



## IMPACT OF LUMWANA MINE ON EDUCATION IMPROVEMENT IN THE HOST COMMUNITY

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### ABSTRACT

The operation of mining companies in any society has many implications for the host community and surrounding communities. The mines do respond by mitigating the risk and impacts to maintain access to the resource and share benefits with the community. This paper shows the results of a study conducted to assess the impact of Lumwana mine Company on Education improvement in the host community in Kalumbila District of the Northwestern province of Zambia. The study used purposive sampling in selecting the participants who provided information using the designed questionnaire. The finding from the study depicts that the Mine has both negative and positive impact on education improvement in the area. The positive impact is because the mine through its corporate social responsibility shares its benefit with the community through a number of interventions which have seen the schools increasingly improving the learner performance. According to the findings, Income generating activities was highly ranked among others (infrastructure and Scholarship) that contributed to the school improved due to the local empowerment programme supported by Lumwana that has enabled the host community to be engaged in alternative livelihood besides formal employment with the mine. Members of the community through empowerment initiatives have developed to the level of being suppliers and compete on the supply chain of the mine. Others supply their goods and services to the catering service of the mine and on the available market within the district.

However, the contributions to the mine to education is still far-fetched to match with ever increasing number of learners. Thus, the negative impact is undoubtedly reckoned with the In-migration influx in operational area of mine that exalted pressure on the existing social infrastructure and education is non exceptional. Worse the government of Zambia has no policy direction of how the new mines in the remotest part through the royalties paid to the country could be directed to address issues surrounding Influx. As such the mines are perceived by the host community as duty bearer or de facto government. With the foregoing, the overstretched budget under corporate social responsibility for Lumwana mine would not tackle all factors that are critical in achieving the desired educational outcomes because of other many competing needs in the host community. However, as observed from study, stride improvement on student performance has been recorded from the time the mines began supporting the education sector. It is on record that during the outbreak of COVID-19 pandemic the learners continued to learn as a result of the space created through construction of infrastructure for example Manyama primary school which was housing both primary and secondary pupils was decongested by the construction of 6 classrooms at a new site for the secondary. As such learner performance in the last exam for grade nine pupils performed better than in the previous years. However better results could have been observed if the fiscal tax

regime could be reviewed to allow part of the loyalty paid to the government to trickle down to where more impact is felt as a result of mine operations.

## **Introduction**

Zambia's economy has been dominated by the Copperbelt's major industrial and mining zone since the early twentieth century (Smart et al., 2015). With time, mining has also moved to the country's North-Western Province. In Zambia mining industry has gone through three major phases of ownership: private ownership during colonial rule, national ownership after independence, and finally privatization beginning in the late 1990s (Sikamo, Mwanza and Mweemba, 2015). The aforementioned changes have had significant implications for mining investment as well as other industries well as the provision of public goods and social services to communities surrounding the mines.

When the mines were administered by the government through the Zambia Consolidated Copper Mines (ZCCM), the government assumed responsibility for providing non-core business services to the population. The government supplied social services to the communities that surrounded the mines they were managing, such as water, recreational facilities, health care, and educational facilities. As part of corporate social responsibility, the new owners of the mines took up part of the provision of social services to the host communities after privatization (primarily on the Copperbelt) (CSR). Corporate Social Responsibility (CSR) is a concept in which businesses consider social and environmental issues as part of their business operation

Apart from the Copperbelt, mining operations are also found in the country's northwestern regions. In comparison to the Copperbelt, the mines in the North-Western province are relatively new. The Kalumbila, Lumwana, and Kansanshi mines are located 150 kilometers west, 65 kilometers west, and 10 kilometers north, respectively, of Solwezi town. The North-Western is slowly getting grounded in copper production and might soon be the largest Copperbelt region. The growing mining industry in North-western province as has been elsewhere in the world comes with it a number of changes either negative or positive that the local people experience. Some of the changes are influx of people seeking employment, business opportunities, goods and other services. Additionally, there could also be infrastructure developments such as roads, recreational facilities, health and education facilities coming into such a location which could probably be a rural area. Suffice to indicate that the Northwestern region, where Lumwana mine is located what is not certain is the extent to which the new mines are inducing changes within the areas in which they are operating more especially on education

It is in this regard, that this study aimed at assessing the impact of mining on Education in the host communities of Lumwana. Lumwana mine is in Kalumbila district and its operational area or host community is comprised of three surrounding chiefdoms namely Mukumbi, Mumena and Matebo. The three chiefdoms are the immediate communities that are impacted by the mine operations

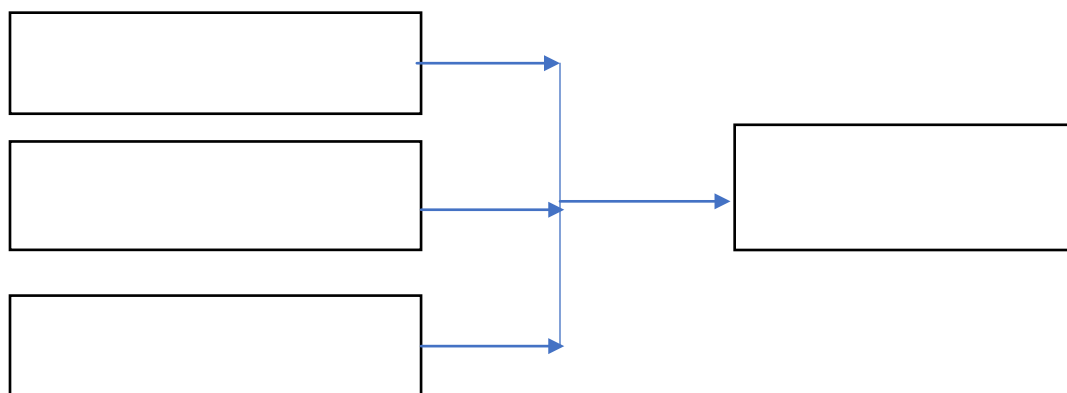
It is a known fact that wherever new mining operations occurs, the local people experience a number of changes and Kalumbila district is not exceptional. According to formal risk assessment and consultative engagement with key stakeholders from the

operation area in the district, risks and impact were identified among them is education which has been impacted by the operations of Lumwana Mine.

Lumwana is a copper mine in the rural Zambia's North-Western Province, west of Solwezi. It was founded in 2010 and is one of Zambia's four copper mines. With 11 000 employees as of 2018, it was Zambia's fourth largest mining employer. Lumwana's local communities rely greatly on these mines for their socioeconomic growth since they provide jobs, education, social services, and health care. An increase in population has been recorded in the area due to influx of people in the project area seeking employment opportunities or other economic opportunities with the project. It is undoubtedly that Lumwana mine responds to the risks to local communities posed by influx in recognition that it is a critical aspect of the overall strategy for social and environmental management. In as much as the inflow of human and economic resources into a region caused by influx, the mine may become a main driver of economic development and wealth creation, heightened standards of living, and opportunities for wage-earning employment. On the other hand the negative impact may cause an increase in crime; over-stretching of public facilities such as schools, and clinics; and a threat to food security, inadequate water supply and waste management, increasing health issues which the mine would want to manage through Corporate Social Responsibility (CSR). Therefore, it is on this basis that the research assessed the impact of Lumwana Mine on education improvement in the host communities.

## CONCEPTIAL FRAMEWORK

The main concepts in this research was the impact done by mining companies (private sector) on Education in the host communit. assessed from the performance of the learners, the learning environments (Infrastructure development, scholarship, desks and reading materials), livelihoods programme to increase the income level in the community Impact of the Mine on Education in the host community



## Hypothesis

1. Mine scholarship program supports the host community education improvement.

2. Income generating activities contributes to the host community education improvement.
3. Infrastructure development contributes to host community education improvement.

## LITERATURE REVIEW

Education in every sense is one of the fundamental factors of development (Sanoussi Bilal) he asserts that no country can achieve sustainable economic development without substantial investment in human capital. Education enriches people's understanding of themselves and world. It improves the quality of their lives and leads to broad social benefits to individuals and society. Education raises people's productivity and creativity and promotes entrepreneurship and technological advances. In addition, it plays a very crucial role in securing economic and social progress and improving income distribution. He claims that the advantages (or costs) of large-scale extractive industries are distributed to local people via market and fiscal processes, as well as the environment. Extractive activity such as mining has the potential to impact local populations in at least three ways: market, fiscal, and environmental. Resource activity might result in an income increase for local governments, easing their budget limitations. If these increased resources are used to offer more and/or higher quality of much-needed public goods, such as education, they can improve wellbeing.

Chibuye (2016) did a study to assess Mopani and Konkola Copper Mines' contributions to improving corporate social responsibility in education. While it is the government's responsibility to provide education, the study revealed that KCM must participate in educating the community's residents. KCM was granting scholarships to school leavers and participating in the administration and operation of trade institutes where they trained their personnel with necessary artisan skills as of 2012, according to the study findings.

On the Zambian local front, the mining industry employs about 17% of the total wage-earning population of the country. In absolute terms in 2016, between 58000 and 62000 people were employed in this sector at that time there were 14 million Zambians these numbers employed under the mines did not give good reading as such the country needed to diversify in all its economic endeavors (Mudenda and Bordoville, 1988). This kind of corporate social responsibility seems unique among most mining conglomerates in Africa especially in Zambia, more often than not; companies would rather concentrate on one sector of education for example University Education. The situation in India seems not peculiar to the Zambian scenario, where the mines employ the local people within the operation area of the mines for example; people around the Wusakile area in Kitwe, Copperbelt province, most of the residents are working for Mopani 31 copper mines. It is not surprising that most of the miners work very hard in order to take their children to school, however, the levels of illiteracy are quite alarming. For example, on 1st December, 2014, Minister of Mines, Honorable Christopher Yaluma, focused his remarks to a gathering of Zambians for an international conference in Australia, on the critical role education and skills development plays in ensuring that activities in the mining sector contribute to the social and economic development of Zambia (ICMM, 2014).

In the colonial period, Kangwa (2001) revealed that the colonial authorities had made little effort to develop educational and health infrastructure and at independence less than 0.5% of the Zambian population were expected to have completed some formal education despite the fact that the colonial government had enough resources from the mining industry that could have been used to enhance education. Actually during this time no university was built in the country. Kangwa (2001) further noted then that the level of social investment by mines in Zambia's Copperbelt was significant. Newer mines in the North-Western province make contributions of around 2% of pre-tax profits towards social investments, a figure similar to that of other countries. This represents between 10% and 16% of the pre-tax profits.

However, social investments made by mines are largely voluntary although there are some legacy obligations for the Copperbelt mines, which are responsible for running several hospitals, schools, and health clinics. The educational investments made by Lumwana in Solwezi have contributed to a reduction in pupil- teacher ratio despite large increases in pupil numbers. While on the Copperbelt the social investment is that of infrastructure, for example, the roads, water and sanitation. As regards the mining company's social investments, quite huge amounts of resources are spent towards health facilities and support by all the four companies this translates to about 43% of the total investment. This entails that the mining companies wish to see a very healthy workforce and the surrounding communities in which they operate. This a good gesture by the mining companies as it shows that there is need for a healthy population which leads to wealthy community. According to available literature, the mining companies spend about 14% of their social investment, Lumwana mine's educational investments in Solwezi have contributed to a reduction in pupil –teacher ratio despite large increases in the pupil numbers in most of the schools as a consequence of the free education policy (CSO, 2012).

According to the International Council of Mining and Metals (ICMM, 2014), the mining companies' contributions towards infrastructure development are about 24% of their total investment. The business development of 8% is where the mining companies offer business dealings to the mines for example, the supply of goods and services to the mines ranging from machinery to stationery; these are used to keep the mines afloat so that copper production continues because this is the main stay of Zambia's economy. Although the country has diversified the mining industry remains a viable industry to earn

Since the beginning of large-scale mining in Geita County in Tanzania, especially Geita Gold Mining Limited (GGML), neighboring communities have raised many complaints about the minimal socioeconomic benefits that the community provides. locally accumulated and negative impacts on their environment. livelihoods (Maliganya, 2013 p, 16). While GGM admits it has done a lot to improve the livelihoods of locals around the mine and beyond, communities also continue to complain about the 's loss of livelihoods and unfulfilled promises. since the beginning of GGML operations in 2000 (ibid., p, 16). The pledges encourage communities around mining areas that will work to compensate for the disrupted livelihoods of surrounding communities and further assist in areas such as medical facilities and education, job opportunities, water supply, incentivizing local businesses by dumping multipliers and over-effects, and improving infrastructure (ibid. p, 16) ). Mining companies declare that they pay all required taxes

and royalties to governments and therefore the government is responsible for returning a portion of mining revenue to local communities for development (Maliganya, 2013 p, 15). Equally serious social and cultural consequences are mining activities, especially when indigenous populations are affected. In addition, workers from other parts of the countries or from abroad tend to have lifestyles and behaviors that differ from and arouse local grievances).

According to Philip Nikanori (2015), who did research in Tanzania on Geita Gold Mining (GGML), studied the impact of mining on the quality of education in Geita. Based on the findings of the study, the researcher concludes that Geita's mining sector still has a long way to go to support socioeconomic development, mainly in the education sector. Mining field is essential to support the development of education to reach the highest success. The mining industry can support the education sector through the comprehensive construction of school infrastructure and the provision of teaching and learning facilities. If used properly, the income from mining seems to make a significant contribution to the socio-economic development of the society.

According to the main findings, most respondents do not see the contribution of mining activities to the development of education in the Geita inner city district. In addition, the present study highlights that there are divergent views of the educational community regarding mining activities in the Geita urban district. The majority of interviewees disagreed that the presence of mining activity in Geita is more of a blessing than a disadvantage. For them, the negative effects of mining outweigh the positive ones. It appears that mining activities in Geita have resulted in environmental risks, minor pregnancy, child labor, truancy, and dropout. All of this has resulted in a lack of quality education.

Kitula (2005) argues that mining has several stages or activities in common, each of which has potential negative impacts on the natural environment, society and cultural heritage, health and safety of the mines. mining workers and neighboring communities. There is little contribution from the mining sector to educational development and the little that it achieves is distributed unevenly. Thus, the results of this study led the researcher to conclude that, the mining sector does very little, in the education sector. His study provided important information that the mining has both positive and negative impacts on the education sector of indigenous people in Geita District. The negative impacts caused by mining activities such as environmental risks, child labor, school absence and school dropout were revealed in this study. These things slow down the development of education. The positive effects of mining activities such as school building and teacher motivation promote student achievement in schools in Geita. According to the results, the negative impacts from Geita's gold mining operations outweigh the positive ones an indication that educational community does not derive much benefit from mining activities.

San Bilal (2017) argues that extractive resources have the potential to bring significant wealth to a country. Whether this translates into sustainable development is a totally different ball game. The rich endowment of natural resources is often a mixed blessing, and at times a genuine curse.

In the context of the UN 2030 Agenda for Sustainable Development, San Bilal states that the extractive sector touches upon most, if not all, the sustainable development goals (SDGs). The size of extractive operations and the significance of the sector for some resource-rich countries means that it dominates not only specific local areas, their economies, the communities, and surrounding environment, but has also implications for the country as a whole: its economic structure, governance and ultimately, its development path.

From the literature review it is concluded that mining industries have both negative and positive impact towards education development. The author of the research do acknowledge that the mining industry use the corporate Social responsibility which is voluntary to support the education sector and other sectors which are well aligned to UN 2030 agenda as described by San Bilal (2017). However, concerns have been raised on how the support towards educational development can be made more beneficial to the host community. Perhaps it is because these social investments are voluntarily provided by the mines. To address the concerns raised, a resolute action by the mining industry and the government is inevitable to improve the level of support from the community members on education improvements. Hence this study will examine and provide the prevailing situation in the host community to ascertain the impact of the mine on education

## **METHODOLOGY**

The research method that was employed was mainly narrative qualitative methods and supplementary quantitative methods to deeply understand the impact of Lumwana mine on educational improvement in the host community. Primary data collected from the three chiefdoms, in chief Matebo, Mumena and Mukumbi being the host community for the mine. These chiefdoms were selected for this study because they form the defined host community.

The respondents for interviews were chosen using purposive sampling. This method is convenient way to get an in depth understanding of the impacts Lumwana Mine on the improvement of education in the host community from the perspectives of the people who have lived within the period before and after establishment of Lumwana Mine. As part of the protocol, both the community, School institutional, District Education Secretary (DEBS) and the mine and its employees were interviewed around Lumwana Mine. The interviews comprised in-depth, semi-structured interviews with the community, DEBS and the Mine. Discussions with the mine, DEBS and the community provided an opportunity to understand the history of Education within LMC's operational area.

A four-point Likert scale was developed to analyse key variables in the framework. Regression and analysis of variance (ANOVA) was used to analyses the data.

## **FINDINGS AND DISCUSSION**

The findings of the study using the questionnaires in assessing of the impact of Lumwana mine on Education improvement in the host community. Using purposive sampling, the study was conducted in the operational area surrounding in the three chiefdoms namely Mumena, Matebo and Mukumbi. The findings were generated from 38 respondents drawn from the District Education Board secretary, Headteachers, Lumwana Mine under corporate social responsibility and the parent teachers' associations (PTA) representing the community. The study therefore had 38 respondents. The study's focus was primarily guided by two principle objectives and that is to assess the impact of the mine on the educational improvement and ascertain the views of the stakeholders on mine contribution towards education improvement. To obtain the relevant information closed and open-ended questionnaire was used to navigate and triangulate on the findings.

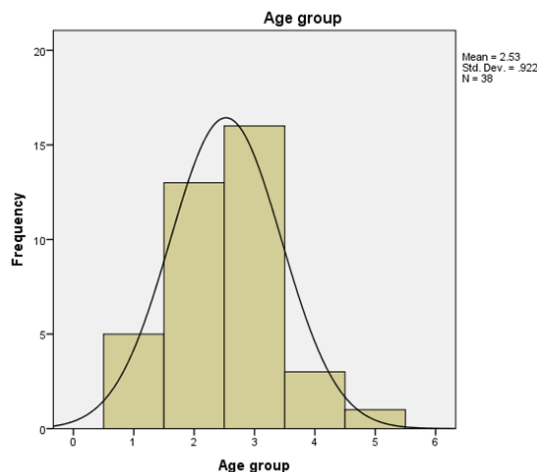
The respondents profile provides an overview of the age, sex, education background, occupation, and work experience.

The gender respondents' profile indicates that 53% of the respondents were male and 47% female of the 38 that responded.

Gender				
	Frequency	Percent	Valid Percent	Cumulative Percent
Male	20	52.6	52.6	52.6
Valid Female	18	47.4	47.4	100.0
Total	38	100.0	100.0	

Table 1 Gender

The respondents age profile table 2 indicates that the age group of 40 to 59 years represented the group with the most respondents with 42%, followed by the 30 to 29 years age group with 34% were in the age group



Age group				
	Frequency	Percent	Valid Percent	Cumulative Percent
18-29yrs	5	13.2	13.2	13.2
30-39yrs	13	34.2	34.2	47.4
Valid 40-49yrs	16	42.1	42.1	89.5
50-59yrs	3	7.9	7.9	97.4
More than 60yrs	1	2.6	2.6	100.0
Total	38	100.0	100.0	

Table 2 Age Profile

Figure 1 Age frequency Distribution



The profile of number of years respondents lived in the areas table 3 indicates that the respondents that lived more than 15 years in the represents the largest group with 39.5% and the smallest group was for those that lived in the areas for 6 to 10 years. Of interest also here are those that have lived in the area in the last 5 years representing 26.3%. this gives an indication of influx in the area



Figure 2 Frequency Chart of number of years lived in the area

	Frequency	Percent	Valid Percent	Cumulative Percent
0-5yrs	10	26.3	26.3	26.3
6-10yrs	3	7.9	7.9	34.2
Valid 11-15yrs	10	26.3	26.3	60.5
More than 15yrs	15	39.5	39.5	100.0
Total	38	100.0	100.0	

Table 3 Number of years lived in areas

Education profile of respondents in the host community table 4 indicates that the respondents that the highest proportion for education attained was 47.4% representing a group that attained grade 9. The smallest group were those that had not attend any education qualification representing 5% and 18.4% had attained grade 12.

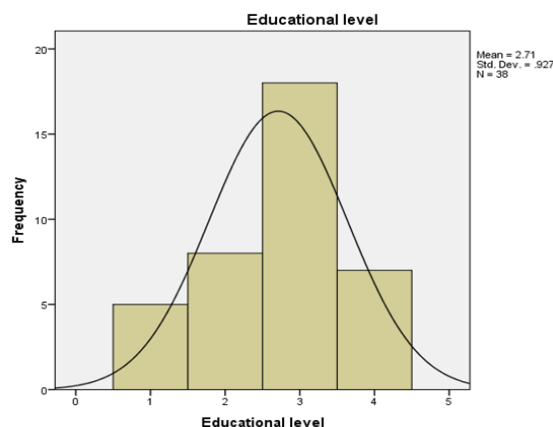


Figure 3 Educational Level of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Nil	5	13.2	13.2	13.2
Attained Grade 7	8	21.1	21.1	34.2
Valid Attained Grade 9	18	47.4	47.4	81.6
Attained Grade 12	7	18.4	18.4	100.0
Total	38	100.0	100.0	

Table 4 Educational Level

The nature of work profile, table 5 below, indicates that 36.8% are self-employed and 21% are in formal employment. 42% presents a group that is dependent on other sources of income for support.

Nature of Work				
	Frequency	Percent	Valid Percent	Cumulative Percent
Self Employed	14	36.8	36.8	36.8
Formally Employed	8	21.1	21.1	57.9
Other	16	42.1	42.1	100.0
Total	38	100.0	100.0	

Table 5 Nature of Work

The work experience profile, table 6 below, indicates that the largest group of people have 1 to 3 years work experience at 50% proportion. 21% have 5 to 7 years experience and 10.5% had 1 year work experience.

Working Experience				
	Frequency	Percent	Valid Percent	Cumulative Percent
1	4	10.5	10.5	10.5
1-3yrs	19	50.0	50.0	60.5
4-7yrs	7	18.4	18.4	78.9
5-7yrs	8	21.1	21.1	100.0
Total	38	100.0	100.0	

Table 6 Work Experience

The children sponsored by Lumwana Mine profile, table 7 below, indicates 47.4% are sponsored by Lumwana Mine and 52.2% are not. see table 7 below.

Are any of your children sponsored by the mine?				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	18	47.4	47.4	47.4
No	20	52.6	52.6	100.0
Total	38	100.0	100.0	

Table 7 Children Sponsored by the mine

Those that belonged to an association and supplied something or their group was given a contract by Lumwana Mine represented 47.4% and 52.6% belonged to a group but did not supply anything to the mine.

Do you sell/supply anything to the mine through you association?				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	18	47.4	47.4	47.4
Valid No	20	52.6	52.6	100.0
Total	38	100.0	100.0	

*Table 8 Supply/Contracted/Worked for Lumwana Mine*

The largest group of respondents had 1 to 3 children representing 65% proportion, 13% had 4 to 7 children.

How many children to you have?				
	Frequency	Percent	Valid Percent	Cumulative Percent
0	7	18.4	18.4	18.4
Valid 1-3Children	25	65.8	65.8	84.2
4-7Children	5	13.2	13.2	97.4
8-11Children	1	2.6	2.6	100.0
Total	38	100.0	100.0	

in school representing ol.

How many children are in school?				
	Frequency	Percent	Valid Percent	Cumulative Percent
0	12	31.6	31.6	31.6
Valid 1-3Children	20	52.6	52.6	84.2
4-7Children	6	15.8	15.8	100.0
Total	38	100.0	100.0	

*Table 10 Children in School*

## Regression Analysis Results

Standard multiple regression was performed. The independent variable included the measure of Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community, Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community and Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community. The dependent variable was the Perception of Impact of Lumwana Mine on Education Improvement in the Host Community

The adjusted  $R^2$  was 45.3% indicating that 45.3% of the observed outcome in the dependent variable, perception of Impact of Lumwana Mine on Education Improvement

in the Host Community, is explained by the independent variables, Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community, Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community, Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community

Model Summary<sup>b</sup>

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.705 <sup>a</sup>	.498	.453	.18245

Table 11 Regression Analysis

a. Predictors: (Constant), Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community, Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community, Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community

b. Dependent Variable: Perception of Impact of Lumwana Mine on Education Improvement in the Host Community

The analysis of Variance (ANOVA) was conducted, see table 12 below. The calculated F-values (11.224) was very significant but did not provide sufficient information to conclude on the impact of the independent variables on the dependent variable.

ANOVA<sup>a</sup>

Model		Sum Squares	df	Mean Square	F	Sig.
1	Regression	1.121	3	.374	11.224	.000 <sup>b</sup>
	Residual	1.132	34	.033		
	Total	2.253	37			

Table 12 ANOVA

a. Dependent Variable: Perception of Impact of Lumwana Mine on Education Improvement in the Host Community

b. Predictors: (Constant), Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community, Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community, Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community

The coefficients indicate that Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community had the highest coefficient with 0.536 followed by the coefficient for Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community which was 0.164 and lastly the coefficient for Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community, which was at 0.070

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.993	.709		1.400	.171
Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community	.070	.091	.093	.764	.450
Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community	.164	.113	.220	1.457	.154
Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community	.570	.160	.536	3.557	.001

Table 13 Regression Coefficients

a. Dependent Variable: Perception of Impact of Lumwana Mine on Education Improvement in the Host Community

The graph below shows the normal probability plot of regression for the dependent variable perception of Impact of Lumwana Mine on Education Improvement in the Host Community.

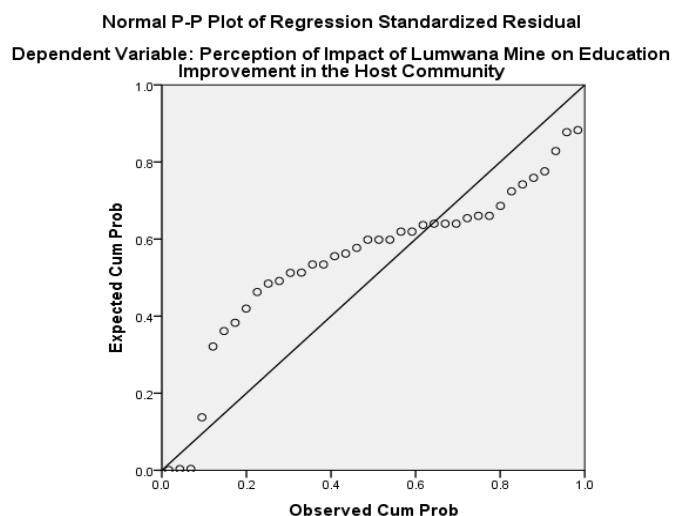


Figure 4 Probability Plot

The standard multiple regression that was performed. The independent variable included was the measure of Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community, Impact of Lumwana Mine

Scholarship Program on Education Improvement in Host Community and Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community and the dependent variable was the Perception of Impact of Lumwana Mine on Education Improvement in the Host Community

The regression adjusted  $R^2$  of 45.3% indicates that 45.3% of the observed outcome in the dependent variable, perception of Impact of Lumwana Mine on Education Improvement in the Host Community, is explained by the independent variables ( Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community, Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community, Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community)

The analysis of Variance (ANOVA) had a significant calculated F-values (11.224) but this did not provide sufficient information to conclude on the impact of the independent variables on the dependent variable.

The coefficients indicate that Impact of Lumwana Income Generation Activity Promotion on Education Improvement in the Host Community had the highest coefficient with 0.536 followed by the coefficient for Impact of Lumwana Mine Infrastructure Support on Education Improvement in the Host Community which was 0.164 and lastly the coefficient for Impact of Lumwana Mine Scholarship Program on Education Improvement in Host Community, which was at 0.070

## CONCLUSIONS AND RECOMMENDATIONS

Following the findings and discussion it was clearly stated that the research was aimed at assessing the impact of Lumwana mine on education improvement in the host communities and to make findings visible to larger audience for future policy direction in as far as education development is concerned in areas where new mines are operational. The results of the research will contribute to the existing body of knowledge on the impact of Lumwana mine on host education sector in the host community.

It is without doubt from the findings and analysis of the data collected that the scholarship program, infrastructure support and income generation initiatives promoted by Lumwana mine has significantly contributed to the improvement of education in the host community.

The most significant contributor was the income generation activities that the mine support in the community. The local content programme of the mine(local employment, local supply and empowerment initiatives) plays a pivotal role in the host community as observed which increased the disposable income, granting an opportunity to the society to earn an income which in turn is used to pay/buy the school prerequisites for their children. It is important to note that some children were missing classes and grades due to financial challenges that the parents faced in supporting children to go to school before the mine's operation.

The second aspect was that of improving or supporting infrastructure development in schools which also contributed to the improvement of education. The scholarship program was not very significant in the improvement of education in the host community largely because the scope is low.

Among other sectors, the Education sector has received its own share through the business Corporate social responsibility interventions. As indicated by LMC personnel in the sustainability department of the mine and attested by the DEBS office, Lumwana Mine remains all weather friend to the sector through the construction of Classrooms, Laboratories, learning materials, libraries, staff houses, ablution blocks, scholarship and indeed through construction of administration block such as the one built at Kananga School in Kalumbila district. Influx of people and subsequently its effect on existing social facilities is one of the elements that the mine continues to contend. LMC is intentional and committed to continue supporting the education sector in the host community and stressed much more can be done by the government and other players to realise the goal of education in the host community.

It is evident from the findings that the Mine operation has benefited the community in many ways such local employment, empowerment programmes, infrastructure development and scholarship programme for both learners and teachers in mathematics sciences.

The scholarship programme has also contributed to the improved school performance. Pupils compete to get good results that can attract a 100% scholarship resulting into better results in the host community.

The sponsorship of teachers in mathematics and sciences is another factor observed to have contributed to improvement of the education sector in the host community. These programmes coupled with infrastructure development and provision of learning materials have to a greater extent attributed to be the drivers of improved school performance recorded this far. However, much is desired to reach standard of the Education sector which is achievable if there is a political will and resolute action by all relevant stakeholder at all levels.

Based on the interactions with respondents and findings drawn from the data collected, recommendations are discussed as possible alternative strategy for improvement education performance of the sector within the host community. Premised on understanding that in Zambia, corporate social responsibility is not mandatory, further challenged by nonexistence of clear policy by government of how the money paid as royalties to the government treasury and rates to Local Authority is redistributed back into the host communities is clear problem to social-economic development in the host community. As observed from the District Education Board Secretary's office that from the time Lumwana became operation, the office hardly receives funds to improve the running and management of schools in the district. To be precise since 2014 to date the DEBS office affirmed that the district has not received any allocation to improve the learning environment. This is the more reason the mine is perceived to be the sole provider of all the prerequisites of the ministry of education and other sectors in the host community. It is therefore prudent that the government working in collaboration with the mine conduct a risk analysis of the area and collectively device a system that will

equitably allocate resources towards education improvement thereby attaining the overall goal for education in the host community. On the basis of the findings from the risk analysis, a mitigation measure can be established which will obviously see the review of the current utilisation of royalties and rates paid to the central government and local authority respectively. A clear policy should be developed to guide corporate social responsibility of business entities and the how concession on royalties and rates will be determined with consideration of a certain percentage channelled back to the host communities. In this way a conscious effort by the government, local authorities and the mines will be assured aimed at improving the education standard in the host community surrounding the mine operations. Mulenga (2017) asserts that mines should pay back to the host communities, but this will never materialize without policy direction. I presume the review or development of the policy will discuss and resolve a number of bottlenecks that both the mine and host community encounter. Probably the increase in the allocation of constituency development fund (CDF) from by the New Dawn government could be the answer to the undeniable challenges that the education sector face with the ever-growing population around the mine's site.

Thus, in the rural areas where new mines are operating, it is right for the government to deliberately develop programmes that mitigate/ respond to risks associated with operation of the mine from inception of the mines through an agreement with the host community and the mine. Th agreement will provide guidance how identified risks could be addressed by which institution. This calls for policy direction where such programmes can be embedded to respond to anticipated risks derived from risks analysis.

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