# The Performance Effects of Regulatory Requirements in Small Scale Gold Miners in Mashonaland Central Province, Zimbabwe

**Gardener Chigogora[1], Maxwell Sandada[2]**

**Abstract:** The Zimbabwean small scale gold mining sector is struggling with excessive restrictive regulations that are impacting negatively on business performance with a number of firms in the sector closing shops and those that are still operational struggling to pay royalties, taxes, salaries, and operating licences. Empirical research has attributed the difficulties being faced by the sector over regulation. This study sort to define the business regulations that govern the small scale mining sector and to assess their impact on business performance. A survey was conducted among small scale gold miners in Mashonaland Central province in Zimbabwe. A total of 289 structured questionnaires were emailed and hand delivered to small scale gold mine workers, supervisors, managers and owners in the various mining towns. Review of literature showed that there are five main categories of legislation governing mining industry in Zimbabwe. Of the five, only product market regulations had a significant impact on business performance of small scale gold miners. Product market regulations were responsible for the 24.3 % variation in business performance. Accordingly, small scale mine managers and mine owners are encouraged to expend many resources towards meeting and complying with the requirements of the product market regulations in order to survive and ensure a going concern.

**Keywords:** Zimbabwe; Small Scale Mining Sector; Product Market Regulations, business performance, restrictive regulations

**JEL Classification:** M1; M5

## 1. Introduction

The Zimbabwean small scale gold mining sector is facing unprecedented challenges in a changing business regulatory environment. The sector is struggling with excessive restrictive regulations that are impacting negatively on business performance. A number of firms in the sector have closed shops and those that are still holding on are struggling to pay royalties, taxes, salaries, operating licences and mineral registration licenses (Mashayahanya, 2014). A research study was carried out in Mashonaland Central Province of Zimbabwe to determine and establish the impact of the various regulatory requirements governing the mining sector on business performance of small scale gold miners.

Zimbabwe, like other developing economies relies heavily on the exploitation of natural resources such as gold, diamonds, platinum and chromium. The country however is still using the legislation adopted from the former colonial masters to regulate the mining sector, which were enacted with the aim of exploiting the natural resources for the benefit of the large multinational companies. Little effort has been put to review the legislation governing the mining sector in Zimbabwe which in-turn brought about the mining sector which is still being governed by the archaic 1961 enacted Mines and Minerals Act, Chapter 21:05 and its regulations whose aim was to exploit and suppress local

[1] Faculty of Commerce, Graduate School of Management, University of Zimbabwe, -mail: msandada@commerce.uz.ac.zw

[2] Faculty of Commerce, Graduate School of Management, University of Zimbabwe, Corresponding author: msandada@commerce.uz.ac.zw.

entrepreneurship. Previous amendments to the Act have not benefited much the small scale gold miners who are still regarded by the laws as outcasts and criminals. Further exacerbating the problems facing the small scale gold miners in Zimbabwe are the numerous requirements emanating from more than 22 Acts of Parliament that regulate the mining sector. Government critics and scholars have attributed the high levels of company closures and the uncompetitive nature of the small scale gold mining sector to the overregulation of the mining sector (Magaisa, 2016; Mandizha, 2014; Mungaya et al., 2012; Griffith & Macartney, 2010), while the proponents of regulation have rubbished the fact that overregulation is the chief culprit of company closures and lack of competitiveness in the sector, rather they argue that mismanagement, incompetence, inexperience, lack of judgment, and inadequate funding (Ambec et al., 2010) is the cause of the failure/collapse of most small scale gold mining ventures. In light of the inconclusive results this study thus undertook to identify the various pieces of regulations governing the mining industry in Zimbabwe and to investigate the impact of these regulatory requirements on business performance and sustainability of small scale gold mining operations focusing on small scale gold miners plying their trade in Mashonaland Central Province of Zimbabwe.

The study sought to test the hypothesis that:

H1: *The existence of restrictive regulatory requirements have got a negative impact on the performance of small scale gold miners operating in Mashonaland Central Province of Zimbabwe.*

## 2. Literature Review

### 2.1. Theory Underpinning the Study

The study was underpinned by Michael Porter's five forces of competitive position model. The model provides a simple perspective for assessing and analysing the competitive strength and position of a corporation or business organisation. Porter's five forces include "Threat of new entrants/barriers to entry", "Bargaining power of Buyers", "Bargaining power of Suppliers", "Threats of substitute products or services", and 'Rivalry among existing competitors" (Wilkinson, 2005). Legal barriers to entry that characterize the Zimbabwe mining industry can act as government protection mechanisms that are aimed at protecting the industry from external competition. These structural barriers to entry makes it unprofitable for new firms such as small scale miners to enter the industry (Froeb & McCann, 2010) and too expensive for those wishing to come out.

### 2.2. Effect of Regulation on Business Performance of Small Scale Gold Miners in Zimbabwe

Laws in many developing countries, including Zimbabwe, however categorize small scale gold miners as part of the informal sector. To legalise their operations, the small scale gold miners are required to comply with a number of regulatory requirements which include the registration of the company with the mining authorities, the possession of a mining lease/claim, compliance with environmental legislation, payment of taxes and royalties, enrolment of employees in the national social security systems and possession of export licence for those into exportation of the products (Makombe, 2014). In Zimbabwe, formal or legal small scale gold miners are those who have registered their mining claims with the Ministry of Mines and Mining Development as per the dictates of the Mines and Minerals Act Chapter 21:05. In addition the small scale gold miners need to legalise their business with other institutions such as the town/rural council health and environmental monitoring department, Environment Management Agency (EMA), ZIMRA, National Social Security Authority (NSSA),

Zimbabwe Manpower Development Fund (ZIMDEF), etcetera. The plethora of costs borne as a result of these numerous government departments' requirements has forced many small scale gold miners to close shops and for those that remain operational to operate informally. According to the Zimbabwe Artisanal and Small Scale Miners Council (ZASMC), there are currently 22 Acts of Parliament a small scale gold miner has to adhere to (Mashayahanya, 2014). The policy conflicts that came up as a result of these numerous regulations and their requirements mean that there is no liaison between authorities in the sector and this is a cost weighing heavily on the miners as different ministry officials demand different permits, licenses and compliance fees (CRD, 2014) thereby affecting the viability and performance of the small scale gold mining sector. Added to the policy inconsistency are high compliance fees being charged by the various government departments, delays in obtaining mining registration licenses, and Environmental Management Agency approval periods and fees (Manyani, 2014). It is envisaged that these regulatory requirements are weighing heavily on the small scale gold miners (Mashayahanya, 2014) but how and what impact do these regulatory requirements have on small scale gold miners' business performance is not known. It is against this background that this empirical study is enunciated.

### 2.3. Business Performance

Performance can be defined as the output or results and their outcomes obtained from processes, products, and services that permit evaluation and comparison relative to goals, standards, past results, and other organisations (Slack et al., 2010). Salaheldin (2009) proposes measuring performance from an operational and organisational perspective. Operational performance looks at the internal operations of the company focusing on reducing costs, waste and improving product quality, while organisational performance is concerned about measuring the actual output or results of a firm pitted against its intended output, goals and objectives. Financial and non-financial measures are used to measure organisational performance. This study was focusing on measuring organisational performance, this does not mean that operational performance is not important, but the researcher believes that operational performance is also factored in organisational performance. According to Wood (2006) cited in Zulkifflia and Perera (2011) regular accounting indicators used in measuring business/organisational performance are net profit margin, current ratio, return on assets (ROA), and return on capital expenditure (ROCE). The majority of small scale gold miners finance their operations through use of personal savings, loans from friends, short term bank loans (for those who are credit worth), and business loans from ministries such as the Ministry of Small and Medium Enterprises hence it would be of less value to measure the performance of small scale gold mining ventures using only financial measures. There is thus need to use non-financial measures as well. Kaplan and Norton (1996) advocate for the use of both financial and non-financial measures as a measure to overcome shortcomings of traditional financial performance measures. Non-financial business performance measures that apply to small scale gold miners include changes in productivity (output per month), improved company image, increased market share, credit worthiness of the business, employee motivation and rate of employee turnover, among others.

## 3. Research Methodology

The research study adopted a quantitative, cross-sectional survey method to collect data from small scale gold miners. A self-administered structured questionnaire was used to collect data. The structured questionnaire which was administered in person among small scale gold miners in

Mashonaland Central had a 5 point Likert-scale with scales ranging from "Strongly Disagree" denoted by 1 to "Strongly Agree" represented by 5 with neutral scores amid the two extremes. The questionnaire contained questions about the miners' understanding of the regulatory framework governing the mining sector and how it affected their business performance. There are 1035 registered small scale gold miners with the Ministry of Mines and Mining Development in Mashonaland Central Province and these constituted the sampling frame for the study. Using a simple random sampling technique, 289 registered small miners were sampled to participate in the study. To test for association between the independent variables a correlation coefficient analysis was performed. The data were also subjected to regression analysis to establish the predictive relationship between the variables.

## 4. Data Analysis, Findings and Discussion

### 4.1. Correlation Tests

Both correlation and regression tests were conducted to address the objective that sought to determine the impact of the different forms of regulation on performance of small scale gold miners operating in Mashonaland Central Province of Zimbabwe. To establish the association between the variables, Spearman's rank correlation was used as the data were unevenly distributed. The correlation results are shown in Table 1.

**Table 1. Correlation Tests**

| | Product Market Regulations | Labour Regulations | Environmental Regulations | Taxation Regulations | Indigenisation Regulations | Financial Indicators | Non Financial Indicators |
|---|---|---|---|---|---|---|---|
| Product Market Regulations | 1<br>225 | | | | | | |
| Labour Regulations | .630<br>.000<br>225 | 1<br><br>225 | | | | | |
| Environmental Regulations | .640<br>.000<br>225 | .536<br>.000<br>225 | 1<br><br>225 | | | | |
| Taxation Regulations | .573<br>.000<br>225 | .550<br>.000<br>225 | .493<br>.000<br>225 | 1<br><br>225 | | | |
| Indigenisation Regulations | .553<br>.000<br>225 | .514<br>.000<br>225 | .535<br>.000<br>225 | .602<br>.000<br>225 | 1<br><br>225 | | |
| Financial Indicators | .487<br>.000<br>225 | .395<br>.000<br>225 | .338<br>.000<br>225 | .364<br>.000<br>225 | .362<br>.000<br>225 | 1<br><br>225 | |
| Non Financial Indicators | .451<br>.000<br>225 | .387<br>.000<br>225 | .337<br>.000<br>225 | .289<br>.000<br>225 | .344<br>.000<br>225 | .691<br>.000<br>225 | 1 |

From the correlation tests results depicted in table 1, it can be shown that there is a positive, moderate and significant relationship ($r = 0.487$, $p<0.05$) between product market regulations and business performance as measured by financial indicators. The relationship is also positive, moderate and significant when measured using non-financial indicators ($r = 0.451$, $p<0.05$). This means that in order for the small scale mining business to ensure a going concern there is need to meet and certify the requirements of the product market regulations requirements (Company Act, Mines and Minerals Act, Gold Trade Act and Statutory Instrument 109), failure of which will result in dismal business performance or collapse. The significance value ($p=0.000$) shows that the relationship is not by chance but is real. Therefore the regulations do have a significant impact on the performance of the business of small scale miners. The tests also showed that there is a positive, moderate and significant relationship between environmental regulations and business performance as measured by both

financial ($r = 0.338$, $p<0.05$) and non-financial measures ($r = 0.337$, $p<0.05$). This implies that for the small scale miner to survive the owner must ensure that he/she complies with the Environmental statutes of the land and pay licenses and permits to do with environmental effluent discharge and pollution. On the relationship between labour regulations and business performance, the correlation tests results showed that there is a positive, moderate and significant relationship between labour regulations and business performance as measured by both financial ($r = 0.395$, $p<0.05$) and non-financial measures ($r = 0.387$, $p<0.05$). This means that the small scale miners cannot ignore the dictates of the Zimbabwean labour regulations when engaging labour as enunciated by the Labour Relations Act (Chapter 28:01). Failure to observe labour requirements can have dire consequences on the business' financial and non-financial performance.

According to the results in table 1 above, it was shown that there is a positive, moderate and significant relationship between taxation regulations and business performance as measured using financial measures ($r = 0.364$, $p<0.05$). However when the relationship was measured using non-financial indicators it was observed that there is a positive, weak and significant relationship ($r = 0.289$, $p<0.05$). This means that the small scale miners need to comply with the taxation regulations if they are worried about profitability and do not have to worry about the taxation regulations if they are in the business to just break even. The weak relationship between taxation regulations and business performance when measured using non-financial measures can also explain the fact that taxation laws are mainly concerned with the profit and loss accounts and the balance sheets, the accounting instruments that are used by a very few number of small scale miners who can afford to hire an accountant. The correlations tests results depicted a positive, moderate and significant relationship between indigenisation and economic empowerment regulations and business performance as measured by both financial ($r = 0.362$, $p<0.05$) and non-financial measures ($r = 0.344$, $p<0.05$). This means that for a business to succeed in Zimbabwe the owners must oblige and comply with the requirements of the Indigenisation and Economic Empowerment Act. For those small scale mining ventures owned by foreign nationals it means failure to comply with the government directive of 51 per cent indigenous shareholding in all business ventures with a capital investment of USD500 thousand and above, can have dire consequences for the business. The business can attract bear hugs and proxy fights by politicians wanting to forcefully takeover their mining ventures if they fail to comply with indigenisation laws.

The relationships among the variables did not show any evidence of multicolinearity. The relationship among independent variables range between 0.493 and 0.640, while the relationship between the dependent variables (Financial and Non-Financial Indicators) had a correlation coefficient $r = 0.691$. The rule of thumb is that the presence of high correlations ($r \geq 0.90$) indicates substantial collinearity (Hair *et al.*, 2009).

### 4.2. Regression Analysis

The regression analysis is used to establish the predictive relationship between the variables. In employing the regression analysis the researcher sought to establish the causal effect (impact) of the regulatory requirements (product market, environmental, taxation, labour and indigenization and economic empowerment) on business performance of the small scale gold miners. The regression analysis was also used to address the researcher's second objective which ought to establish the degree/impact of the five forms of regulation on performance of small scale gold miners operating in Mashonaland Central Province of Zimbabwe. This was tested using the Adjusted R Square, the

Analysis of Variance (ANOVA) and the standardized βeta coefficient values. The results are shown in Table 2 below

**Table 2. Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .509[a] | .259 | .243 | .71604 |

a. Predictors: (Constant), Indigenisation Regulations, Labour Regulations, Environmental Regulations, Taxation Regulations, Product Market Regulations

To test for the model's goodness of fit the study used Adjusted R square. Adjusted R-square provides an adjustment to the R-squared statistic based on the number of independent variables in the model thereby catering for sampling errors. This makes the adjusted R-square a more desirable goodness-of-fit statistic than the R-square. The results from the regression analysis (table 4.4) showed that the model's goodness of fit is very low with an Adjusted R square of 0.243. This means that the independent variables (product market, environmental, taxation, labour and indigenisation and economic empowerment regulations) have a 24.3 per cent predictive power of the variance in business performance of small scale miners.

**Table 3. Analysis of Variance (ANOVA)**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 39.343 | 5 | 7.869 | 15.347 | .000[b] |
| | Residual | 112.283 | 219 | .513 | | |
| | Total | 151.626 | 224 | | | |

a. Dependent Variable: Financial Indicators

b. Predictors: (Constant), Indigenisation Regulations, Labour Regulations, Environmental Regulations, Taxation Regulations, Product Market Regulations

The analysis of variance (ANOVA) displayed in Table 3 above shows how significant is the model to the dependent variable, that is, the predictive power of product market, environmental, taxation, labour and indigenisation and economic empowerment regulations on business performance of small scale gold miners. The analysis of variance determines the ratio of the explained to the unexplained variance, and therefore tests if the regression model is statistically significant. When $p<0.05$ it shows that the model is statistically significant in predicting business performance. The results from the ANOVA table ($F_{(5, 219)} = 15.347$, $p=0.00$) shows that the model is statistically significant ($p<0.05$) hence the variables have a significant combined predictive effect on the dependent variable. In other words the model is fit to predict the business performance of small scale miners.

**Table 4. Regression Coefficients**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 1.602 | .173 | | 9.250 | .000 |
| ProductMarketRegulations | .292 | .074 | .349 | 3.957 | .000 |
| LabourRegulations | .085 | .064 | .107 | 1.330 | .185 |
| EnvironmentalRegulations | -.014 | .056 | -.020 | -.252 | .801 |
| TaxationRegulations | .041 | .053 | .062 | .780 | .437 |
| IndeigenisationRegulations | .058 | .052 | .088 | 1.103 | .271 |

a. Dependent Variable: Financial Indicatorsβ

The model summary table explains the contribution of each independent variable to the dependent variable. The standardized βeta coefficient values revealed that only product market regulations had

the significant ($p<0.05$) and the highest predictive power ($\beta = 0.349$) in explaining the contributions of the factors to the performance of small scale mining business. The other independent variables namely labour regulations ($\beta = 0.107$, $p>0.05$), environmental regulations ($\beta = -0.020$, $p>0.05$), taxation regulations ($\beta = 0.062$, $p>0.05$) and indigenisation regulations ($\beta = 0.088$, $p>0.05$) were not significant. Using the βeta coefficient, it can be shown that product market regulations, labour, taxation and indigenisation and economic empowerment regulations have positive impacts on Business performance, however only product market regulations had a significant impact. Product market regulations have the highest and significant impact with a βeta of 0.349. This means that a unit increase in product market regulation will result in an increase of 0.349 units in business performance of small scale gold miners. Mine owners and managers need therefore to expend much resources at meeting the requirements of the product market regulations in order to maximize profits and reap rewards from small scale gold mining.

## 5. Discussion of Findings with Respect to Extant Literature

After a thorough review of literature in chapter two, a model to predict the impact of regulations on business performance of small scale gold miners was proposed. Five categories of legislation namely product market regulations, environmental regulations, taxation regulations, labour regulations and indigenisation regulations were hypothesized as the factors that affect business performance among small scale gold miners in Mashonaland Central province. These factors were subjected to hypothesis testing based on the results of the linear regression analysis. The regression coefficient (table 4.6) results showed that only product market regulations had a significant negative impact on business performance of the small scale gold miners ($p<0.05$; $\beta = 0.349$). This infers that the sluggish growth in the small scale gold mining sector and collapse of some small scale gold mines is being caused by the complex and restrictive requirements of the product market regulations. The results confirms the findings by Griffith, Harrison and Simpson (2010) cited in Frontier Economics (2012), who claims that product market regulations can have a negative and significant impact on economic growth, if the objective is rent seeking. The summary outcome of the regression tests indicated that the regulatory factors explored in this model drive only 24.3 per cent of business performance in the small scale gold mining sector in Mashonaland Central province of Zimbabwe. It was also established from the regression analysis (table 4) that when the independent variables in the model are none-existent (have statistical zero values), business performance will increase by a factor of 1.602 (Beta constant).

## 6. Conclusions and Recommendations

The research study sought to establish the different forms of regulation that govern the operations of small scale gold miners in Zimbabwe. The findings have shown that there are five categories of regulations that govern the small scale gold mining sector in Zimbabwe namely Product market regulations, Environmental regulations, Taxation regulations, Labour regulations and the Indigenisation regulations. The research also sought to determine the impact of the different forms of regulation on performance of small scale gold miners operating in Mashonaland Central Province of Zimbabwe. The regression analysis results isolated product market regulations (($\beta = 0.349$; $p =0.000$) as the only significant factor that have a negative impact on business performance of small scale gold miners among the five factors. The implication is that performance in the small scale gold mining sector is a function of one product market regulations.

In the light of the results the study submits that mine managers and owners of small scale gold mining firms need to expend much resources on meeting and certifying the requirements of the product market regulations in order to promote growth and survival of the sector. In view of the findings the researcher came to the conclusion that the main hypothesis which claimed that "The existence of restrictive regulatory requirements have got a negative impact on the performance of small scale gold miners operating in Mashonaland Central Province of Zimbabwe" is to a lesser extent true and thus the hypothesis was partially accepted.

### 7. Areas of Further Research

The results indicated that product market regulations only account for a quarter (24.3 per cent) of variation in business performance among small scale gold miners, meaning that the remaining three quarters (75.7 per cent) is therefore influenced by other factors outside those considered in this study. In light of these findings it is proposed that future studies should aim to explore other variables that contribute to this huge variation in the performance of small scale gold mining ventures. The future studies can also adopt a qualitative approach in order to capture the emotional feelings of small scale miners on the impact of regulatory requirements on their business performance. Future studies can also aim to cut across sectors in the economy so that the results can easily be generalized on SMEs.

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