

Factors Influencing Poverty Reduction in the Mining Sector in Zambia: A Case of Selected Mines

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Cite: Kanyinji, P., Tembo, G., & van Wijk, J. (2019). Factors Influencing Poverty Reduction in the Mining Sector in Zambia: A Case of Selected Mines. *The University Journal*, 1(3), 211-225.

Abstract

The study focuses on how to reduce poverty by facilitating the inclusion of Zambian SMEs in the mining industry and link them to global value chains. In the past 15 years, Zambia has adopted a series of National Development Plans aiming at the support of small and medium enterprises (SMEs). Despite these plans, poverty levels are still high to over 60%. The main research question was what the barriers are that hold back local SMEs to join the Zambian mining chains and how to overcome them. The study adopted an embedded multiple case study approach that included Lumwana, Konkola and Kansanshi mines and the SMEs in the proximity of these mines. Primary data was collected through a survey involving 150 members of the Mining Suppliers and Contractors Association of Zambia, and 35 in-depth interviews with immediate stakeholders in the three selected mines, government authorities, NGOs, and experts. Data processing involved use of EQS for a structural equation modeling and self-administered questionnaire for qualitative data. Data analysis framework focused on RMSEA values, FIT indices, and multiple regression analysis for quantitative data while theory construction involved coding the indicators that measure variables into themes, categories and subcategories which were expanded with detailed explanations, and thereafter summaries and conclusions. The conclusion of the study was that despite public and private support, SMEs continue to be excluded from supplying to the mine. The study recommends the formation of Zambia National content development and monitoring board for managing local content policies for inclusive growth, formation of Mining incubator to support SMEs upgrade to reach international requirements, formation of the mining commission of Zambia to implement mining policy, and form the supplier development working group to implement the private and public policies to improve capacity of SMEs to supply to the mines

Introduction

Poverty and poverty reduction have become buzz words in the world today. In Zambia the Living Conditions and Monitoring Survey (LCMS) Report of 2006-2010 have mentioned these two words several times. At global level, poverty reduction has become a drone attracting the attention of the United Nations, World Bank, IMF, and other donor agencies (CSO, 2011:1-5). In 1996, the Heavily Indebted Poor Countries (HIPC) initiative was launched with a joint effort of the IMF and World Bank. This initiative was designed as a comprehensive approach to debt reduction and ensure that no poor country faces a debt burden it cannot manage (World Bank, 2013a). In order to enjoy the facility, developing countries were expected to formulate Poverty Reduction Strategy Papers (PRSPs) through a broad-based participatory process in the country. In the year 2000, the United Nations established 8 Millennium Development Goals (MDGs) and among them, poverty reduction was on the top (MDG, 2013). The Efforts of the MDGs were being supplemented by the Multilateral Debt Relief Initiative (MDRI) of 2005 which allowed 100 percent relief on debts by three institutions - IMF, World Bank, and African

Development Fund (AfDF) (MDG, 2013). Poverty has persistently gripped mankind in the world and there has been no one with a key to eradicate it despite unprecedented prosperity in economic growth and living standards led by technology advances and globalization process (UN, 1997). However, Zambia has taken various measures to reduce poverty through economic development plans. Between 2002 and 2015, the government introduced the Transitional National Development Plan (TNDP), the Medium-Term Expenditure Framework (MTEF), The Fifth National Development Plan (FNDP), The Sixth National Development plan which were aimed at broad-based economic activities and poverty reduction (FNDP, 2006; SNDP, 2011). Unfortunately, poverty continues to flourish in Zambia (CSO, 2011), and the study is being undertaken to use the global value chain approach to reduce poverty.

Setting of the of Study

The mining sector on the Copperbelt and North Western provinces form the setting of the study. This sector records poverty levels of over 34% and 67% respectively despite the many commercial activities (CSO, 2011:1-5) as well the funding by the World Bank to develop value chains for linking SMEs to commercial activities (MoA&L, 2014; MoFNP, 2014:7; ZDA, 2014a; ZDA, 2014b). The government revenue collection in recent years has increased to over 30 per cent of total tax revenues in the mines which previously were as low as 16 per cent until around 2008. The mining investment has boomed since the year 2000, with over US\$10 billion in foreign direct investment (FDI), and in 2011 new FDI into the mining accounted for 86.2 per cent of total FDI. The sector accounts for about 15-18 percent of GDP in Zambia (CSO, 2012). However, the unemployment rate for the Copperbelt province stands at 20.2% (UNDP, 2013b:12), youth unemployment is at 29.6 per cent compared to 8.0 per cent in other provinces without mining (Lusaka times, 2013; World Bank, 2013b). The SMEs who are suppliers to the mines and who may offer additional employment opportunities to the community have been disadvantaged in the absence of industrial policy to promote an informal SME sector in the mines which could give direction aimed at supporting the huge unemployment task. In recent years, the global value chain approach has often been embraced as a method to reduce poverty through support of private sector activities. Global Value Chains (GVCs) describe the full range of activities involved in creating, producing, and delivering a product involving several companies that are spread across the world. These chains facilitate access to global markets and open up opportunities for long term industrial upgrading (OECD, 2013a; UNCTAD, 2013a).

Rationale of the Study

This study uses the value chain approach to reduce poverty. The value chain approach has not been in the Poverty Reduction Strategy Papers, as well as in the TNDP, FNDP, and SNDP of Zambia. Being connected to GVCs is one option for local firms and suppliers to access larger markets and technology (Gereffi and Fernandez-Stark, 2011; Van Dijk, and Trienekens, 2012). This means that GVC helps in reducing poverty upon the inclusion of SMEs to local, regional, and global chains. The rationale in the study therefore is to enhance the inclusion of SMEs in the global value chain and increase the productivity of both the formal and informal sectors. This involves exploring the distinctive benefits of the value chain approach that address the challenges that SMEs face in their production systems. The dynamics and inclusiveness of the global value chain rests largely on the upgrading possibilities and once SMEs upgrade, they will participate in supplying to the high-grade markets.

Statement of the Problem

The problem being addressed in this study is the relatively low benefit that the local communities enjoy from the mining activities in the country due to limited inclusion into the mining global value chains. Recent studies in the Zambian mines such as Chibwe, 2008:10-11 and World Bank & UKaid, (2011:5) have shown that SMEs in the mining areas in Zambia are not competitive and unable to meet the strict requirements of modern supply chain management practices and yet UNCTAD, (2010:1-3) stress that the inclusion into global value chains allows small and medium-sized enterprises (SMEs) to participate in the global economy (Mitchell *et al.*, 2009:), and to further enhance their competitiveness. (OECD, 2013a:9). The non-competitiveness of SMEs leads to the failure of SMEs meet international standards and therefore excluded from supplying in the mining global value chain (Anand *et al.*, 2014). This lack of inclusion of SMEs who are potential employment agents has led to low economic activities resulting in higher unemployment and poverty in the mining sector of the Copperbelt and Northwestern provinces of Zambia (CSO, 2011:1-5; Lusaka times, 2013; KPMG, 2013b:5-16).

Main Research Objective

To investigate factors that affect poverty reduction in the mining sector in Zambia.

Specific Research Objectives

- i) To assess the effect of government supports upgrading of SMEs on poverty reduction in the mining sector in Zambia
- ii) To examine the influence of NGOs play in upgrading of SMEs on poverty reduction in the mining sector in Zambia.
- iii) To determine the influence of mining companies in upgrading of SMEs on poverty reduction in the mining sector in Zambia.
- iv) To determine the effect of mining global value chain on poverty reduction in the mining sector in Zambia.

Research Questions

- i) How does government support influence poverty reduction in the mining sector in Zambia?
- ii) What is the influence of NGOs on poverty reduction in the mining sector in Zambia?
- iii) To what extent does the mining companies support affect poverty reduction in the mining sector in Zambia?
- iv) How can mining global value chain influence poverty reduction in the mining sector in Zambia?

Literature Review**Global Value Chain**

The theory of GVC refers to the activities performed by firms to bring a product from its inception to the end user and beyond. In respect to poverty reduction, this approach provides a framework that answers the dynamism of economic geography of industries and bequeath linkages in the value-added activities, the distribution of power among firms and the role

institutions play in structuring business relationships. GVC also focuses on how chains are organized and managed, and contribution of value to socio-economic development of the poor, spreading the gains in the chains and economic integration into international design, production, and marketing of many different firms (Pietrobelli, 2008; Gereffi and Fernandez-Stark, 2011; Van Dijk, and Trienekens, 2012).

Barriers of Entry in the Global Value Chain

Cost competitiveness in terms of labour, production, transport, investment and tax incentives form barriers for SMEs to enter into international markets (UNCTAD, 2010). Standards establish products and process specifications so that wide range of global suppliers deliver according to requirements of developed-country markets, and failure to meet these standards may lead to exclusion from the GVC. Non-tariff measures (NTMs) also act as barriers as they have influence on competitiveness of domestic companies, and attractiveness for foreign investors (OECD, 2013a). When domestic law is inflexible, countries are forced to offer offshore status to foreign firms that are part of GVC and export most of the production. SMEs also face managerial and financial resources challenges including the ability to upgrade and protect in-house technology (Pietrobelli, 2008). Other barriers include lack of scale to invest in R&D, train personnel and meet strict standards and quality requirements, shortage of working capital to finance export, limited information to locate and analyze markets, difficulty in identifying foreign business opportunities, lack of managerial time to deal with internationalization, inability to contact potential overseas customers, difficulty in developing new products for foreign markets, unfamiliar foreign business practices, meeting export products quality, and unfamiliar exporting procedures and paperwork (Drost *et al.*, 2011).

Government Upgrading Support

The government influences chains by providing public goods, services, and infrastructure and its sound legal systems support export for all actors in the chains. In addition, the government enhance linkages of local SMEs with international firms, fostering their supply and innovativeness, and facilitate their adoption of product standards (Albu & Griffith, 2005; Sela 2012:34-35; Cooper, 2013; OECD, 2013b). The availability of policies may promote good relations between SMEs, local and Multinational companies in the value chains. Policies improve connectivity with global markets and address traditional barriers, customers, transport and telecommunication and logistics in the global value chain and they are conducive for upgrading opportunities (Fortwengel, 2011; SELA, 2012:34; Cattaneo *et al.*, 2013). A stable macroeconomic policy and well-designed structural policies associated with competition, international trade and investment, financial markets, labour markets and education, including human resources capacity building for internationalisation is suited to growth and development of SMEs. In addition, the licensing and permit system, tax system, property rights law, standard compliance certification procedures, efficient dispute settlement procedures and bankruptcy law are cardinal in GVC (OECD, 2007a:1). The government may set up business incubator to support local SMEs to access financial support, upgrading possibilities, business linkages and technical support (Buys & Mbewana, 2007).

NGO Upgrading Support

Non-Governmental organizations, development agencies, standards organization, researchers, and government (Helmsing & Vellema, 2011; Cooper, 2013) have become important in enhancing inclusiveness of the global value chains. NGOs play a significant role in making GVC inclusive by providing market information, train SMEs in negotiation skills, act as intermediaries, and collaborate with lead firms to enable small and medium primary producers

to benefit from large producers (Muller *et al.*, 2006; Gomez, 2010; Nelen *et al.*, 2012). NGOs also enhance collaborations among various actors and facilitate stakeholder meetings in the global value chains (Helmsing & Knorringa, 2009; UNIDO, 2009:37; Trienekens, 2011; Drost *et al.*, 2012:11) and typically they offer technical support and credit facilities to chain actors (van Wijk & Kwakkenbos, 2011). They provide expert knowledge on certification systems, they have good contacts with certifiers, and are well positioned to create consumer demand for certified products. They are seen to have power in the value chains emanating from their capacity to finance chain building, upgrading, standard setting and facilitation of access to markets (Altenburg, 2006:47; Van Wijk *et al.*, 2009; Cooper, 2013).

Private Mining Support

Private sector involvement is important in value chains and plays a pivotal role on the fringe of public services and downstream market networks. In using value chain approach, key downstream private sector chain actors can be involved in the identification of key bottlenecks within the value chain that are mutual constraints for both upstream and downstream player and ultimately there is facilitation of ownership and agreement on subsequent key interventions and reforms. Private sector is crucial in the delivery of business development services in many remote and underprivileged areas and in cases where the public sector can only play a minor role due to lack of outreach resources, the private sector in the form of public-private partnership (PPPs) is encouraged to take initiative alone (Hoermann *et al.*, 2010:29). Multi-stakeholder partnerships are increasingly recognized in order to include smallholder producers in developing countries. These are voluntary, collaborative arrangements between actors from two or more domains of society. These multi-stakeholders strive to include smallholders into the value chains, and enhance their sustainability through overcoming government failures, and increasing efficiency in the value chains. Value chain partnership improve production and delivery of products and services of SMEs, and they construct new institutional arrangement in order to address important technological and institutional gaps that hinder smallholder producers from producing and transacting into global value chains and supply chains. Collaborations among various partners in the value chain imply sharing of risk, resources and rewards. It also entails a formalization of governance structures, and contracture arrangements to specify objectives, activities, roles, and responsibilities. Trust building among partners is very important, and improves relationships. Transparency, prosperity, and control are breeders of trust, and these decrease risk in the value chain. Value chain partnerships meet key conditions for successful collaborations, and mitigate institutional barriers to upgrading for SMEs. Therefore, critical success factors include; win-win situation, formalized goal alignment, stakeholder embeddedness, stakeholder involvement, risk and resource sharing, shared processes, formalised governance structures, clear roles and contributions, trust building and transparency (Drost, van Wijk & Mandefro, 2012: 2-5).

Global Value Chain and SME Inclusion

The upgrading of Small and Medium enterprises is at the core of inclusive value chain development since upgrading add value by improving efficiency or product quality. Upgrading opens the door for SME to employ their resources more productively, and if market conditions are favorable to earn higher returns. Inclusion in global value chains may be done by engaging in one or more of the many types of activities that are performed in different countries in a coordinated fashion to bring a product from its conception to its end use (Dunn, 2014:3). The inclusion of SMEs into GVC in order for them to participate into international value chains will not necessarily mean directly trading goods or services across borders, but rather being linked to such activities through the process of value creation (Kowalski *et al.*, 2015:13). The

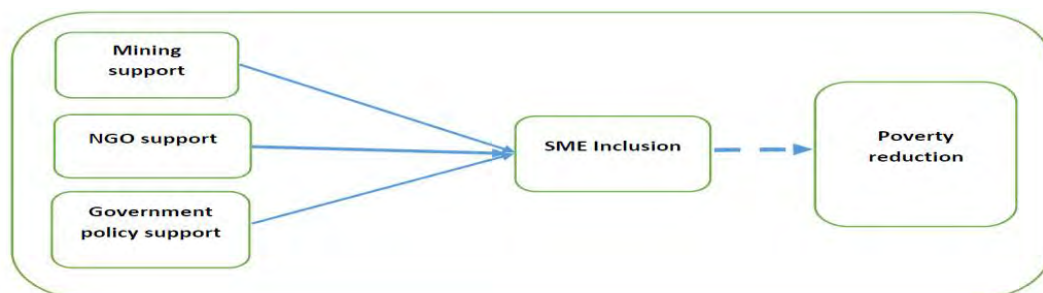
SMEs' socio-economic upgrading enhances them to be integrated in the global value chain and engage them in value added activities, remunerated jobs, and good governance.

Global Value Chain and Poverty Reduction

It is assumed that if more SMEs are included into mining GVC, it may have a positive effect on jobs and income, hence likely on poverty reduction of the households involved. But this question of poverty is beyond the scope of the research. However, the inclusion of SMEs in GVC is not automatic but SMEs must be willing to work hard and upgrade themselves to meet international requirements to supply to the mines. Once SMEs are rendered with domestic support, and they upgrade themselves and increase capacity, they may be included in the mining global value chain, and the inclusion may create opportunities for them to participate in high grade markets, they may become agents of employment for the local people, there may be improvement in economic activities around the mining chain and this may lead to increased incomes ((Dunn, 2014:3; Kowalski *et al.*, 2015:13).

Conceptual Model

The conceptual model below depicts the composition of value chain concepts which help to understand and simulate the various relationships. The model has been organized to answer the research questions which are based on global value chain theories and its approach to poverty reduction. According to Sekaran & Bougie (2009:81), a conceptual model helps to structure a review of literature into summarized relationship as espoused in the research questions. Further, Sekaran & Bougie (2009:81) stressed that a good conceptual model is based on a sound theory or good literature review and once the model is constructed, an explanation of the relationship between the variables is done.



Independent Variable

Moderating variable

Dependent variable

Source: Author, 2018

Research Methodology

Three (3) registered mining companies were selected as case studies: the Lumwana, Konkola and Kansanshi mines and this approach enhances inter-unit comparisons and triangulation process (Yin, 2003; Saunders *et al.*, 2009:145-147). The study population also comprised of SMEs around the mining sector, NGOs (Oxfam, IFC, and Catholic relief services and Government agencies (CEEC, ZBS and Ministry of Mines). Quantitative data gave an opportunity to the researcher to identify the various interventions from government support, NGO support and Private support and how the support was attributed to the upgrading of local SMEs and inclusion into the mining global value chain. 150 SMEs participated as respondents to provide data to ascertain the contribution of the intervention to the current status of SMEs and subsequent poverty reduction. In addition, 35 immediate stake holders from ZBS, CEEC,

MINISTRY OF MINES, IFC, and Oxfam provided qualitative data. The 150 respondents sampled met the requirements of EQS (structural equation modeling software) as less than 150 gives errors (Maxwell, Kelly, & Rausch, 2008). Qualitative data focused on barriers that SMEs encounter to supply to the mining global value chain and how the mining value chain may be made more inclusive.

Data Analysis

Quantitative data analysis: A structural equation modeling was performed using EQS to carry out the RMSEA Test, FIT indices test, and multiple regression analysis test.

RMSEA:

A RMSEA test show a RAMSEA values of **0.04**. Saunders *et al.*, (2016) have suggested that a RMSEA value of about .05 or less reflects a model of close fit, whereas values between .05 and .08 indicate reasonable fit (Steiger, 2007)). This means that the model used to discuss the relationship between government, NGO, and Private Mine support is good and fits well to be used to explain the relationship

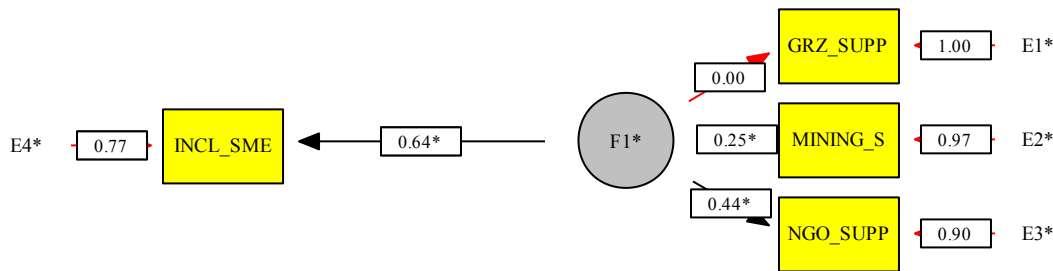


Figure X: EQS 6 final third data set 2018.eds Chi Sq.=2.49 P=0.29 CFI=0.96 RMSEA=0.04

FIT Indices:

An extract from EQS show the following fit indices below. Fit indices reading of 0.9 indicating a good-fitting model that is reasonably consistent with the data and so does not necessarily require respecification. Fit Indices test values showing 0.9 show the perfectness of the model before estimating causal relations (O'Boyle, & Williams, 2011)

FIT INDICES

-
- BENTLER-BONETT NORMED FIT INDEX = 0.873
- BENTLER-BONETT NON-NORMED FIT INDEX = 0.892
- COMPARATIVE FIT INDEX (CFI) = 0.964
- BOLLEN'S (IFI) FIT INDEX = 0.972
- MCDONALD'S (MFI) FIT INDEX = 0.998
- JORESKOG-SORBOM'S GFI FIT INDEX = 0.992
- JORESKOG-SORBOM'S AGFI FIT INDEX = 0.959
- ROOT MEAN-SQUARE RESIDUAL (RMR) = 0.047
- STANDARDIZED RMR = 0.038
- ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = 0.041
- 90% CONFIDENCE INTERVAL OF RMSEA (0.000, 0.172)

Multiple Regression
ANALYSIS OF VARIANCE

Source	SUM OF SQUARES	DF	MEAN SQUARES	F	p
REGRESSION	22.067	3	7.356	5.814	0.001
RESIDUAL	184.707	146	1.265		
TOTAL	206.773	149			

An extract from the EQS output from structural equation modeling on ANOVA test show that overall, government support, NGO support and Mining support are predictors of Inclusion of SME in the mining global value chain. The p-value is equal to 0.01. This means that government, NGO and Mining support sit statistically Significant to determining inclusion of SMEs and therefore is a significant predictor of inclusion of SMEs in the Mining global value chain

=====R and R squared=====

Dependent Variable = INCL_SME
 Number of obs. = 150
 Multiple R = 0.3267
 R-square = 0.1067
 Adjusted R-square = 0.0884
 F(3, 146) = 5.8141
 Prob > F = 0.0009
 Std. Error of Est. = 1.1248
 Durbin-Watson Stat.= 1.4356

An extract from output of EQS for structural equation modeling above show Multiple R-value of 0.3267 and R-Square of 0.1067. This means that in terms multiple R, the correlation between government, NGO and Mining support is 0.33 while R-Square of 10.67% indicate that government, NGO and mining support account for 10.67% of the variance in Inclusion of SMEs. This means that we can not 89.33% of the inclusion of SMEs.

=====REGRESSION COEFFICIENTS=====

HETERO-
ORDINARY SCEDASTIC

VARIABLE	B	STD. ERROR	STD. ERROR	BETA	t	p
Intercept	2.217	0.366	0.483	4.593	0.000	
GRZ_SUPP	-0.122	0.096	0.106	-0.099	-1.146	0.254
MINING_S	0.114	0.064	0.064	0.141	1.786	0.076
NGO_SUPP	0.224	0.067	0.079	0.264	2.853	0.005

The regression analysis show that NGO support is statistically significant predictor of SME inclusion while government and Mining support are not statistically significant predictors of SME inclusion in the global mining value chain

Discussion of Quantitative Findings

The study shows that there is a significant benefit that SMEs derive from NGO support with a p-value of 0.005. This means that the NGOs help SMEs to upgrade to meet international requirement to supply to the mines and earn sustainable income. On the other hand, mining upgrading support show a p-value of 0.076 indicating that there is not enough support coming from the mining companies but as compared to government support whose p-value 0.254 gives an impression of some form of assistance towards SMEs coming from the mines. Although the p-value is not significant (0.076), mining support renders some assistance through supplier development programme which is currently existing. The P-value of government support (0.254) show that there is very little government policy support towards SMEs to improve their position in the value chain.

Presentation and Discussion of Qualitative Research Findings

a) Barriers of entry to the mining global value chain

Findings show that there are a number of barriers that SMEs encounter to participate in the mining value chain. Some of the barriers include; standard barriers, Capacity of SMEs barriers, Working capital barriers, Managerial competencies barriers, Competition barriers, Government regulation and policy barriers and Trust and relationship barriers

b) How the global mining value chains could be made more inclusive

i) Local content policies in the mines

Most respondents stressed that local content policies have been a hindrance to inclusion. One of the respondent stressed; *“the local content policies governing the suppliers development programme is not effectively being implemented”*. A similar study by Ming-Yen & Chong, (2008) as well as OECD, (2007b) and Sin, (2010) emphasize that local content policies has benefited SMEs in Malaysia which has seen over 6.2 million employment creation as well as job creation and incomes.

ii) Upgrading the technology of the local SMEs

Most respondents stressed that technology upgrade was a critical method of enhancing the competitiveness of local SMEs for their participation in the mining global value chain. In a similar study of Gibbon (2003), he indicated that upgrading helps them to be competitive and sign better contracts, have better job creation, increased supply and incomes.

iii) Donor support

Donor support was singled out as one of the most important factor enhancing SMEs to be included in the mining global value chain. It was stressed that Oxfam, CRS as well as IFC help in funding local SMEs to improve competitiveness which ultimately lead their inclusion in the global mining value chain where there is high grade market for better job creation and income. It was therefore stressed that donor support may help making global value chain inclusive. Helmsing & Vellema, (2011) as well as Cooper, (2013) emphasized that donor support have become important in enhancing inclusiveness of global value chains.

iv) Government consolidation

Government consolidation enhances the inclusiveness of the mining global value chain. It was stressed that government policy under the mines and minerals Act no. 11 of 2015 show the

development of local content to empower local SMEs. SELA (2012) explain that the government influence chains by providing public goods and services as well as infrastructure and sound legal systems. In addition, the government enhance linkages of local SMEs with international firms, fostering their supply and innovativeness, and facilitate their adoption of product standards (Albu & Griffith, 2005; OECD, 2013b).

v) Tax

Tax barriers are very critical and OECD (2013b) stress that they make SMEs uncompetitive. The government must review the tax policy and make it affordable as well as implement tax holidays for local SMEs in certain economic areas. It was stressed that skills barriers as well as working capital barriers can be overcome by government initiative through CEEC providing microfinance and reducing loan requirements, and NGOs who acting as donors to target productive areas such the mines.

Recommendations

The study recommends the following;

- i) The Ministry of Mines must setup a Mining Commission through an Act of Parliament whose objective among others will be to implement the the Mines and Minerals development Act No.11 of 2015, Section 31&32 that empowers it to give mining licences to those providing employment, training and business promotion development with local stakeholders
- ii) Zambia National Content Development and Monitoring Board must be formed by the government through an Act of Parliament so that various “local Content Committees for specific economic sectors” will ensure that a certain share of factors of production required at various stages of the value chain is sourced from the domestic economy.
- iii) The Citizenship Economic Empowerment Commission must be transformed from merely offering micro-credits to selected sectors of the economy into a Business Incubator for SME development so that its local incubation facilities and innovation system are created for nurturing SMEs providing integrated technical and business development support to SMEs, mentoring and coaching SMEs, technology upgrading for competitiveness to SMEs participation in the mining global value chain
- iv) Creation of the Supplier Development Working Group comprising executives from the mines, Mining suppliers and contractors association of Zambia, NGOs, and the ministry of mines whose task will be to identify and implement global value chain governance strategies, economic, social and technological upgrading of SMEs, supplier and buyer partnerships, on-site technical support and business development and any economic program of the non-functional supplier development programme so that SMEs build capacity for competitiveness

Recommendations for Further Studies

I recommend that another study is undertaken to use *cluster management approach in poverty reduction*. The value chain approach has many barriers of entry and SMEs have difficulties in terms of capacity, training, technology upgrade and various financial support. When SMEs form a cluster, it may be easy to train them, offer financial assistance, and technology upgrade.

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