# Constraints faced by domestic suppliers to mining industry in Kitwe, Zambia

Smiti Modhurima

*Barnard College, Columbia University*

**Abstract**

This research investigates the constraints faced by non-mining firms in Kitwe, Zambia, that supply or aspire to supply goods and services to the country's mining sector. With Zambia's mining industry serving as a cornerstone of its economy, the sector presents significant opportunities for local suppliers; however, non-mining firms encounter substantial barriers that limit their integration into this supply chain. This study draws on survey data from 1,055 firms in Kitwe to identify and analyze these barriers. Key constraints include a lack of industry connections and high competition. Through statistical and qualitative analyses, this research explores the economic and structural factors shaping these constraints and provides policy recommendations aimed at enhancing local supply chain integration. These insights contribute to a broader understanding of the challenges faced by non-mining sectors in resource-rich regions and inform policy frameworks to support more inclusive economic development.

## Introduction

### *Background*

The mining industry is a vital part of Zambia's economy, representing a significant portion of the nation's GDP (14%) and dominating its export sector, with more than 70% of foreign exchange stems from copper mining alone (African Development Bank, 2019). As the second-largest copper producer in Africa, Zambia has developed a mining infrastructure that plays a central role in regional economic activity, contributing to job creation and national revenue. Kitwe, situated in Zambia's Copperbelt Province, is at the heart of this industry and hosts a substantial number of mining operations, including notable mines like Mopani and Konkola (Nachalwe, 2020). These operations have led to a network of auxiliary industries that supply essential goods and services to mines, from food to equipment. However, despite the mining sector's role in bolstering national growth, Zambian firms, particularly non-mining suppliers, struggle to become fully integrated within the supply chains of mining companies.

Small to medium-sized enterprises (SMEs) in Kitwe (and in fact, across Africa) are particularly affected by this lack of integration, as they face significant challenges in becoming consistent suppliers (Bigsten and Söderbom, 2006). In a region where mining is the dominant industry, the ability of local firms to participate in the mining value chain is essential to foster economic growth and local wealth creation. However, we found that firms encounter several barriers to entering the mining sector, including limited access to business networks, competition, and a fluctuating demand for goods and services from mining companies. Additionally, issues such as corruption and high barriers to building connections with mining firms further complicate efforts for local suppliers to establish themselves in the sector. These challenges highlight the need to better understand the structural constraints that prevent Kitwe's non-mining suppliers from capitalizing on the opportunities presented by the mining industry.

The limited involvement of local firms in the mining industry supply chain reflects a broader trend of restricted local content in globalized resource extraction sectors. Industries like mining often operate as "enclave economies" that have limited linkages to the domestic economy, resulting in little to no economic benefits for local businesses and communities. In Zambia, we see this in the copper mining industry, where the economic benefits are often not distributed beyond the mining companies and their international suppliers. The copper mining industry therefore remains a largely extractive industry with limited benefits for locals in Zambia. Given the local economic implications, increasing the participation of Zambian firms in the mining sector could potentially lead to broader socioeconomic benefits, including employment opportunities, skill development, and improved infrastructure.

The mining industry's reliance on international suppliers exacerbates local firms' exclusion, as foreign companies often dominate supply chains. Zambian SMEs are thus at a disadvantage when competing with established, well-connected international firms that already have the technical capacity and experience needed to secure mining contracts. Bridging this gap and enabling more local firms to enter the mining supply chain could diversify Zambia's economy, reduce dependency on copper exports, and support long-term economic resilience.

### *Objectives and Research Questions*

This research aims to identify the specific constraints faced by Kitwe's non-mining firms in their attempts to supply goods and services to the mining industry. We investigate the primary constraints faced by local non-mining firms seeking to supply the mining industry, as well as how these barriers vary between firms with established connections to mining companies and those without.

By analysing the survey responses from local firms, this study aims to provide a comprehensive understanding of the obstacles they encounter and to identify potential pathways to enhance their involvement in the mining value chain. By addressing these questions, the research will contribute insights that may guide future policies aimed at supporting local suppliers and strengthening backward linkages in Zambia's mining sector.

**Methodology**

Data for this study were collected through a structured survey administered to a sample of 1,055 firms across Kitwe, Zambia, with the aim of analyzing the constraints faced by non-mining firms in integrating with the mining supply chain. Conducted in partnership with UC Berkeley and the International Growth Centre (IGC), the data collection occurred between January to March 2024. The survey targeted businesses with at least one full-time employee and a permanent operational structure to ensure the inclusion of enterprises of various sectors and sizes. 91.5% of the surveyed firms were registered, formal firms. This level of registration is not representative of the general trend for firms in Zambia. The Zambia Business survey found that small enterprises in urban areas are more likely registered (at a level of 21%) compared to in rural areas (3%) (Clarke, 2019). Registered firms were likely over-sampled due to the effect of the inclusion restrictions. This survey design facilitated the capture of a broad representation of firms within Kitwe's business ecosystem, which supports the extensive mining activity in Zambia's Copperbelt Province.

Randomized sampling techniques were employed to select firms throughout the city of Kitwe. Researchers followed a systematic approach to visit and interview business representatives on-site, ensuring a diverse and randomized sample across the city's business districts. The survey instrument was designed to elicit detailed responses on firm demographics, engagement with the mining sector, and perceived barriers to supplying goods and services to mining firms. Specifically, the survey included both closed- and open-ended questions, allowing respondents to share quantitative information as well as descriptive insights into their experiences with the mining supply chain. In addition to firm-specific details, the survey inquired about supply status—whether a firm had previously supplied to mining companies—as well as motivations, perceived obstacles, and aspirations related to the mining sector.

The questionnaire focused on critical areas of constraint, such as limited connections, competitive pressures, fluctuations in mining sector demand, and other operational challenges including corruption. Respondents were also asked to rfecord attitudes on several statements related to the mining industry in Kitwe on a Likert scale, which allowed for the measurement of attitudes and perceptions beyond the summary statistics generated in our analysis.

Data analysis employed a combination of statistical and qualitative methodologies, aimed at providing a comprehensive understanding of the barriers that limit Kitwe's firms from effectively participating in the mining supply chain. Quantitative data were analyzed using Stata and R software, focusing on descriptive statistics to summarize firm characteristics and constraint frequency. Regression and quintile analyses were also applied to identify patterns and correlations between firm attributes, such as size and age, and specific barriers reported by respondents. The regression analysis sought to determine whether certain characteristics—like firm size or prior supply relationships with mining companies—were associated with a higher likelihood of encountering specific barriers, including competition, networking limitations, and demand volatility.

Quintile analysis further divided firms based on metrics such as revenue and number of employees to determine whether constraints varied with firm size. This approach provided insights into structural disadvantages faced by smaller enterprises, highlighting whether larger, more established firms experienced different constraint patterns when attempting to integrate into the mining supply chain.

## Data and Analysis

### *Overview of Sample Characteristics*

The sample consists of 1,055 firms surveyed across Kitwe, a hub for mining-related economic activities in Zambia's Copperbelt Province. The demographic data reveal that 9.1% of these firms have either occasionally (8.15%) or regularly (0.95%) supplied goods and services to mining companies, indicating that only a minority have successfully integrated into the mining supply chain. Among these firms, 16% reported selling regularly to mining companies in the past year, whereas 67% indicated occasional sales, suggesting that even firms within the supply chain experience sporadic demand rather than consistent procurement contracts. This variability in supplier relationships highlights the challenges that non-mining firms face in establishing stable business connections with mining companies. Notably, 74% of all firms expressed a desire to increase their sales to mining firms, which emphasises the need to integrate local firms further into the mining supplier industry.

### *Analysis of Constraints Faced by All Firms*

The data show that a lack of business connections is the most frequently cited constraint, affecting approximately 23.3% of the surveyed firms (Figure 1). This finding suggests that many firms are hindered by limited access to networks that could facilitate introductions or contracts with mining companies. Networking constraints are especially problematic for smaller firms, which typically lack the industry contacts and influence to initiate business relationships with established mining corporations.

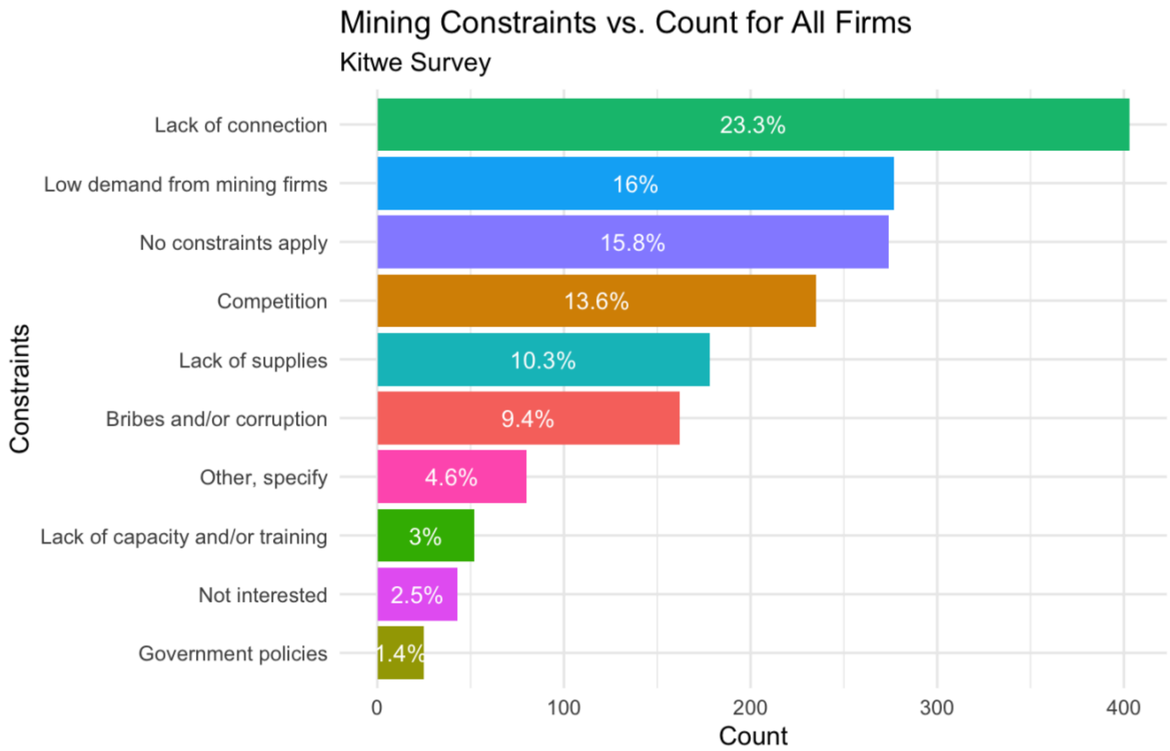


*Figure 1: Mining constraints for all firms*

For firms already supplying the mining sector, competition emerges as the primary constraint, with 23.9% of mining suppliers identifying it as a significant barrier (Figure 2).

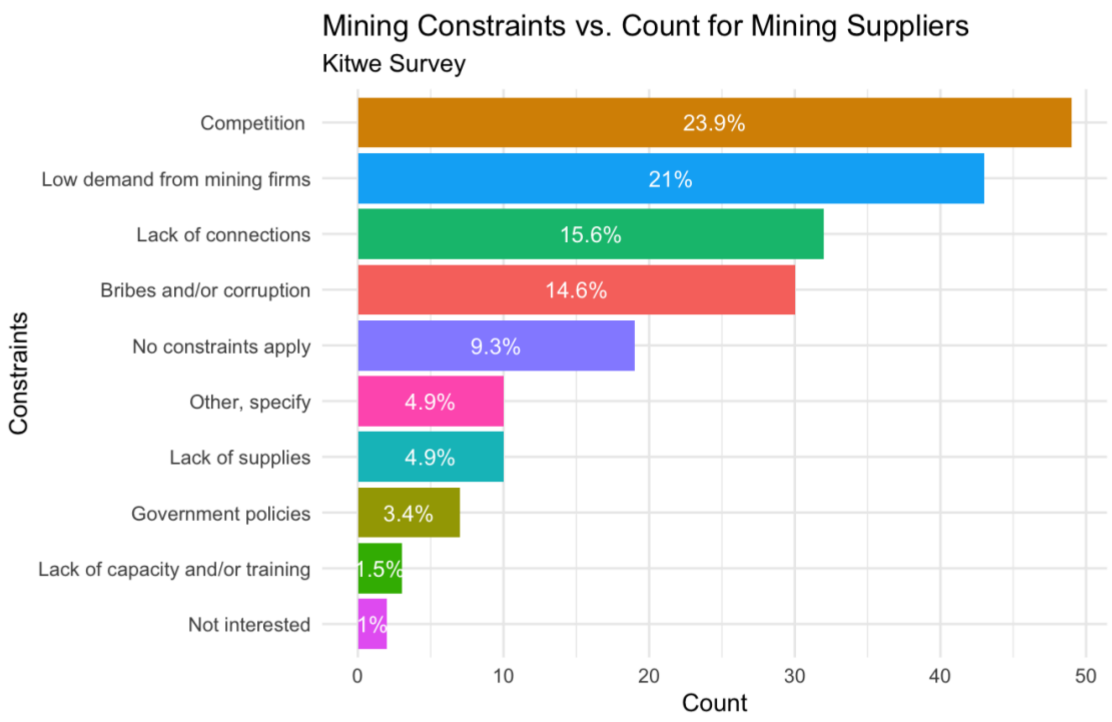


*Figure 2: Mining Constraints for suppliers*

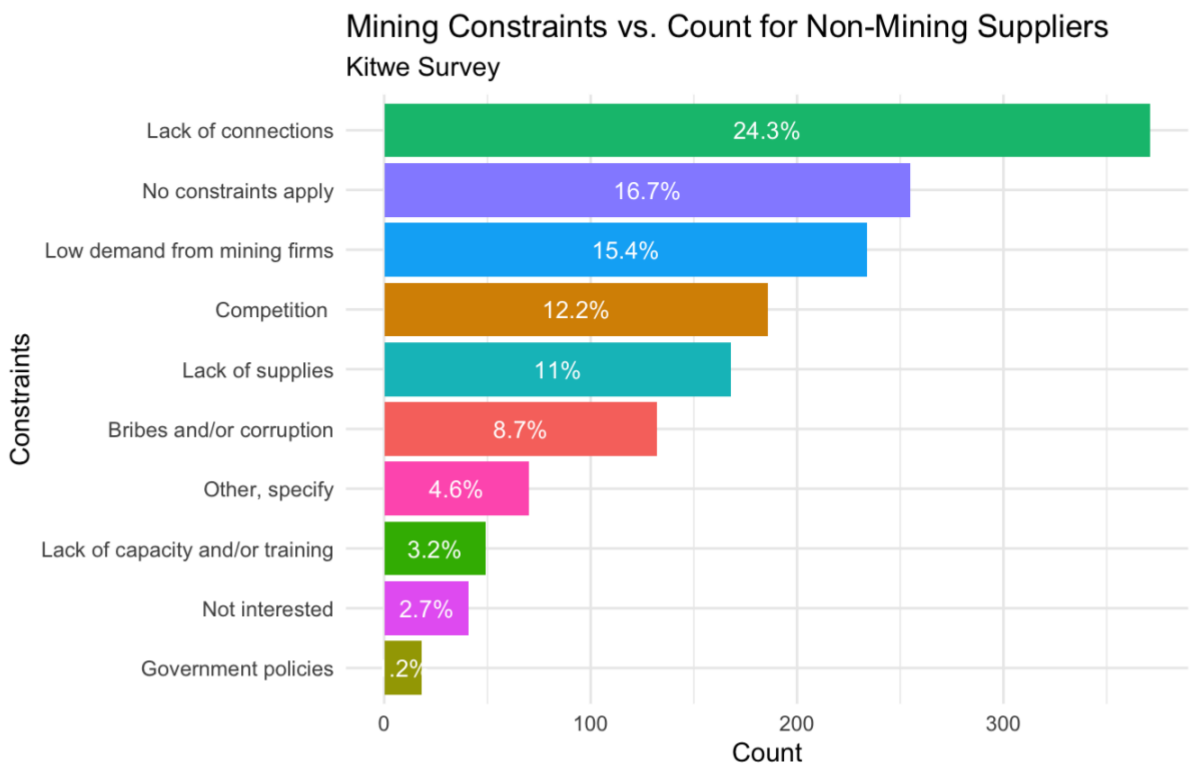


*Figure 3: Mining constraints for non-suppliers*

This contrast between firms that supply mining companies and those that do not highlights the distinct challenges that each group faces. Firms outside the supply chain struggle primarily with connection barriers, while those within it grapple with intense competition (Figure 2 and 3). This competitive pressure reflects the high demand for mining-related contracts among local firms, many of whom face challenges in securing consistent business due to competition from both local and international suppliers.

***Comparative Analysis of Constraints for Mining and Non-Mining Suppliers***

The constraints identified by mining and non-mining suppliers show clear differences in the factors that impede their ability to grow within the mining supply chain (Figure 5). Among non-mining suppliers, the leading constraint remains a lack of connections, cited by 24.3% of firms. This statistic emphasizes the structural barriers faced by firms that have yet to break into the mining sector, as they lack the networks and reputation that might facilitate contracts with mining companies.

Conversely, for firms that currently supply mining companies, competition is the dominant challenge. This group reports that other suppliers—both local and international—create a competitive market environment, which limits their ability to expand or maintain stable contracts with mining clients. This competitive barrier underscores the saturated nature of the mining supply market in Kitwe, where mining companies often have numerous options for goods and services and may prioritize suppliers with established reputations or long-standing contracts. As a result, new or smaller firms find it particularly challenging to secure a foothold within this market.

The difference in primary constraints between these groups points to the layered nature of supply chain entry barriers. For non-suppliers, structural limitations such as networking and connectivity to mining firms are the largest hurdles. Once firms succeed in overcoming these initial barriers, they must then navigate the highly competitive market environment dominated by established suppliers.

***Impact of Demand Fluctuations on Supplier Firms***

An additional finding from the survey is that demand inconsistency from mining firms acts as a significant constraint on local suppliers. Data indicate that demand fluctuations particularly affect firms that only occasionally supply to mining firms. This group is more likely to report constraints related to demand volatility compared to firms with regular contracts. These fluctuations may be influenced by external factors, such as global copper prices or shifts in mining company procurement policies, both of which can lead to unpredictable demand patterns for local suppliers.

As shown in the poster's findings, firms that sold occasionally to mining firms were the most likely to cite constraints (91%), followed by firms that never sold to mines (73%) and those that regularly supplied to mines (60%). This trend suggests that firms with irregular or one-time contracts are more vulnerable to demand-related challenges, which impedes their ability to plan for long-term growth or investment. In contrast, firms with regular contracts report fewer constraints, as stable demand enables more predictable cash flows and planning, reducing reliance on occasional sales to the mining sector.

***Attitudes and Perceptions of Domestic Suppliers***

The survey also captured firms' attitudes and perceptions regarding their role in the mining supply chain and their views on mining companies as clients. Firms overwhelmingly expressed a desire for mining companies to increase their procurement of goods and services from Zambian firms. This sentiment is reflective of a broader concern among local suppliers who see greater involvement in the mining supply chain as a pathway for economic growth and diversification within the local economy.

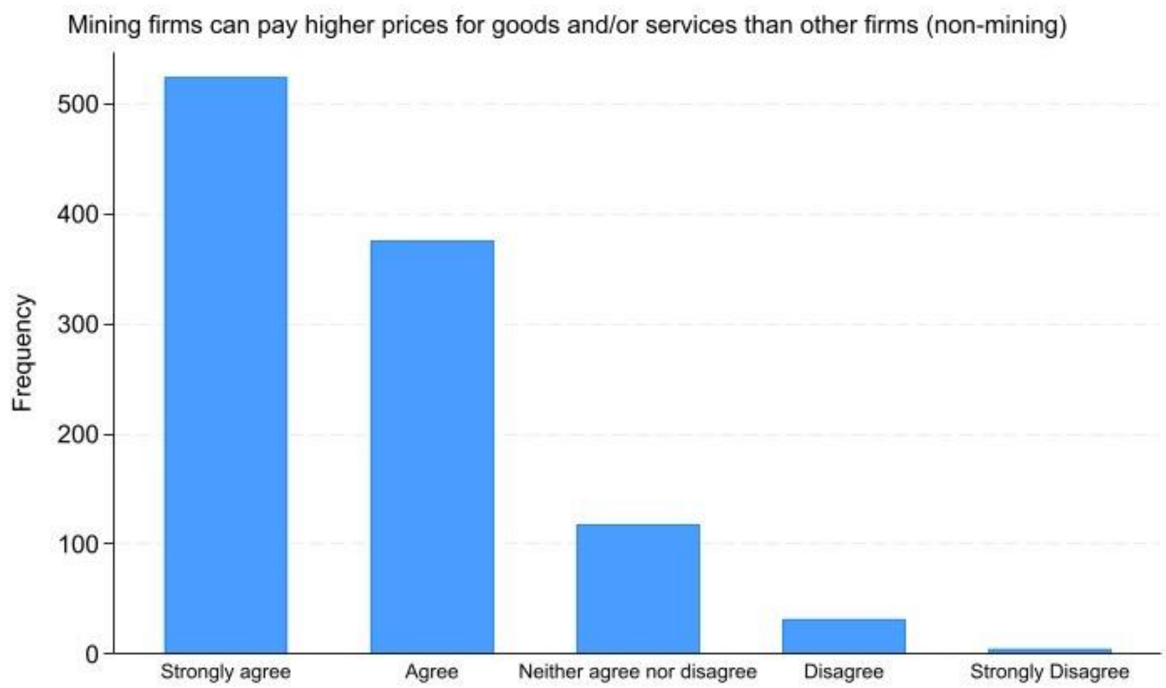


*Figure 4: Likert Scale for attitudes on mining firms*

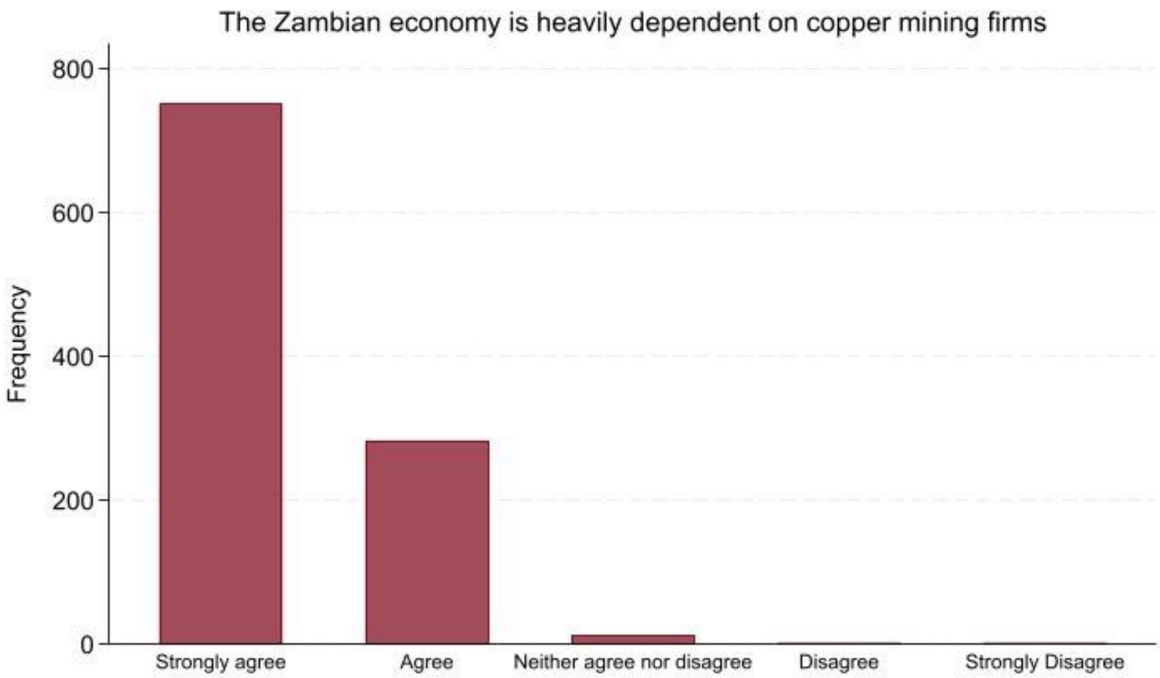


*Figure 5: Likert Scale for attitudes on mining firms*

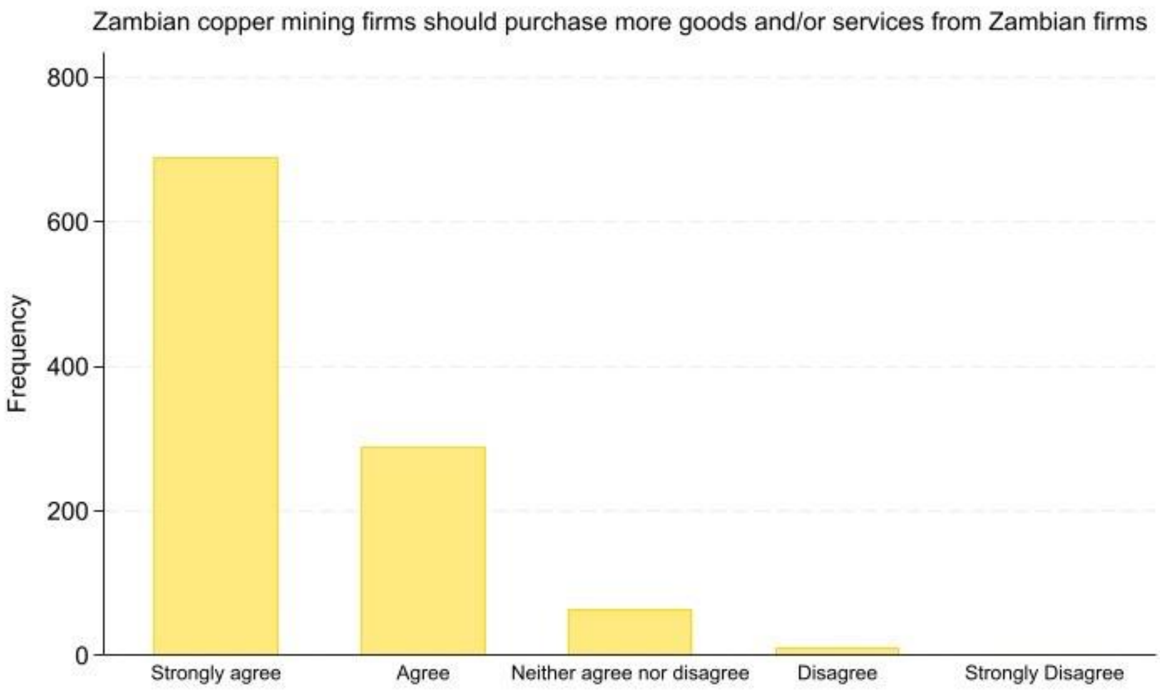


*Figure 6: Likert Scale for attitudes on mining firms*

Firms were asked to respond to statements on a five-point Likert scale, indicating their level of agreement on issues related to the mining industry and its impact on the local economy.

Notably, firms agreed strongly that the Zambian economy is heavily dependent on copper mining and that Zambian copper mining firms should purchase more goods and/or services from Zambian firms.

***Summary of Key Findings***

The analysis of survey data reveals that Kitwe's non-mining firms face multifaceted barriers when attempting to supply to the mining sector. These constraints can be categorized into two main groups: structural barriers, such as lack of connections and networking limitations, which primarily affect firms outside the mining supply chain, and operational barriers, such as competition and demand inconsistency, which are more pronounced among firms that already supply to mining companies. Furthermore, the survey highlights a pronounced desire among local firms to participate more actively in the mining supply chain, suggesting untapped potential within the local economy that could be harnessed through targeted policies aimed at reducing entry barriers and fostering greater economic integration.

These findings indicate the need for multi-tiered policy interventions. Addressing networking limitations and connection-building efforts could facilitate initial entry for non-supplier firms, while policies aimed at reducing competitive pressures and demand volatility may support the growth of firms already within the supply chain. By addressing these distinct constraints, Zambia's mining sector could foster a more robust and inclusive supply chain network that benefits both the mining companies and the local economy.

**Limitations**

This study provides a comprehensive analysis of the constraints faced by non-mining firms in Kitwe attempting to engage with the mining sector's supply chain; however, several limitations should be noted. First, the sample used in this study was limited to firms with at least one full-time employee and a permanent physical structure, which excluded a substantial segment of smaller, informal enterprises that also operate within Kitwe's economic landscape. Many micro-enterprises and informal firms lack the resources to establish permanent structures or to hire full-time employees, yet these firms represent a significant portion of Zambia's economy. Consequently, the findings may not fully capture the experiences and challenges faced by these smaller firms, who may encounter unique barriers, especially in accessing networks and resources for growth.

Second, the high registration rate among the surveyed firms may limit the generalizability of these findings across Zambia's broader business environment, particularly for unregistered and informal enterprises. Firms that are registered are likely to have greater access to certain types of resources, such as credit or business networks, than unregistered firms, which may experience additional constraints not captured in this study. Consequently, the constraints faced by smaller, less formalized businesses could be more complex than those highlighted in this analysis, which is largely based on more formalized entities.

The survey's primary focus on factors such as competition, networking barriers, and demand fluctuations, while highly relevant, may also omit certain regulatory or policy-specific obstacles that affect firms' ability to engage with the mining sector. Issues such as tax policy, licensing requirements, and specific regulatory compliance measures were not extensively explored in this study, though these factors may play significant roles in limiting firms' access to the mining supply chain. Future research could further examine the regulatory landscape to better understand how policy barriers intersect with operational constraints to impact firms' market entry potential.

Additionally, the survey captured firms' perspectives on constraints but did not incorporate input from mining companies, which could provide valuable insights into the selection criteria and procurement practices that shape the supply chain landscape. Understanding the mining companies' perspectives on local supplier capabilities, such as their capacity to meet quality standards and production volumes, would offer a more holistic view of the challenges and potential solutions for greater integration of local suppliers. Such an inclusion could reveal mismatches between the expectations of mining firms and the capacities of local suppliers, allowing for a more targeted approach to overcoming barriers.

Finally, the data were collected from a single urban region in Zambia, limiting the study's applicability to other regions where mining conditions and economic contexts might differ. Kitwe, as a hub for mining activity, presents a unique environment with established infrastructure and proximity to mines, which may not be representative of more remote or rural areas. In less accessible regions, additional barriers such as limited transportation infrastructure, lower availability of skilled labor, and logistical challenges could further restrict firms' participation in the mining supply chain. Future studies could expand geographically to provide a more comprehensive understanding of regional variations in supply chain constraints across Zambia's mining sector.

**Policy recommendations**

The analysis of survey data reveals several structural and operational barriers faced by Kitwe's non-mining firms in their efforts to supply goods and services to the mining industry. Addressing these barriers requires a multi-faceted policy approach that promotes market entry for local suppliers, reduces competitive inequities, and enhances the long-term sustainability of the mining supply chain. The following policy recommendations are proposed to foster a more inclusive economic environment that benefits both local firms and the mining sector in Zambia.

***Strengthening Local Supplier Networks***

A prominent barrier for Kitwe’s non-mining firms is the limited access to essential business connections with mining companies, which restricts their ability to secure procurement opportunities. To address this, policymakers could establish centralized platforms aimed at promoting direct interaction between mining firms and potential local suppliers. The creation of a "supplier directory," managed by the Ministry of Commerce, Trade, and Industry, would enable mining firms to easily identify Zambian suppliers with the requisite capabilities. Additionally, organizing regular networking forums and supplier engagement events could provide opportunities for local firms to establish connections with procurement officers in mining companies, thus increasing the visibility and accessibility of local suppliers within the mining supply chain.

***Implementing Training and Capacity-Building Programs***

To enhance the competitiveness of local firms and ensure they meet mining sector standards, government and industry stakeholders could introduce targeted training programs. These programs should focus on essential skills, including quality control, regulatory compliance, and logistical management, with the support of mining companies, universities, and technical institutes to ensure relevance and practicality. Training initiatives that improve suppliers’ knowledge of industry-specific standards would increase their competitiveness and readiness for procurement opportunities. Capacity-building programs should emphasise financial management and strategic planning to support firms in managing the cyclical nature of mining sector demand, thereby improving their resilience.

***Reducing Competitive Barriers through Local Content Policies***

The implementation of local content policies (LCPs) could serve as a powerful tool to mitigate the competitive disadvantages experienced by local suppliers. By establishing minimum procurement targets for Zambian firms within the mining sector, LCPs could encourage a more inclusive supply chain. To ensure compliance, monitoring and enforcement mechanisms should be instituted, with penalties for firms that fail to meet local content requirements. Such policies would help to shift the balance away from foreign suppliers, promoting greater engagement with domestic businesses and leveling the playing field for Zambian firms. However, for LCPs to succeed, they must be supported by robust monitoring frameworks that assess compliance and measure the economic impact on local suppliers.

***Promoting Stable Demand Through Long-Term Contracts***

The demand volatility experienced by non-mining suppliers highlights the need for stable and predictable contracting practices within the mining supply chain. Policies encouraging mining companies to adopt longer-term procurement contracts with local suppliers could provide the stability needed for firms to plan and invest confidently. Collaborative agreements between government agencies and mining firms could incentivize longer-term commitments, thereby offering local suppliers a reliable source of demand. To further encourage these practices, the government might consider developing incentive programs that reward mining companies for maintaining consistent and extended contracts with Zambian suppiers, thus supporting stable and predictable revenue streams for local firms.

### *Facilitating Access to Finance for SMEs*

Access to finance is a crucial requirement for small and medium enterprises (SMEs) seeking to enter or expand their participation within the mining supply chain. To address financial constraints, government-backed financial initiatives, such as loan guarantee programs, could provide firms with the capital needed to invest in equipment, technology, and human resources. Partnering with commercial banks to offer mining-specific financial products, including contract-based financing, would enable firms to secure funding by leveraging contracts with mining companies as collateral. Enhanced access to finance would empower local firms to grow, innovate, and compete more effectively within the mining sector, thereby supporting broader economic development goals.

## Conclusions

In this study, I examined the interactions small and medium enterprises (SMEs) in Kitwe with the mining sector. The focus was on understanding the challenges these businesses face in entering or solidifying their participation in the mining supply chain.

Surprisingly, we found a very strong interest in joining the supply chain, with 74% of respondents indicating interest in supplying to mining firms, despite only 9.1% of firms surveyed having supplied mining firms in the last 5 years. The primary barriers identified included a lack of connections, insufficient demand from mining companies, and competition. These findings suggest that policies aimed at facilitating connections between SMEs and mining firms could enhance local engagement. The competitive landscape appears to be exacerbated by “unfair competition,” as noted by the African Development Bank (2019). Additionally, weaknesses in the tariff system may disadvantage Zambian firms (Fessehaie et al., 2015).

Based on our findings, it is essential to adopt a dual approach to strengthen connections between local SMEs and mining companies in Kitwe. First, increasing demand from mining firms is crucial, as most respondents agreed that copper mining companies should source more goods and services from Zambian firms. Second, efforts should focus on building networks and linkages between SMEs and the mining sector. However, it is important to address the issue of bribery and corruption, as these factors could undermine local content initiatives (Ba and Jacquet, 2022).

**References**

African Development Bank (2019). Analysis of input goods and services in Zambia's mining industry. Opportunities for creating domestic linkages in the short and medium term. *African Development Bank: African Natural Resource Centre.*

Nachalwe, P. (2020). *Management of environmental risks arising from mining operations in Kitwe and Mufulira* (Doctoral dissertation, The University of Zambia).

Bigsten, A. and Söderbom, M. (2006). What have we learned from a decade of manufacturing enterprise surveys in Africa? *The World Bank Research Observe*r, 21 (2), 241–265.

Fessehaie, J., das Nair, R., Ncube, P. and Roberts, S. (2015). Growth promotion through industrial strategies—Zambia.

Ba, D. G. and Jacquet, J. B. (2022). Local content policies in west Africa's mining sector: Assessment and roadmap to success. *The Extractive Industries and Society*, 9, 101030.