

# Local Content Policies in the Mining Sector in Zambia: A Synthesis of Its Benefits

Peter Kanyinji<sup>1\*</sup> Gelson Tembo<sup>2</sup>

1.Department of Business, School of Business and Information Technology, Cavendish University, Villa Elizabetha, Great North, Lusaka, Zambia

2.Department of Agriculture Economics, School of Agriculture, University of Zambia; Great East Road Campus, Lusaka

## Abstract

There has been lots of questions as to why there is continued marginalization of small and medium enterprises (SMEs) in the mines despite local content policies. A recent report regarding estimates of input goods and services to the mines in Zambia show an accumulation requirement of US\$5 billion annually and the share of domestic firms in the mining market is less than 4 per cent, while that of indigenous firms is about 1 per cent. This raises lots of questions as to what extent local content help SMEs to supply to the mines. Local content policies are legal requirements to empower local SMEs so that a share of factors of production in form of labour, supplies of goods and technology required at various stages of the value chain is sourced from the domestic economy. A survey of 350 SMEs answered a questionnaire to determine how local content policies help them to supply to the mines. It was found out that the local content only helped SMEs to improve their skills and capacity and not to help them supply to the mines or employment of the local people. The study recommends that a mining commission of Zambia be formed with executive powers to enhance the inclusion of local SMEs to the mines. Further, a local content committee and economic empowerment must be institutionalized to improve the position of SMEs and enhance economic empowerment respectively

**Keywords:** Local content, global value chain, small and medium enterprises

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## 1.0 Introduction

In the Zambian mining sector, small and medium enterprises (SMEs) continue to lag behind in supplying in the mining global value chain. The global value chain (GVC) covers the full range of activities performed by various firms to bring a product from its inception to the end user and beyond (OECD, 2013a). The linkages of the SMEs to the mining global value chain offers great opportunities for them to supply and earn income. However, due to competitive problems, the SMEs are excluded from participation (IFC, 2002). Most SMEs worldwide who gain access to commercial activities of the mines are supported by local content policies (IFC, 2002; Ata *et al.*, 2013; SELA, 2012). These local content policies are broad array of approaches that aim at increasing procurement of local goods and services, increasing hiring from local communities, and increasing the capacity of local actors in the mining global value chain. The presence of mines in the Zambian economy creates an excellent drive for industrialization where SMEs may be linked and upgrade themselves for competitiveness. Regrettably, SMEs are excluded to participate in the mining global value chain despite the presence of local content policies promoting SMEs. The role of local content policies in Zambian mines are uncertain as it is not clear the extent to which they enhance SMEs' growth and connectivity. The notable local content policies include the supplier development programme (SDP) aimed at inclusive growth, and the Mines and Minerals development Act No.11 of 2015 aimed at prioritizing suppliers and employment from the local community (Barrick, 2013; Barrick, 2015a; Chibwe, 2009; Fessehaie, 2011). Whereas the supplier development programme involves lead firms to train their suppliers various skills, upgrade their suppliers to meet international requirement, offer financial support to improve capacity, the mining Act no.11 of 2015 has mandated the ministry of mines to give mining licenses to any organization that will give local suppliers the first opportunity to supply to the mines, employ local personnel and get involved in corporate social responsibility.

A recent report regarding estimates of input goods and services to the mines in Zambia show an accumulation requirement of US\$5 billion annually (Fessehaie *et al.* 2015). The share of domestic firms in the mining market is less than 4 per cent, while that of indigenous firms is about 1 per cent (Fessehaie *et al.*, 2015; UNDP 2016). This raises questions as to what extent the local content policies help localize a significant portion of the supply chain to the local community. In addition, what are the levels of contribution of local content policies towards local industrialization, economic diversification, employment and wealth redistribution?

This study therefore is a synthesis of the benefits of local content policies in the Zambian mining sector. In addition, the study annotates the relevance of the local content policies, the challenges to effective implementation of local content policies and how local content policies may be enhanced to benefit the local communities

## 2.0 Literature Review

### 2.1 Local content

Local content policies in most countries are legal requirements to empower local SMEs to supply to the mines, create jobs and facilitate the transfer of valuable skills and knowledge (Tordo *et al.*, 2013). Local content policies help SMEs to contribute a certain share of their actors of production in form of labour, supplies of goods and technology required at various stages of the mining global (Sigam and Garcia, 2012). In other countries such as Nigeria with local content Act (LCA) of 2010 (Heum *et al.*, 2008), South Africa with the Mining Charter, Ghana with a strong Local Content Policy, and Bolivia with the National Constitution on Local Content Policy stimulate commercial activities with the SMEs in the extractive sector (Ovadia, 2016). Among the aspirations of local content, the mining sector generates linkages with upstream (backward) SMEs, which connect the activities to its suppliers of goods and services, and the downstream (forward) links, where its output is linked into intermediate manufacturers and final products (Lombe, 2018). These linkages involve flows of materials among the international network of firms including the marginalized SME along the global value chain (OECD *et al.*, 2013; OECD, 2017).

### 2.2 Role of local content

The role of local content has become of buzz work in the world today as these local contents help to engage SMEs to the mining global value chain and gainfully participate for inclusive growth (OECD *et al.*, 2013). However, there are many cases where local content has failed to improve the position of SMEs due to poor implementation, monitoring and evaluation (OECD *et al.*, 2013). World bank (2014) asserts that most countries use quantitative measure to improve the productivity of local contents. Some countries such as Norway give preferences to local firms that are competitive to supply to the mines. In Nigeria, a preference is given to the Nigerian people to take up junior and intermediate job positions (Ramdoo, 2015), while in Kazakhstan and Angola, the local content demands that 95% and 70% of employment comes from local nationals respectively (World Bank, 2014; Ramdoo, 2015). In addition, local companies are given 100% opportunity to supply in the Nigerian mines and more than 50% in Angola and South Africa for certain categories of goods and services (Ramdoo, 2015). Alongside the quantitative requirement that help integrate local SMEs in the chains, the qualitative aspect of local content offer great opportunity for SMEs to be linked to the global value chain. These qualitative measures include but not limited to supplier development programmes aimed at nurturing the competitiveness of SMEs (Ramdoo, 2015), technology transfer aimed at upgrading possibilities of local firms, and managerial training of local suppliers to improve their business and management processes (World Bank, 2015). Another notable feature of local content is the development of community projects where operating companies partner with local communities to compensate degradation and pollution from extraction activities. These commercial activities do not only displace established communities (Ramdoo, 2016) but also cause pollution to habitat. In some countries, mining companies are forced to share a small proportion of benefits with the communities to prevent civil society and local government pressures (Ernst and Young, 2014).

### 2.3 Challenges in implementing local contents

The local content policies have met some hard resistance in the implementation processes. In order to improve the functioning of local contents, they need other policies alongside in which SMEs are required to showcase capability and knowledge development. R&D is one such policy to support public investment and collaborative partnerships with private sector. There is need to supplement local content with sound management practices to build the capacity of suppliers, and address skills and financial gaps (KPMG 2010; Cosbey, 2015). Further, some local contents are faced with unrealistic and inflexible and become difficult to succeed. In some cases local content emerge as a “forced marriage” that fails due to poor trust, poor shared vision no complementarity (Cosbey and Mann, 2014).

### 2.4 Enhancing application of local content

In improving local content, most governments worldwide provide a regulatory framework with incentives to lead firms to implement local content (Ramdoo, 2015). Some incentives may be inform of tariff exemptions on imports, fiscal exemptions in support of the development of local industries, and improvement to infrastructure (World Bank, 2014; Ramdoo, 2015). In addition, Weiss (2015) argue that local content design must be pro-local suppliers although Esteves, *et al.*, (2013) as well as Grice (2018) proposes a mandatory regulation to impose mandatory implementation of local content.

### 2.5 Conceptualization

Arising from literature, local content serves the purpose of integrating SMEs to the mines by linking them to various mining global value chain activities. The local content help to improve the position of SMEs through training (LC SME skills), improving capacity of SMEs (LC SME capacity), improving SMEs to supply to the

mines (LC SME supplying) and improving local employment (LC SME employment). It is assumed that the four independent variables (skills, capacity, supplying, and employment) influence SME inclusion (LC SME inclusion) in the mining global value chain. The supplier development programme nurtures SMEs by developing them with skills and capacity so that they meet mining requirements. The mining companies require certain managerial skills to be exhibited by the local SMEs to meet their requirements. In addition, local SMEs must meet capacity to supply to the mines in terms of volume of supply, quality of supply, time of supply and other mining requirements. The government of the republic of Zambia through the mining Act no.11 of 2015 demands that mining companies offer first priority to local SMEs to supply to the mines as well as employment of local people. This means that once the government implements the law, it is assumed that the mines will be forced to engage local SMEs in their supply chain and employ local people for their mining activities.

**Table 1.** Independent and dependent variables

Independent variables	Dependent variable
Local content SMEs skills (LCSME skills)	SME inclusion (LCSME inclusion)
Local content SME capacity (LCSME capacity)	
Local content SME employee (LCSME employment)	
Local content SME supplying (LCSME supplying)	

It is assumed in table 1 that the four independent variables influence the dependent variables. This means that in order to improve SME inclusion in the mines, SMEs must be given a supportive platform in form of skills development, capacity, employment and an opportunity for them to supply. A regression analysis will help to determine how the four (4) independent variables in the standard predict significantly the dependent variables and the strength of relation

### 3.0 Methodology

#### 3.1 Design

The study used a positivist paradigm to determine how local content policies have helped SMEs to supply to the mines. This approach was suitable since the units of analysis are in the mining area in Zambia. The positivist approach was recommended by Creswell (2011) in various studies where he says that positivist paradigm views reality as external and objective in the ontological and epistemological perspective. A cross-sectional descriptive survey research was utilized. This method describes the events as they currently occurred, as well as how they relate to other factors in the present conditions (Bryman, 2015; Creswell, 2014). This study then adopted a global value chain theory which breaks down the variables under discussion. This break down of variables makes it easier to collect and analyze relevant data on how local content affect inclusion of SMEs in the mines. The analysis of the global value chains is central to policy implementers to identify areas for intervention in the chains. In line with the positivist paradigm which demands to collect primary data through quantitative methods, a standardized questionnaire was developed.

#### 3.2 Local content policies

In the study, a number of questions arise as to whether the local content policies have helped the local SMEs to be included in the mining global value chain. The local content aim at skills training of SMEs, improvement of capacity of SMEs, employment support towards SMEs and SMEs support to supply to the mines. The various support trajectory is assumed to enhance SMEs inclusion in the mining global value chain and it is not clear the extent to which the local content policies have helped SMEs to supply to the mines. SME inclusion means the opportunity of suppliers to be linked to the mining activities where they can supply and earn sustainable income (Kowalski *et al.*, 2015). The inclusion of SME precipitates a structural transformation that increases productivity, incomes, and food security as well as multiplier effects on employment as well as fueling a process of local and national economic growth (Dunn, 2014)

**Table 2.** Probing Local content policies

Supplier development programme	Mining Act. No. 11 of 2015
To what extent does the SPD train SMEs to improve skills to meet mining requirement?	To what extent does the mining Act no.11 of 2015 improve the local employment to the mines?
To what extent does the SPD improve SME capacity to meet mining requirement?	To what extent does the mining Act no. 11 of 2015 enhance local suppliers to the mines?

#### 3.3 Selecting samples

In the study, a simple random sampling among 720 SMEs was considered. This technique gave all respondents an equal opportunity of being selected. The study considered suppliers who belong to the mining suppliers and contractors association of Zambia. In addition, the respondents considered were those who are serving membership

of the association and have knowledge about the mining global value chain.

### 3.4 Data collection

Primary data collection was done over a period of 4 months starting December 2018 to the end of March 2019. This study used standardized questionnaires which were completed by respondents through a cross section survey. The questionnaire development process proposed by Neelankavil (2015) was adopted to ensure quality. Neelankavil (2015) proposes a rigorous process of reviewing research objectives and research questions to streamline them to information needs and thereafter pretesting the questionnaire. The internal consistency method as estimated by the Cronbach's alpha was used to measure reliability. This measure is very important as it reveals the similarity of items in the instrument that is used to tap the constructs. The data collection process resulted into distribution of 720 questionnaires to the respondents. An incentive was given to respondents in form of a small diary for them to use for taking some notes and a pen to be used for answering the questionnaire. The researcher acknowledges the conflict nature of respondent incentive, however it was merely meant to empower the respondents. The respondents were sent a friendly reminder after ten (10) days and this strategy worked very well as 400 questionnaires were returned. Further, the researcher checked the questionnaire for correct answering upon receiving them. Thereafter, the questionnaires were numbered for easy identification for future review. The data was loaded into an Excel software package after which it was transferred into the IBM SPSS software package for subsequent analysis

### 3.5 Data analysis

Data was analyzed using the regression to determine the relationship between the independent and dependent variable. In regression analysis, the assumption of multivariate regression analysis are the normal distribution, freedom from extreme values, and having no multiple ties between independent and dependent variable. As regards the questionnaire, the items were measured using the "five-point Likert scale from 1 to 5" rating, with choices from "strongly disagree" to "strongly agreed. The researcher used Microsoft excel to develop a data sheet then transferred it into the IBM SPSS statistical package. In addition, data was reviewed several times for the purpose of cleaning against possible errors and omissions. Finally, data was analyzed using regression analysis.

The availability of missing data was checked in the research using the frequency analysis. Thereafter, a Univariate normality test was done, then linearity test, freedom from extreme values, and multi-linear relations. To satisfy the requirement to carry out a regression analysis, a univariate normality assumption was done for each variable through the use of skewness and kurtosis test. In addition, scatter diagram matrix and p-p plot was used to determined multivariate linearity and homoscedasticity of the assignment. In order to check the unidirectional linearity extreme values, it was checked whether or not the Z scores of the variable were in the +- 3 range.

### 3.6 Response rate

A total of 400 out of 720 suppliers completed and returned the questionnaires. There were Fifty (50) questionnaires not suitable for processing. Some questionnaires were not fully answered while other questionnaires from some respondents were rejected because of respondents' failure to complete the consent form. The useable questionnaires were three hundred and fifty (350) giving us a response rate of 55% of the total sample of the identified mining global value chain suppliers.

### 3.7 Reliability test

Cronbach's alpha which enables the estimation of consistency in the questionnaire items was employed to check the reliability of the instrument (Field, 2009; Hair *et al.*, 2010). Cronbach's alpha ranges from 0 to 1 with those alpha coefficients closest to 1.0 revealing highest internal consistency on the items. Nonetheless, any value above 0.6 can be accepted as posing satisfactory item reliability (Hair *et al.*, 2010). Table 3 shows the reliability statistics

**Table 3.** Shows the Cronbach's alpha for the items used in this study

Reliability Statistics	
Cronbach's Alpha	N of Items
.785	5

## 4.0 Results

Firstly, it was important to check for suitability of regression analysis by carrying out some descriptive statistics. Among the test include a test on missing values, skewness and kurtosis test. The test result in table 4 show that there are no mission data. Missing data may cause serious problems in statistical procedures. It may cause elimination of cases with missing data leading to not having enough data to perform the analysis

**Table 4.** Frequency table for missing data

		Statistics				
		LC SME skills	LC SME Capacity	LC SME supplying	LC SME employment	LC SME inclusion
N	Valid	350	350	350	350	350
	Missing	0	0	0	0	0

*4.1 Skewness and kurtosis*

Prior to the multivariate normality test, univariate normality test was done for all quantitative variables. The skewness and kurtosis coefficient of the research variables were analyzed. On one hand, the skewness analysis measures the relative size of the two tails, on the other hand, Kurtosis measures the amount of probability in the tails. It is a measure of the combined sizes of the two tails and the value is often compared to the kurtosis of the normal distribution, which is equal to 3. The analysis results are shown in table 5. The skewness coefficient of all variables are within the acceptable range of +/- 1 range. This means that the variables are not in skewed position. The kurtosis coefficient does not differ from the normal, and henceforth distribute normally.

**Table 5.0** Skewness and Kurtosis

		Statistics				
Measurement		LC SME skills	LC SME Capacity	LC SME supplying	LC SME employment	LC SME inclusion
Skewness		.055	.047	.139	-.017	-.134
Std. Error of Skewness		.130	.130	.130	.130	.130
Kurtosis		-1.412	-1.080	-.498	-.792	-1.314
Std. Error of Kurtosis		.260	.260	.260	.260	.260

*4.2 Multivariate normality and linearity*

The scatter diagram is being used to check the multivariate normality and linearity. The scatter diagram is examined for each group as shown in figure 1.0. As regards normality, it is important to ensure that before making valid inferences from a regression, the residuals which are the error terms of the regression should follow a normal distribution. An examination shown on a normal Predicted Probability (P-P) plot display that the residuals are normally distributed. Figure 1 and 2 show the scatter diagram and P-P plot with residuals conforming to the diagonal normality line and homoscedasticity respectively

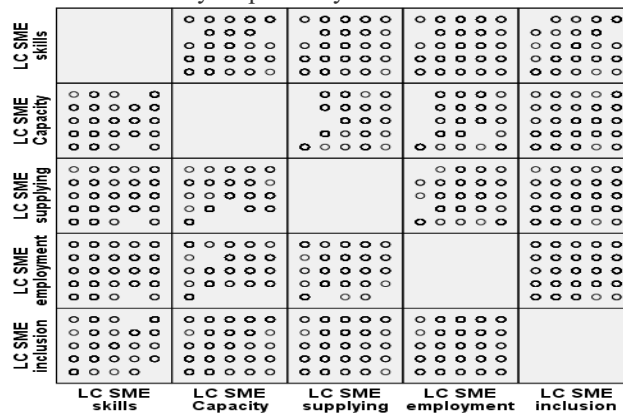


Figure 1. Scatter diagram matrix

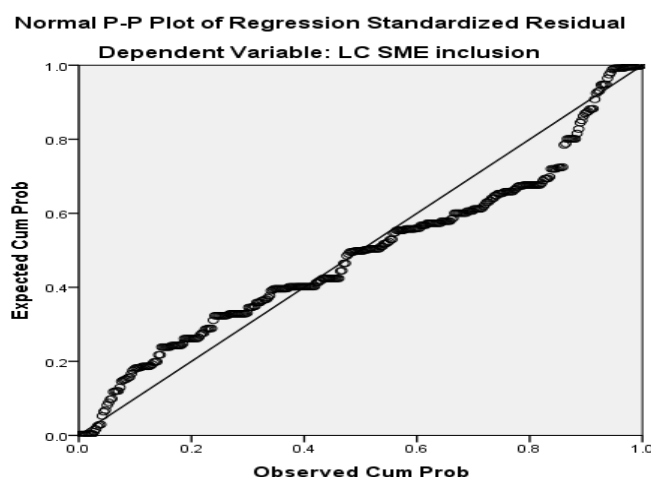


Figure 2. P-P plot of regression standardized residuals

#### 4.3 Multiple relations Coefficients

In the study, it was important to check whether or not there were any multiple relations between variables. To that effect, some tests such as simple correlations, variable increase factors (VIFs), tolerance and conditional index (CI) were examined. Table 6 shows the multiple relations coefficient.

Table 6. Multiple relations coefficients

	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	.805	.179		4.493	.000					
LC SME skills	.568	.045	.588	12.711	.000	.701	.565	.476	.657	1.522
LC SME Capacity	.182	.054	.168	3.402	.001	.527	.180	.127	.574	1.741
LC SME supplying	.047	.060	.036	.788	.431	.352	.042	.030	.663	1.507
LC SME employment	.014	.050	.012	.284	.777	.206	.015	.011	.816	1.225

The table 6 analysis show correlation results on zero-order, partial and part. The results show that there are no correlation coefficient higher than 0.8 showing that there is no multiple relation among the variables. Further, the variance increase factor (VIF) analysis show that they are less than 10 indicating good results. If they are equal or more than 10, then we would have concluded a multiple relation between variables. The tolerance values are higher than 0.10 and therefore no multiple relations between variables is decided.

Table 7. Multiple relations Condition Index Values

Model	Dimension	Eigenvalue	Condition Index	(Constant)	LC SME skills	LC SME Capacity	LC SME supplying	LC SME employment
1	1	4.660	1.000	.00	.00	.00	.00	.00
	2	.137	5.841	.05	.33	.11	.02	.26
	3	.078	7.707	.13	.39	.28	.38	.05
	4	.065	8.475	.12	.04	.41	.46	.41
	5	.060	8.839	.70	.24	.19	.15	.27

Dependent Variable: LC SME inclusion

When the CI is bigger than 30, it is considered that there are correlations between variables. In table 7, all the CI values are smaller than 30. Henceforth, a conclusion that there were no multiple relations between the variables. After having a satisfactory examination of the univariate normality test, linearity test, freedom from extreme values, and multi-linear relations, a regression analysis was henceforth done.

#### 4.4 Multiple linear regression

**Table 8. Regression model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.718 <sup>a</sup>	.516	.510	.965	.516	91.794	4	345	.000

a. Predictors: (Constant), LC SME employment, LC SME skills , LC SME supplying , LC SME Capacity

b. Dependent Variable: LC SME inclusion

Table 8 show the degree of the emerging models predicting the dependent variable in the consequence of the standard regression as well as the degree of the model's explaining the variance in the dependent variable. The model's degree of predicting the dependent variable was found to be R=.718. As regards the model's degree of variance in the dependent variable, it was found to be R<sup>2</sup>=51.6. After examining these coefficients, it can be reported that the model predicts the dependent variable very well.

**Table 9. Analysis of variance (NOVA)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	341.749	4	85.437	91.794	.000 <sup>b</sup>
	Residual	321.109	345	.931		
	Total	662.857	349			

a. Dependent Variable: LC SME inclusion

b. Predictors: (Constant), LC SME employment, LC SME skills , LC SME supplying , LC SME Capacity

Table 9 shows whether or not the four (4) independent variables in the standard model predicted significantly the dependent variable in the regression model. The results show that the four (4) independent variables are significantly predictive of the dependent variable according to ANOVA statistics [F (4, 345) =91.794, p<0.05]

**Table 10. Regression coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.805	.179		4.493	.000	.452	1.157
	LC SME skills	.568	.045	.588	12.711	.000	.480	.656
	LC SME Capacity	.182	.054	.168	3.402	.001	.077	.287
	LC SME supplying	.047	.060	.036	.788	.431	-.071	.165
	LC SME employment	.014	.050	.012	.284	.777	-.084	.112

The absolute value of β (Beta) in table 10 indicates the order of importance of the independent variables with the highest beta value being relatively important variable. Local content SME skill (LC SME skills) made the biggest contribution with the value of (β=.588). The next contribution were in their higher sequence LC SME capacity, LC SME supplying, and LC SME employment respectively. The regression equation is shows as follows: *SME Inclusion: (0.568 skills) + (0.182 capacity) + (0.047 supplying) + (0.014 employment)*

#### 5.0 Discussion

In the study, the analyses show the four (4) predictor variables (skills, capacity, supplying, and employment) being overall significantly predictive of the independent variable (inclusion). Firstly, the analysis of the assumptions necessary for the multiple linear regression was done in the research. The results of the assumption test showed fulfillment of the assumptions to carry out a regression analysis. The model's degree of predicting the dependent variable was found to be R=.718. As regards the model's degree of variance in the dependent variable, it was found to be R<sup>2</sup>=51.6. After examining these coefficients, it can be reported that the model predicts the dependent variable very well. The results show that the four (4) independent variables are significantly predictive of the dependent variable according to ANOVA statistics [F (4, 345) =91.794, p<0.05].

Further, the regression coefficients show that supplier development programme which is aimed at building skills and capacity influence SME inclusion to the mines with the p-values less than 0.05. The local SME skill show p value of 0.00; while SME capacity show the p-value of 0.001. This imply that both skills development and capacity develop have a positive effect on SME inclusion in the mining global value chain. On the other hand, the mining Act show that it does not have influence on SME inclusion in the mining global value chain. The Act

empowers SMEs to access opportunities to supply to the mines and employment but the regression coefficients show that both local content supply ( $p = .431$ ) and local content employment ( $p = .777$ ) are not predictors of SME inclusion. They do not influence SME inclusion to the mining global value chain.

## 6.0 Conclusion

The study concludes that the four (4) predictor variables (skills, capacity, supplying, and employment) show overall that they are significantly predictive of the independent variable (inclusion). The model's degree of predicting the dependent variable was found to be  $R = .718$  while the model's degree of variance in the dependent variable was  $R^2 = 51.6$ . Further, it was concluded that the supplier development programme influence inclusion of SMEs in the mining global value chain while government policy through the Act of parliament does not.

## 7.0 Recommendations

In order to enhance the inclusion of SMEs to the mines, the study recommends that a mining commission be enacted through parliament to enforce the regulatory aspect of the local content. The mining commission may have executive powers to enforce the law to support local SMEs in the mines. In addition, the study recommends that a local content stakeholder committee comprising members from the mining suppliers and contractors association of Zambia, non-governmental organization who advocate for empowerment of local suppliers and representatives from the mines. The local content committee will formulate strategies appropriate for enhancing SME inclusion in the mining global value chain. Finally, the study recommends that the citizen's economic empowerment of Zambia be proactive in broadening their scope in financial empowerment of the local SMEs to improve capacity and meet mining requirements

## 8.0 Limitation of the study

There were some limitations in the study in spite of the good methodological approach. The structured questionnaires may have provided a generalized phenomenon while disregarding some important insights. To address such limitations, the data presented in this study as well as any recommendations must be amplified with other essential datasets from further research, literatures from non-government organizations, government publication and the mining sector. There is a further need for refining the local content through an internal review supported by further collection of feedback from more stakeholders from within the mining global value chain.

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