indigenous-owned SMEs and transparent procurement under the Towards Sustainable Mining program have yielded a 30% rise in net profits and contract awards averaging CAD 500,000 (Ramdoo, 2019 ^[46]; Loutit *et al.*, 2016). However, studies caution that high compliance costs can erode profit margins by 15%, disproportionately affecting smaller SMEs (Esteves & Barclay, 2018). In South America, Chile's World Class Supplier Program fostered collective sales of US\$400 million and 20% profitability gains through innovation-driven solutions, though dependency on mining conglomerates exposes SMEs to commodity price volatility (Navarro, 2018; Sánchez & Hartlieb, 2020) ^[42, 50]. Oceania's focus on sustainable practices, such as Australia's Leading Practice Sustainable Development Program, has bolstered financial margins by 22% and generated AUD 300 million in annual Indigenous-led contracts, yet delayed payments and high entry costs remain viability risks for undercapitalized firms (Franks *et al.*, 2020; Esteves *et al.*, 2017). These findings collectively underscore that while SDPs clarify pathways to financial uplift, their success hinges on integrating financial safeguards and mitigating structural inequities in contract distribution.

Regionally, the financial impact of SDPs in Asia and Africa is shaped by the interplay of mandatory local content rules and entrenched institutional challenges. In Indonesia, Contract of Work frameworks have boosted SME contract values by 20–30%, yet compliance gaps and high production costs linked to local content requirements have stifled profitability for smaller suppliers (PwC Indonesia, 2025 ^[45]; CSIS Indonesia, 2022). Similarly, Kazakhstan's Subsoil Use Code mandates 30–50% local procurement but achieves only 3.33% implementation, with SMEs facing a 15% margin squeeze due to financing constraints and inadequate capacity building (World Bank, 2023) ^[52]. In Africa, Ghana's procurement regulations catalyzed in-country spending of US\$2.7 billion, lifting SME revenues by 20–25%, though tariff exemptions on imports continue to undermine local manufacturing viability (Atta-Quayson, 2022 ^[12]; Smith *et al.*, 2019). Conversely, in Nigeria, community development agreements have been frustrated by delayed payments and corruption, capping contract values below ₦500 million annually and eroding SME financial stability (Abe, 2021 ^[1]; Ovidia, 2019). Southern African initiatives, such as South Africa's Zimele program and Botswana's Supplier Development Programme, report 25% profitability increases and contract growth of up to 30% for participating SMEs, but infrastructural bottlenecks and compliance costs suppress gains for remote or marginalized enterprises (Mparutsa, 2025; International Trade Centre, 2019) ^[41, 36]. A recurring theme across these regions is that without enforceable mandates, financial incentives, and targeted support for smaller firms, SDPs risk amplifying rather than alleviating existing disparities in SME financial integration.

In Zambia, the discourse on SDPs and financial outcomes is defined by a critical tension between the potential of recent investments and the legacy of historical exclusion. Post-privatization reforms in the 1990s eroded backward linkages, confining SMEs to low-value, non-core contracts

and undermining financial viability through inconsistent payments and foreign competition (Caramento, 2020^[25]; Kragelund, 2016). Although amendments to the Mines and Minerals Development Act (2015) spurred a rise in local content spending to US\$1.2 billion by 2019, enforcement weaknesses meant that only 30% of contracts reached genuine local SMEs, often at values below ZMW 1 million, thereby limiting profitability and perpetuating dependency (Fessehaie & Rustomjee, 2021; ZEITI, 2021^[57]). Recent developments under Mopani's new ownership, including a US\$1.1 billion investment and debt settlements to suppliers, have elevated local supplier engagement to 82% and generated over US\$200 million in contracts, signaling progress in contract award values (Chishya, 2024; Ministry of Mines and Mineral Development, 2024)^[29, 39]. However, critiques persist that these gains are unevenly distributed, with compliance costs, delayed payments, and limited access to capital continuing to erode the financial viability of smaller SMEs (Mining for Zambia, 2023^[40]; CSIS, 2025). The Zambian literature thus converges on the necessity of "hard" local content policies with stringent quotas, monitoring, and financial incentives to translate SDP participation into equitable and sustainable financial resilience for SMEs, moving beyond symbolic integration toward transformative value chain inclusion.

2.3 Supplier Development Programs, Market Diversification, and Sustainability of SMEs

Globally, the capacity of Supplier Development Programs (SDPs) to foster meaningful market diversification and long-term SME sustainability beyond the mining sector reveals significant divergence between theoretical potential and practical outcomes. Proponents point to strategic interventions that create new pathways for SME growth; for instance, the OECD (2025) highlights how ESG-integrated SDPs in European regions like Zinkgruvan enable over 40 local businesses to adopt circular economy practices, building sustained competitiveness. Similarly, systems change initiatives in Canada, such as the Mining Local Procurement Reporting Mechanism (LPRM), empower SMEs through transparency, fostering economic diversification and countering resource curse effects (Geipel & Nickerson, 2023)^[30]. In Oceania, programs facilitating capital access and renewable energy co-ownership in Australia's Pilbara region have enabled SMEs to pivot toward tourism and manufacturing, reducing economic volatility despite high mining dependency (OECD, 2023). However, these optimistic views are sharply contested by empirical evidence from resource-rich economies. In Chile, national policies emphasizing broad backward linkages have failed due to a lack of regional tailoring, leading to declining supplier sales, exports, and firm numbers, thereby trapping SMEs in generic services with limited diversification potential (Bravo-Ortega & Muñoz, 2018; Atienza *et al.*, 2018)^[23, 11]. This suggests that without context-specific, multi-level governance and a focus on creating fungible capabilities, SDPs may inadvertently reinforce functional specialization in low-value ancillary services, ultimately stifling the very diversification they aim to promote.

Regionally, the pursuit of diversification through SDPs and Local Content Policies (LCPs) in Asia and Africa is marked by ambitious industrial strategies clashing with implementation realities. In Asia, Indonesia's battery

strategy, backed by over USD 30 billion in investment, aims to integrate SMEs into electric vehicle (EV) supply chains, enhancing technological upgrades and export diversification (Huber, 2022)^[35]. Similarly, ASEAN-wide sustainable minerals development frameworks are posited to build SME capacity in ESG and governance, countering the resource curse (Satchwell *et al.*, 2022)^[51]. However, these initiatives are often undermined by governance gaps and environmental controversies, such as the high-pressure acid leaching waste in Indonesia's nickel sector, which limits sustainable benefits for smaller firms (Bilek *et al.*, 2023)^[18]. In Africa, strategic alliances in Ghana have led to a 25% rise in SME revenues and enhanced export capabilities (Ablo, 2019)^[3], while South Africa's Broad-Based Black Economic Empowerment codes have driven SME diversification into high-tech supplies like automation tools (Bloch *et al.*, 2018)^[19]. Conversely, in Nigeria, institutional weaknesses and a lack of complementary infrastructure have left SMEs tethered to extractive dependencies, preventing meaningful diversification into manufacturing or services (Ovadia, 2016). A recurring theme is that while linkage models reveal untapped potential (Weldegiorgis *et al.*, 2021), achieving sustainability often hinges on overcoming persistent capacity gaps, financial barriers, and the need for stricter enforcement of local content mandates to ensure SMEs are not sidelined in favor of foreign operators.

In the Zambian context, the discourse on SDP-driven diversification is intensely polarized, centering on whether programs can overcome a historical legacy of dependency to foster resilient, non-mining SME growth. Skeptics argue that institutional impediments and foreign dominance, entrenched since the 1990s privatization, have fundamentally limited diversification. Studies consistently show that despite the 2015 Mines Act, local content utilization remains below 15%, with SMEs confined to low-value services and facing stagnant linkages that prevent a pivot to sectors like manufacturing or agro-processing (Kragelund, 2017, 2020; Bowa *et al.*, 2023^[21]). This school of thought posits that without a developmental state challenging political interests and foreign investors, even well-intentioned SDPs will fail to create the intersectoral linkages necessary for sustainable, diversified growth (Caramento, 2020)^[25]. In contrast, a more optimistic outlook emerges from recent analyses of circular economy potential and regional integration. Tandem Circular Consulting (2024) identifies opportunities worth USD 1.25 billion annually in tailings reprocessing and e-waste recycling, suggesting that programs like GREEN Tech4CE could enable SMEs to diversify into green manufacturing. Furthermore, the African Development Bank (2024)^[6] argues that pragmatic LCPs, coupled with AfCFTA integration, could exploit SADC markets and displace USD 1 billion in imports, creating sustainable regional value chains for Zambian SMEs. The fundamental schism lies in the mechanism for change: critics advocate for mandatory "hard" LCPs with stringent quotas and penalties to force diversification (Kragelund, 2024), while optimists emphasize incentivized, circular, and regionally-focused models (Tandem Circular Consulting, 2024). Ultimately, the literature concurs that robust, multi-stakeholder governance is the pivotal factor that will determine whether SDPs in Zambia perpetuate a state of dependency or finally unlock sustainable SME sustainability beyond the mining enclave.

2.4 Literature Gap

While the extant literature provides substantial evidence on the operational and financial impacts of Supplier Development Programs (SDPs) globally and within Africa, a significant gap exists in conducting a holistic, SME-centric analysis that explicitly connects capacity-building outcomes with the ultimate goal of sustainable market diversification, particularly within the specific context of Mopani Copper Mines in Zambia. Existing studies, such as those by Kragelund (2017) and Bowa *et al.* (2023) [21], effectively critique the structural barriers and policy enforcement failures in Zambia, yet they often treat operational capacity, financial viability, and market diversification as separate siloes of inquiry. There is a lack of integrated, empirical research that traces the cause-and-effect pathway from the resources transferred by Mopani's SDP to the firm-level ability of Kitwe-based SMEs to achieve autonomy and resilience beyond the mining value chain. This gap leaves a critical question unanswered: why do apparent successes in operational and financial integration consistently fail to translate into sustainable diversification, and what specific mechanisms within the SDP perpetuate this state of sustained dependency? This study seeks to fill this void by providing a consolidated examination of these interconnected dimensions, offering a nuanced understanding of the program's holistic effectiveness.

3. Methodology

3.1 Research Design

This study employed a descriptive case study design to facilitate an in-depth examination of the effectiveness of Mopani Copper Mines' Supplier Development Program (SDP) within its real-life context. The design enabled the collection of both quantitative and qualitative data, providing rich, contextual insights into how and why the SDP influences SME development outcomes (Yin, 2018) [54].

3.2 Target Population

The target population consisted of SMEs in Kitwe District that have participated in Mopani's SDP. This included approximately 120 active SMEs in sectors like transport, catering, engineering, maintenance, and construction, as they are direct beneficiaries capable of providing accurate insights on program effectiveness.

3.3 Sampling Design

A combination of purposive and simple random sampling was used. Purposive sampling ensured only SMEs engaged with Mopani's SDP were included, while simple random sampling within this frame minimized selection bias and enhanced representativeness (Etikan, Musa & Alkassim, 2016).

3.4 Sample Size Determination

A sample size of 50 SMEs was determined using Krejcie and Morgan's (1970) formula for a population of 120 at a 95% confidence level. This size was both statistically representative and practically manageable for fieldwork, with stratification to ensure proportional representation across service categories.

3.5 Data Collection Methods

Primary data was collected through a structured questionnaire administered to SME owners/managers. The instrument used five-point Likert scales across four sections covering demographics, operational capacity, financial viability, and market diversification. Pilot testing with 5 SMEs ensured reliability and question clarity (Bryman, 2016) [24].

3.6 Data Analysis

Data analysis involved both quantitative and qualitative techniques. Quantitative data from questionnaires were processed using descriptive statistics, including frequencies, means, and cross-tabulations, to identify patterns and relationships related to SME operational capacity, financial viability, and market diversification (Acock, 2018) [4]. Qualitative insights from open-ended questions were analyzed thematically to contextualize the numerical findings. This mixed-method approach, supported by data triangulation, enabled a comprehensive understanding of the program's effectiveness.

3.7 Triangulation

Methodological triangulation was achieved by comparing survey results with secondary sources including Mopani's procurement reports and government publications. This enhanced validity through corroboration from multiple data perspectives (Denzin, 2017).

3.8 Limitations

Potential limitations included non-response bias, geographical specificity to Kitwe limiting generalizability, and the cross-sectional nature capturing only a single timepoint. These were mitigated through confidentiality assurances, clear question design, and contextual interpretation of findings (Kothari, 2014) [38].

3.9 Ethical Considerations

The study adhered to strict ethical protocols including voluntary participation, informed consent, anonymity, and confidential data storage. Ethical clearance was obtained and Zambia's Data Protection Act (2021) compliance maintained throughout (Resnik, 2018) [48].

4. Findings and Results

4.1 Characteristics of Respondents (Bio Data)

The demographic profile of the surveyed SMEs reveals a cohort primarily composed of relatively young, small to medium-sized enterprises concentrated in sectors directly servicing Mopani's core operational needs. The majority of businesses (56%) were established between 2010 and 2015, indicating a trend of recent entrepreneurial activity in Kitwe, while the average firm employed 27 people, with substantial variation in scale reflected in annual revenues ranging from ZMW 400,000 to ZMW 7.8 million (average ZMW 2.7 million). Sectoral distribution showed a strong focus on construction and engineering (20%) and manufacturing and production (14%), with significant presence in transport, ICT, and catering (8% each), confirming that the program predominantly engages suppliers aligned with the mine's technical and production supply chain. The high

participation rate of 76% in the SDP underscores that the findings are drawn from a sample deeply embedded in the program's initiatives, providing a robust foundation for assessing its impact on local value chain integration.

4.2 The effect of Mopani's Supplier Development Program on the operational capacity and compliance standards of participating SMEs in Kitwe

This section examines the effect of Mopani's Supplier Development Program on SMEs' operational capacity and compliance, highlighting improvements in efficiency, process adoption, certifications, and training outcomes.

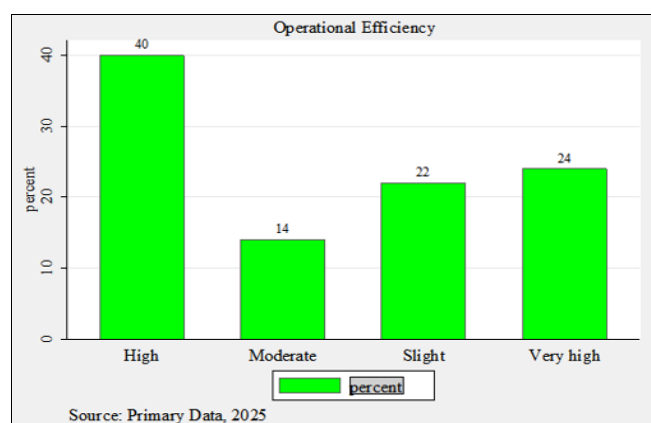


Fig 4.1: Operational Efficiency

Fig 4.1 reveals that a majority of SMEs (64%) rated the improvement in their operational efficiency due to the Supplier Development Program as high (40%) or very high (24%). Meanwhile, 14% reported a moderate improvement and 22% a slight improvement.

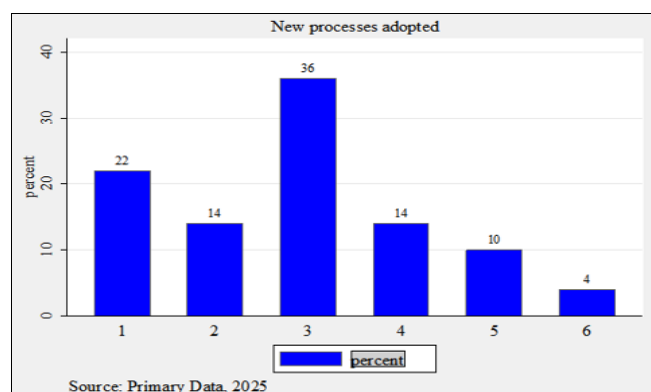


Fig 4.2: New processes adopted

Fig 4.2 shows that most SMEs (36%) adopted three new operational processes as a result of the Supplier Development Program, while 22% adopted one and 14% adopted two or four. A smaller proportion (10%) implemented five processes, and only 4% introduced six.

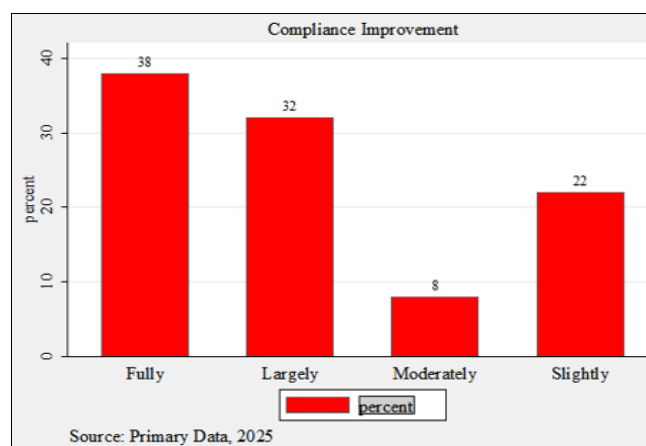


Fig 4.3: Compliance improvement

Fig 4.3 indicates that the majority of SMEs experienced substantial improvement in compliance with industry standards due to the Supplier Development Program, with 38% reporting they are fully compliant and 32% stating they have largely improved. Meanwhile, 8% noted moderate improvement and 22% only slight improvement.

Table 4.1: Certifications or compliance standards achieved after program participation

Category	Freq.	%
Quality Management (ISO 9001, ZABS Quality Marks)	16	32%
Occupational Health & Safety (ISO 45001, Safety Certs)	10	20%
Environmental Management (ISO 14001, ZEMA)	3	6%
Food Safety & Hygiene (HACCP, ISO 22000, Food Safety)	6	12%
Sector-Specific Certifications (FSC, Transport Safety, Organic)	3	6%
No	10	20%
Total	50	100%

Source: Primary Data, 2025

Table 4.1 shows that a significant portion of SMEs (32%) achieved quality management certifications such as ISO 9001 or ZABS Quality Marks, followed by 20% obtaining occupational health and safety certifications. Smaller proportions attained food safety and hygiene (12%), environmental management (6%), and sector-specific certifications (6%), while 20% reported no certifications.

Table 4.2: Distribution of Trainings Received by Suppliers

Category	Freq.	Percent
Technical & Skills Development	24	48%
Health & Safety (H&S) Training	10	20%
Business & Management Training	8	16%
Quality Assurance (QA) & Compliance Training	5	10%
No Training Received	3	6%
Total	50	100%

Source: Primary Data, 2025

Table 4.2 shows that nearly half of the SMEs (48%) received technical and skills development training, followed by health and safety training (20%) and business and management training (16%). Quality assurance and compliance training was received by 10%, while only 6% reported receiving no training.

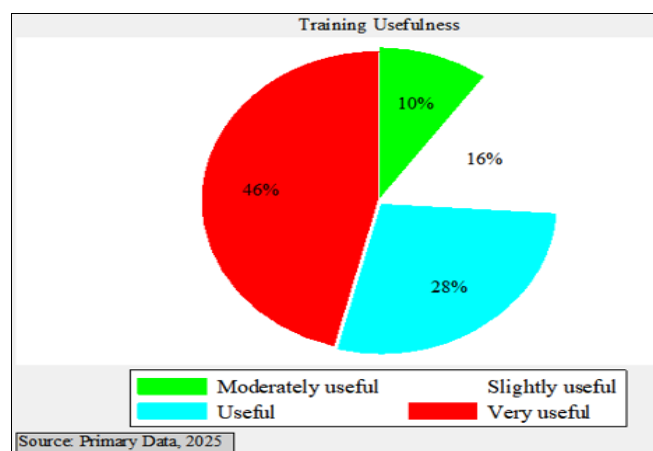


Fig 4.4: Training usefulness

Fig 4.4 shows that the majority of SMEs (74%) rated the training received through the Supplier Development Program as useful (28%) or very useful (46%), while 16% found it slightly useful and 10% moderately useful.

4.3 The influence of the Supplier Development Program on the financial viability and contract award value of beneficiary SMEs from Mopani Copper Mines

This section examines how the Supplier Development Program affects the financial viability and contract awards of Mopani Copper Mines' beneficiary SMEs, focusing on revenue, funding access, and overall support for supplier growth and competitiveness.

Table 4.3: Percentage increase in revenue since joining the program

Variable	Obs	Mean	Std. Dev.	Min	Max
c1revenuei-e	50	40.82	22.27719	0	85

Source: Primary Data, 2025

Table 4.3 shows that SMEs reported an average revenue increase of 40.82% since joining the Supplier Development Program, with increases ranging from 0% to 85%. The standard deviation of 22.28% indicates considerable variation among firms, suggesting that while many SMEs experienced significant financial growth, the impact of the program differs depending on individual business circumstances.

Table 4.4: The number of contracts awarded by Mopani before and after participation

Variable	Obs	Mean	Std. Dev.	Min	Max
c2contract~e	50	1.06	.8184106	0	3
c2contract~r	50	3.56	2.260215	0	9

Source: Primary Data, 2025

Table 4.4 indicates that before participating in the Supplier Development Program, SMEs had an average of 1.06 contracts with Mopani, ranging from 0 to 3 contracts. After participation, the average increased to 3.56 contracts, with a range of 0 to 9 contracts.

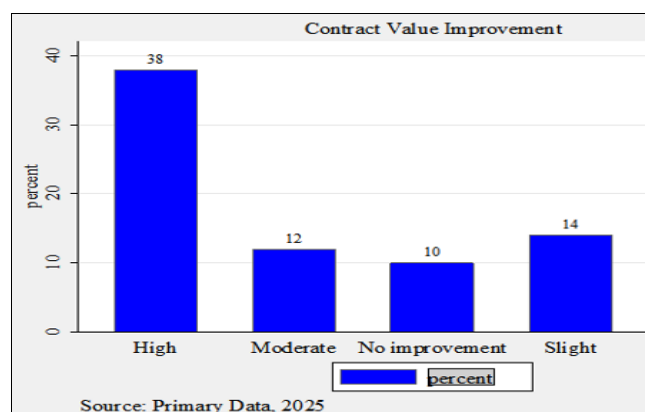


Fig 4.5: Contract value improvement

Fig 4.5 shows that a majority of SMEs (64%) rated the improvement in contract value as high (38%) or very high (26%) since joining the Supplier Development Program. Meanwhile, 12% reported moderate improvement, 14% slight, and 10% no improvement.

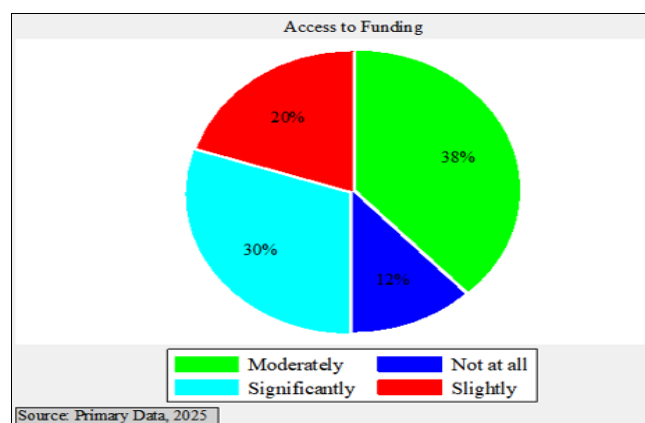


Fig 4.6: Access to funding

Fig 4.6 shows that participation in the Supplier Development Program improved SMEs' access to other funding sources for most respondents, with 38% reporting moderate improvement and 30% significant improvement. Meanwhile, 20% experienced slight improvement and 12% reported no improvement.

Table 4.5: Financial Challenges Faced by Suppliers

Category	Freq.	%
Delayed Payments & Limited Cash Flow	10	20%
High Operating & Input Costs	14	28%
Limited Access to Capital & Financing	8	16%
Market & Contract Access Limitations	7	14%
Rising Raw Material & Fuel Prices	6	12%
Equipment & Maintenance Costs	3	6%
Other Operational Challenges (e.g., Power Outages, Inflation)	2	4%
Total	50	100%

Source: Primary Data, 2025

Table 4.5 shows that the main financial challenges faced by SMEs, despite participating in the Supplier Development Program, include high operating and input costs (28%) and delayed payments or limited cash flow (20%). Other notable challenges are limited access to capital (16%), market and contract access limitations (14%), and rising raw material and fuel prices (12%), while equipment and maintenance costs (6%) and other operational issues (4%) were less frequently reported.

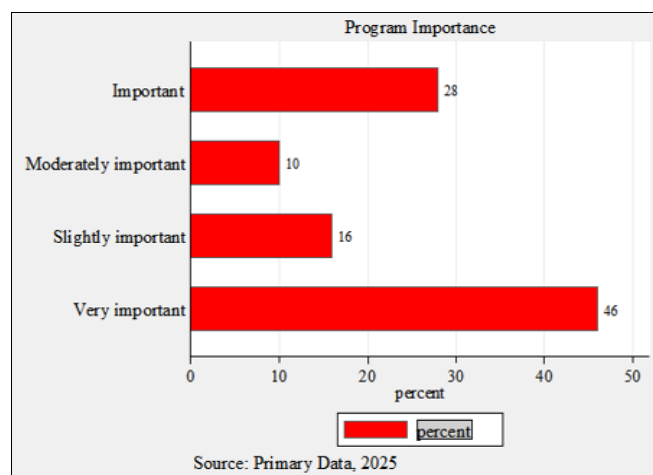


Fig 4.7: Program importance

Fig 4.7 shows that most SMEs (74%) consider the Mopani Supplier Development Program to be important (28%) or very important (46%) to their financial growth, while 10% rated it moderately important and 16% slightly important.

4.4 The extent to which participation in the Supplier Development Program enhances the market diversification and long-term sustainability of local SMEs beyond their engagement with Mopani

This section examines how participation in the Supplier Development Program has supported SMEs' market diversification and long-term sustainability, highlighting new market entry, growth strategies, challenges, and supply chain improvements.

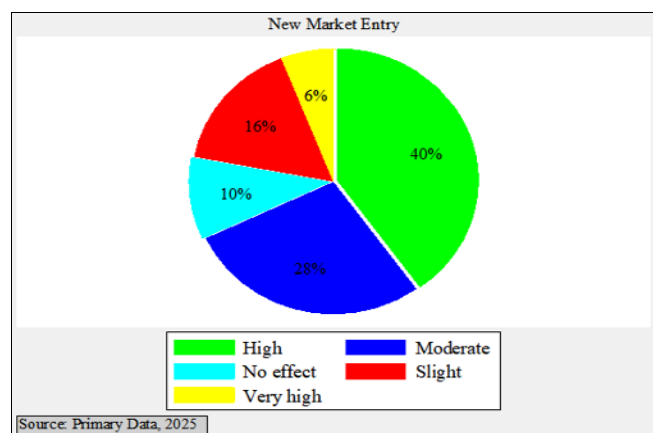


Fig 4.8: New Market Entry

Fig 4.8 shows that 40% of SMEs reported high success in entering new markets outside Mopani due to the Supplier Development Program, while 28% indicated a moderate impact. Smaller proportions reported slight (16%), very high (6%), or no effect (10%).

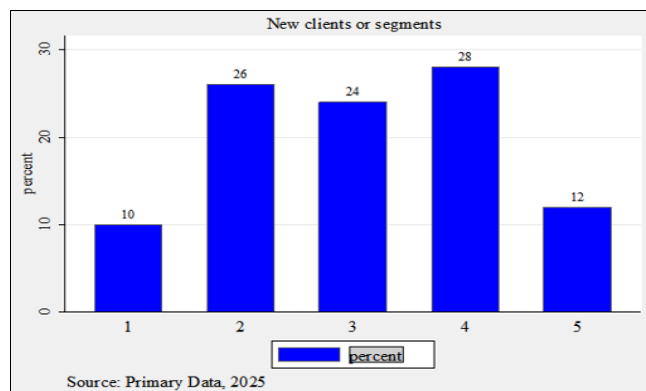


Fig 4.9: New clients or segments

Fig 4.9 shows that 40% of SMEs reported high success in entering new markets outside Mopani due to the Supplier Development Program, while 28% indicated a moderate impact. Smaller proportions reported slight (16%), very high (6%), or no effect (10%).

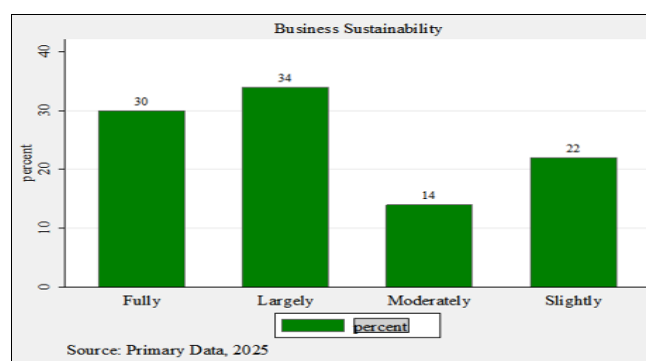


Fig 4.10: Business sustainability

Fig 4.10 shows that the majority of SMEs (64%) reported that the Supplier Development Program has contributed largely (34%) or fully (30%) to the long-term sustainability of their businesses. Meanwhile, 14% indicated moderate contribution and 22% slight contribution.

Table 4.6: Strategies or practices adopted from the program helping sustain the business

Category	Freq.	%
Operational Efficiency (Preventive maintenance, route optimization, fleet scheduling, process automation, project monitoring tools)	8	16%
Quality and Safety Management (Quality control, quality tracking, audits, food safety, safety compliance)	8	16%
Lean Production & Cost Control (Lean methods, cost saving, cost control, bulk procurement, recordkeeping)	7	14%
Environmental Sustainability (Energy efficiency, eco-packaging, water recycling, treated timber)	4	8%
Human Capital Development (Staff training, retraining, digital upskilling)	3	6%
Product and Market Diversification (Menu diversification, crop diversification, marketing outreach, customer retention)	4	8%
Supplier and Resource Management (Supplier diversification, community projects)	2	4%
Digital Transformation (Digital service expansion, financial planning tools, fleet tracking systems)	4	8%
Other (Basic recordkeeping, standardization, equipment maintenance)	10	20%
Total	50	100%

Source: Primary Data, 2025

Table 4.6 presents the distribution of operational strategies adopted by SMEs participating in Mopani's Supplier Development Program. The findings show that the most common areas of improvement were operational efficiency and quality and safety management, each accounting for 16% of responses. Other significant areas included lean production and cost control (14%) and digital transformation (8%). Additionally, 20% of SMEs reported adopting other practices such as standardization and equipment maintenance, reflecting a broad commitment to improving operations, compliance, and sustainability within their business processes.

Table 4.7: Main challenges in fully integrating into Mopani's supply chain

Category	Freq.	%
Delayed Procurement & Contract Processes	11	22%
Payment Delays & Financial Bottlenecks	6	12%
Bureaucracy & Regulatory Bottlenecks	6	12%
Market Access & Competition Challenges	7	14%
Limited Access to Resources, Equipment & Training	5	10%
High Compliance & Certification Costs	2	4%
Unfair Contracting & Exclusion Issues	4	8%
Price Instability & Inflation Effects	3	6%
Environmental & External Risks (e.g., Weather)	1	2%
Other Operational Challenges	5	10%
Total	50	100 %

Source: Primary Data, 2025

Table 4.7 shows that SMEs face several challenges in fully integrating into Mopani's supply chain. The most frequently reported issues were delayed procurement and contract processes (22%), market access and competition challenges (14%), and payment delays or financial bottlenecks (12%). Other notable constraints include bureaucracy and regulatory bottlenecks (12%), limited access to resources, equipment, and training (10%), unfair contracting and exclusion (8%), price instability and inflation (6%), and high compliance costs (4%), with smaller proportions citing environmental or other operational challenges.

Table 4.8: Suggested Improvements to Enhance Supply Chain Transparency and SME Participation

Category of Suggestion	Freq.	Percent
Financial Support & Access to Credit	10	20%
Simplification of Procurement Processes	7	14%
Payment Efficiency & Disbursement Improvements	3	6%
Capacity Building & Training	5	10%
Inclusion & Equity in Tendering	4	8%
Digitalization & Networking	3	6%
Cost Reduction & Compliance Ease	3	6%
Market Access & Local Sourcing Promotion	3	6%
Logistical & Transport Support	4	8%
Transparency & Governance Enhancements	4	8%
Price Stability & Operational Support	4	8%
Total	50	100%

Source: Primary Data, 2025

Table 4.8 shows that SMEs suggested several improvements to enhance supply chain transparency and participation. The most frequent recommendation was financial support and access to credit (20%), followed by simplification of procurement processes (14%). Other notable suggestions included capacity building and training (10%), inclusion and equity in tendering (8%), logistical support (8%),

transparency and governance enhancements (8%), and price stability and operational support (8%), while smaller proportions emphasized payment efficiency, digitalization, cost reduction, and market access (6% each).

4.5 Discussion of Research Findings

The influence of Mopani's Supplier Development Program on SME financial viability presents a complex paradox of measurable progress undermined by structural constraints. The substantial average revenue increase of 40.82% and the dramatic rise in contract awards provide strong empirical evidence that the program is fulfilling its core objective of creating "shared value" by enhancing SME financial performance (Porter & Kramer, 2019) [44]. This aligns with Resource-Based View theory, which posits that enhanced capabilities should translate into superior organizational performance (Grant, 2019) [31], as demonstrated by 64% of SMEs reporting high to very high improvements in contract value. However, this financial uplift is markedly uneven, characterized by significant variation in revenue growth and persistent vulnerabilities. The core paradox lies in the coexistence of improved financial metrics with debilitating challenges including high operating costs (affecting 28% of firms) and delayed payments (affecting 20%), which are not merely operational hiccups but structural features of the buyer-supplier relationship that systematically erode the very gains the program seeks to create, ultimately fostering a dependent form of viability rather than genuine entrepreneurial resilience.

The program's impact on market diversification and long-term sustainability reveals an even more critical limitation in its current design. While 64% of SMEs attribute significant contributions to their long-term sustainability to the SDP, this stability remains precariously confined within the Mopani ecosystem, failing to catalyze meaningful diversification beyond the mining value chain. The finding that only 46% of firms achieved high success in entering new markets indicates that the capabilities developed through the program lack sufficient fungibility for broader application, reflecting the "functional specialization in ancillary services" noted in similar mining contexts (Bravo-Ortega & Muñoz, 2018) [23]. This outcome underscores how the program's design, while effective at creating capable suppliers for Mopani's specific needs, inadvertently reinforces the very "enclave economy" it aims to dismantle by limiting SME capacity to leverage their enhanced capabilities in alternative sectors or markets.

Ultimately, the analysis suggests that Mopani's SDP in its current form cultivates what might be termed "sustained dependency" - a state where SMEs achieve improved operational and financial metrics but remain critically vulnerable to the mine's procurement cycles and payment practices. The persistent barriers reported by SMEs, including delayed procurement processes (22%), unfair contracting (8%), and bureaucratic hurdles (12%), are not failures of SME capability but features of asymmetrical power dynamics that the program does not adequately address (Luzzini *et al.*, 2016). This finding powerfully echoes Zambian-specific critiques that without confronting entrenched power asymmetries and implementing "hard" local content policies, supplier development may perpetuate dependency rather than foster sustainable independence (Caramento, 2020 [25]; Kragelund, 2017). The roadmap for transformation lies in the SMEs' own suggestions, which

emphasize financial support, simplified procurement, and enhanced transparency - reforms that would address the structural constraints currently limiting the program's potential to generate truly sustainable local enterprise development.

5. Conclusion

This study conclusively demonstrates that Mopani Copper Mines' Supplier Development Program (SDP) functions more effectively as a mechanism for corporate supply chain optimization than as a catalyst for sustainable local enterprise development. While the program successfully cultivates a standardized and compliant supplier base—evidenced by 70% of SMEs achieving full or largely improved compliance and adopting an average of three new operational processes—this achievement creates a fundamentally dependent relationship. The SDP constructs a captive ecosystem where enhanced capabilities are tailored specifically to Mopani's requirements, offering limited transferable competitive advantage and ultimately stifling genuine entrepreneurial autonomy. The celebrated financial uplift, including a 40.82% average revenue increase and a more than threefold jump in contract awards, proves to be a precarious façade that masks underlying structural vulnerabilities. These gains are systematically undermined by crippling operational constraints, particularly delayed payments affecting 20% of firms and high operating costs impacting 28%, revealing a program architecture that prioritizes the mine's procurement convenience over supplier financial health. Most critically, the program fails to overcome the enclave economy syndrome it purports to dismantle, with only 46% of SMEs achieving significant market diversification beyond Mopani, demonstrating that the acquired resources lack fungibility for broader application. By locking SMEs into mining-specific compliance requirements without addressing fundamental power asymmetries or structural barriers to diversification, the SDP integrates local firms into corporate value chains while simultaneously ensuring their continued dependency, leaving Kitwe's economy more deeply embedded in yet no more resilient to the inherent volatilities of global copper markets.

6. Acknowledgement

I am profoundly grateful to Almighty God for His guidance and strength throughout this project. I sincerely thank my work institution for its support and resources, my lecturers for their mentorship, and my family especially my mother, children, and brother for their unwavering love, encouragement, and support. I also appreciate my friends Nabyana Lizazi and Evelyn Malama for their moral and financial support, motivation, and kindness, which were invaluable in completing this academic journey.

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