# Effects of Regulatory Environment on the Performance of Small-Scale Mining Enterprises: Evidence from Zambia

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## ABSTRACT

This paper makes a significant contribution to the existing literature on the performance of small-scale mining enterprises (SSMEs) by incorporating institutional theory into an area of study that has been relatively unexplored in developing countries. The study specifically examines the effects of the regulatory environment on the performance of SSMEs in Zambia, focusing on two key regulatory dimensions: government policies and government support programs for SSMEs.

The study employed a quantitative correlational research design and administered a structured questionnaire to 408 SSMEs in Zambia. The findings reveal that the regulatory environment has a substantial influence on the operations of SSMEs, ultimately influencing their performance as business entities.

It is worth noting that although this study is cross-sectional and centred on Zambia, its implications extend beyond its specific context. The findings have important implications for educators, policymakers, and researchers by highlighting the significance of regulatory factors and their influence on the performance of SSMEs, thus offering valuable insights for training and entrepreneurial support initiatives.

**Keywords:** Institutional Theory, Regulatory Environment, government policies and support programs, Small Scale Mining Enterprises, Small Scale Mining Enterprises Performance

## INTRODUCTION

Drawing support from current and seminal work on institutional theory and in the light of the development of the small-scale mining enterprises (SSMEs) sector, the regulatory dimension of the institutional environment provides formal and informal rules and norms that either restrict or facilitate SSMEs' performance (Torkkeli et al, 2019). The regulatory environment can enable and encourage SSME activity, or can also slow it down and influence the enterprise's competitive posture and performance (Peci, 2017). The development and performance of small-scale mining enterprises and general entrepreneurship, however, are better served by improving a nation's regulatory profile because it is expected that there is a correlation between the regulatory environment (government programmes and policies) and small-scale mining enterprise performance.

Relatively less is known about Zambia's Small-Scale Mining Enterprises (SSMEs) sector in contrast to the large firms dominating the copper production. According to the Mining Cadastre records, there were 1,666 active small-scale and artisanal mining rights in Zambia as of August 2019 (Siwale, 2019). The length of a license for artisanal mining is two years, and for small-scale mining, it is ten years, as stated in section 34 of the Mines and Minerals Act of 2015. The large number of ASM (Artisanal and Small Scale Mining ) licenses that are currently in effect indicates that more people are becoming interested in engaging in ASM mining activities (Siwale, 2019). Nonetheless, almost 60% of ASMs do not pay any taxes to the municipal or federal governments, and 67% of employment in the subsector is casual and informal. To accurately track the sector's contribution, more formalization might be needed in this situation (MMM, 2019). In Zambia, the industry employs about 40,000 people, of whom 9,000 are women. The precise number of ASM miners in Zambia is unknown, but over 100 million people in sub-Saharan Africa are thought to depend on this industry for their living, employing 13 million

people overall. In addition, the demand for minerals connected to batteries, including manganese, which is essential to the manufacturing of lithium batteries, has increased dramatically as a result of the growing global appetite for electric vehicles. Zambia's manganese exports have increased from 33,000 to 57,000 tons in 2018 alone (Siwale, 2019). Government strategy calls for raising the production annual targets for battery minerals like copper from the current level of about 800,000 tonnes to 3 million tonnes by 2031. Given the subsector's enormous potential, it is vital to investigate how small businesses might make significant contributions to sector goals.

The ASM subsector represents an important and growing part of the mining industry and a significant economic sector. Small-scale mining is defined by the International Labour Organization (2001) as mining operations that are "low-tech, labour intensive and using only manual methods". SSMEs can play a catalytic role in employment generation, poverty alleviation, rapid industrialisation and economic development (Davidsson et al., 2006). Therefore, support systems established by governments can be instrumental in nurturing the growth and performance of SSMEs.

Prior research in Indonesia suggests that an uncertain business environment hinders individual efficiency, and has short-term and long-term impacts, possibly forcing enterprises/entrepreneurs to respond to the environment competitively or collaborate to survive (Pamungka and Utami, 2021). In India, Ram et al. (2017) elucidate that the implementation of encouraging and appropriate business rules and policies is meant to enhance entrepreneurial activity and thereby lead to the creation of new businesses, which in turn results in new job opportunities and accompanying economic growth and development. Prior research conducted in Zambia suggests that the institutional environment affects the small-scale mining enterprise's performance (Nuwagaba, 2015, Siwale *et al*. 2016). Other empirical studies have established how the regulatory environment, affects SMEs' growth and development.

For example, in China, Lin et al (2020) examine the role of institutional forces in e-business transformation intention. Furthermore, the existing literature presents a more fragmented approach, with little attention to a more integrated presentation of regulatory environment factors (government programmes and policies) to explain small-scale mining enterprises' performance.

Extant literature reveals significant gaps in both the contextual factors and methodologies employed in previous studies. There is also a lack of empirical data concerning the effects of the regulatory environment on the performance of small-scale mining enterprises in Zambia (Davidsson & Wiklund, 2000; Wiklund et al., 2007; Siwale, 2019). This study aims to address these gaps by examining the effects of the regulatory environment, particularly government policies and support programs for small-scale mining enterprises, on their performance in Zambia.

## LITERATURE REVIEW AND HYPOTHESES

This section presents a variety of perspectives from extant literature on how the regulatory environment affects the performance of SSMEs in relation to government programmes and policies.

### Regulative Institutional Factors and SSMEs Performance

The regulatory environment is concerned with various laws, regulations, policies and government support to new and existing firms including assistance such as business counselling and consultancy, development services and mechanisms for risk management. Such support would be designed by the government and other formal institutions intended to enhance startup and fledgling firms' capabilities in a country (Busenitz et al., 2000; 2017). This study reviews the literature on the regulatory environment, specifically focusing on government policies and support programmes for small-scale mining enterprises (SSMEs) from both the government's and the SSMEs' perspectives.

### Government Policies

Favourable government policies for start-ups improve their access to resources and broader markets, while also

establishing firm legitimacy, which is particularly crucial for new businesses. For example, Beck, Demirgüç-Kunt, and Maksimovic (2005) presented evidence highlighting the significance of the financial system and legal enforcement on firm growth. According to an OECD report (2009), government policies have a substantial impact on the performance of SSMEs and typically enhance opportunities for SSMEs to flourish. The development of government policies for SSMEs varies across different countries, influenced by variations in societal customs, values, and the business environment (Busenitz et al., 2017).

Sathe (2006) emphasizes the significant influence of government regulations and bureaucratic procedures on entrepreneurship. These policies can either impede or support the initiation of new businesses. Their impact extends to the competitiveness, ambition, and efficiency of small and medium-sized enterprises (SSMEs).

**Government Support Programmes**

Small and medium-sized enterprises (SSMEs) face a multitude of interconnected challenges, necessitating constant adaptation and innovation. However, these businesses often lack the necessary resources, capabilities, and networks to effectively address these obstacles. Therefore, governments must play a central role in fostering the growth and advancement of SSMEs. Government initiatives can provide substantial assistance in various ways, such as offering financial support, ensuring the safety of loans, reducing tax burdens, providing guidance, enhancing skill sets, facilitating job opportunities, and enabling networking opportunities (O'Faircheallaigh and Corbett, 2016). These programs are instrumental in helping SSMEs surmount barriers, bolstering their competitiveness, generating employment, and aiding in the achievement of societal and environmental objectives. In a study conducted by Akinbogun (2008) on the influence of infrastructure and government initiatives on the viability of small-scale ceramic industries in the South-west of Nigeria, it was found that the government supports the SSME sector through avenues like tax relief, loans, and social support.

Furthermore, Sheng, Zhou, and Li (2011) suggested that government incentives play a vital role in enhancing sustainable competitive performance in emerging economies. Hence, government incentives and development projects significantly contribute to firms' performance (Wei & Liu, 2015). Furthermore, the government's financial support may help the SSME sector to internationalise; thus, it can increase the SSME's performance and significantly contribute to economic growth (Clement & Hansen, 2003). Lee (2007) suggested that firm performance is significantly dependent on the political and government ties in emerging economies. Moreover, top management which has strong political and government relationships can help a firm to quickly gain a sustainable competitive advantage in the turbulent market (Li, Meng, Wang, & Zhou, 2008). Tarp, 2009). Fajnzylber, Maloney, and Montes-Rojas (2009) suggested that access to credit, training, essential services, favourable taxes, etc. are important drivers for gaining sustainable performance. Hence, extant literature posits that government financial and non-financial support significantly improves innovation capabilities (Ma & Gao, 1997). Government support for technological developments within organisations can have a substantial impact on firms' growth (Guan & Yam, 2015).

Government financial incentives are particularly crucial for driving innovation in both developed and developing economies (Mustar & Larédo, 2002; Wei & Liu, 2015). According to Desai and Shaikh (2018), government support in the form of tax reliefs, allowances, access to loans, as well as social and financial assistance play a vital role as an external resource and contribute to the performance of small and medium-sized enterprises (SMEs). Research by Takalo and Tanayama (2010) suggests that firms receiving government support may signal positively to market-based financiers and consequently attract higher external investment compared to their counterparts without such support. Wei and Liu (2015) conducted a study on the impact of government support in China, categorizing it into "vertical and horizontal support," and found that both types had a positive effect on firms' innovation performance. They identified direct R&D subsidies, horizontal support, and regional innovation policy as having a favourable influence on firms' innovation performance. In Vietnam, studies indicate that government support is an effective instrument for enhancing firm growth and survival (e.g., Hansen et al., 2009).

**Theoretical Background**

This section delves into the theoretical underpinnings buttressing the conceptualisation of this study. It aims to

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accentuate the most pertinent and fundamental theories.

**Institution Theory**

Institutional theory is one of the main theories underpinning entrepreneurial studies as well as organisational and management research. The analysis in institutional economics is driven by the core of Veblen's dichotomy (1899), a powerful concept that explains how organisational performance is shaped by surrounding formal and informal institutional forces or 'rules of the game' that constrain and shape decision-making (Engle et al., 2011; Kostova, 1997; North, 1990; Scott, 1995; Scott, 2008; Szyliowicz and Galvin, 2010). Following the path settled by institutional theorists in explaining the role of institutions towards organisational legitimacy (Scott, 1987), entrepreneurship researchers proposed three institutional pillars encompassing regulative, normative and cognitive elements as being conceptually distinct and plausible.

The focus of institutional theory is on how various groups may strengthen their influence and legitimacy by abiding by the rules and standards of the institutional environment (DiMaggio and Powell, 2000; Meyer and Rowan, 1977; Scott, 1995). Scott (1995) outlines three pillars of an institution as follows: regulatory (rule setting, monitoring, and sanctioning activities), normative (a prescriptive, evaluative and obligatory dimension into social life), and cognitive (shared conceptions that constitute the nature of social reality and the frames through which meaning is constructed). Thus, beyond the entrepreneur's mind, there is a general environment that establishes laws, norms, standards, support and practices that shape an economy, its culture, and its policies encouraging some behaviours and discouraging other behaviours (Bruton et al., 2010; Scott, 1995; Mwiya and Chanda, 2014). Entrepreneurship studies have found particular benefits in the application of institutional theory. Yang and Su (2014) empirically examine institutional theory in the setting of business markets. In China, Lin et al. (2020) investigate the role of institutional forces in e-business transformation intention. Aggarwal and Jha (2019), in India, apply institutional theory to evaluate the pressures of corporate social responsibility. In Zambia, Mwiya (2015) examine the effects of institutions on the entrepreneurial intention of university graduates. This paper is anchored on the regulatory element of the institution theory.

**Hypotheses Development and Conceptual Framework**

This section develops the hypotheses, commencing with an examination of the effect of Government policy on the performance of SSMEs, and culminating with an analysis of how government programs may influence the performance of SSMEs.

**Government Policy and SSMEs Performance**

Numerous studies suggest that the external business environment imposes constraints on the range of strategic options available to firms, which in turn affects their overall performance (Hambrick and Lei, 1985; Venkatraman and Prescott, 1990). Government policies regarding small and medium-sized enterprises (SSMEs) are evident in various forms such as regulations governing business start-ups, labour practices, taxation, and foreign trade (Quartey, 2001). Additionally, Bouazza et al. (2015) have specifically identified bureaucracy, corruption, and tax systems as legal and regulatory frameworks that have the potential to impede the growth of SSMEs. Furthermore, bureaucratic hurdles in business registration processes and permit issuance have been acknowledged as legal constraints inhibiting business growth (Mashenene and Rumanyika, 2014). Considering these perspectives, it is postulated that:

**H1:** The presence of favourable policies on small-scale mining enterprises is positively associated with enterprise Performance

**Government Support / Programmes and SSMEs Performance**

Institutional theory helps to underscore the effects of government subsidies and other support mechanisms as drivers of external investment. According to Takalo and Tanayama (2010), companies receiving government support may send a positive signal to market-based financiers, potentially leading to higher external investment compared to their counterparts without such support. Government backing can also open up additional funding

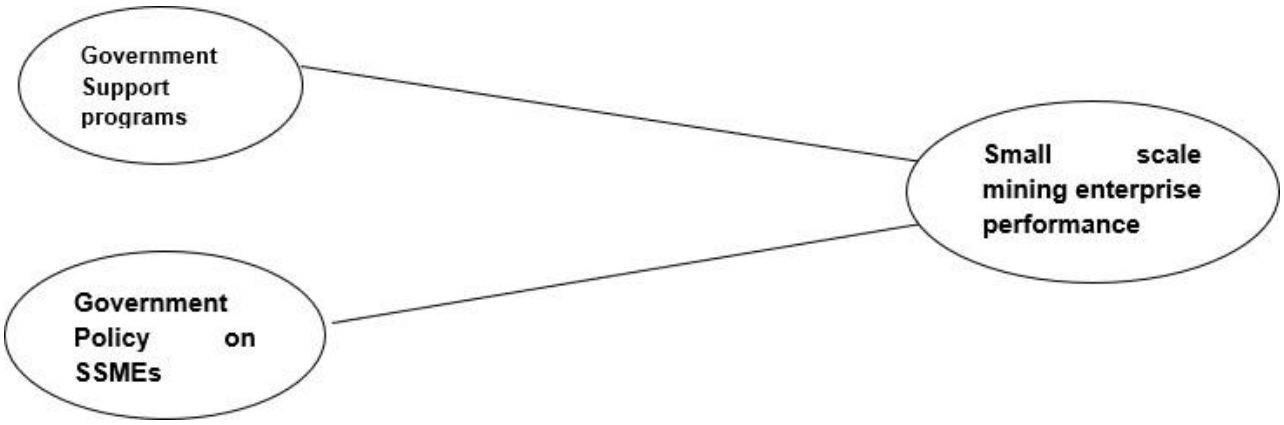
sources, providing firms with more resources in constrained environments. Additionally, private enterprises may surmount institutional and other barriers with the aid of government support, as noted by Hansen, Rand, & Tarp (2009). Consequently, firms backed by the government are likely to increase their research and development (R&D) input, leading to improved performance (Wu, 2017). In the context of Vietnam, studies have demonstrated that government support is an effective tool for enhancing firm growth and survival (e.g., Hansen et al., 2009). Therefore, based on the preceding explanation, it is hypothesised that:

**H2:** The availability of government support programmes to small-scale mining enterprises is positively associated with their Performance

**Conceptual Framework**

To assess the effects of the institutional environment on the performance of SSMEs, a conceptual framework was developed buttressed by institutional economics theory. The regulatory environment including the policies available to SSMEs and government support, was taken into account. Government support for SSMEs encompassed financial assistance required for entrepreneurial activities, commercial and infrastructure services, market access, technical training, investment services, and research and development transfer. Furthermore, government policy factors including borrowing costs, technology development, tax exemptions, infrastructure investment policies, ease of formalisation, and favourable regulations were also considered. Building upon this discussion and hypothesis development, Figure 1 depicts the conceptual model for the study:

Fig. 1 Conceptual framework of this study




## METHODS AND MEASUREMENTS

A correlational research design was employed to examine the conceptual model and hypotheses. Correlational research investigates relationships among variables (Brown and Hedges, 2009) and has been utilised in previous studies to examine similar relationships. The study's target demographic comprised 408 sampled Small Scale Mining Enterprises (SSMEs) in Zambia. Data was collected through a self-administered survey questionnaire with items rated on a five-point Likert scale, ranging from strongly disagree to strongly agree. Table 1 provides an overview of the sample profile.

Table 1 Sample Profile

| Variable | Description | Frequency | Percent |
|---|---|---|---|
| Gender | Female | 156 | 38.2 |
| | Male | 252 | 61.8 |
| | Total | 408 | 100 |

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| | | | |
|---|---|---|---|
| Age Group (Years) | below 20 years | 6 | 1.5 |
| | 21 - 30 years | 67 | 16.4 |
| | 31 - 40 years | 117 | 28.7 |
| | 41 - 50 years | 205 | 50.2 |
| | below 20 years | 6 | 1.5 |
| | Total | 408 | 100 |
| Education | Primary education | 18 | 4.4 |
| | Secondary school | 141 | 34.6 |
| | College and other tertiary institutions | 147 | 36.0 |
| | University | 102 | 25.0 |
| | Total | 408 | 100 |
| Legal Status | not registered | 166 | 40.70 |
| | Partnership / sole proprietorship | 84 | 20.6 |
| Variable | Description | Frequency | Percent |
| | cooperative society | 122 | 29.9 |
| | private company | 36 | 8.9 |
| | Total | 408 | 100 |
| Years in SSMEs | 1 - 5 years | 204 | 50.0 |
| | 6 - 10 years | 156 | 38.2 |
| | 11 - 15 years | 42 | 10.3 |
| | 16 - 20 years | 6 | 1.5 |
| | Total | 408 | 100 |

In Table 1, the characteristics of the sample are depicted. The majority of small-scale mining enterprise (SSME) owners in Zambia are male. Out of 408 respondents, 252 or 61.8% were male, while 156 or 38.2% were female. Most of them engage in SSMEs to fulfil the daily basic needs of their families and sustain their livelihoods. Young and middle-aged individuals in Zambia are actively involved in SSMEs, with approximately 74% of respondents falling within the economically active age group, and the average age of the respondents being 40 years. When it comes to education, 36.6% of the respondents had attended college or other tertiary education, 34.6% had completed secondary school, 25.5% had finished university, and only 4.4% had primary education. A significant portion of the respondents had obtained education at the college or other tertiary level. Furthermore, the majority of the SSMEs were registered, but 40.70% were operating as non-registered entities due to a lack of knowledge about the registration process and its requirements. Finally, 50% of the SSMEs have been in business for the last 5 years, thus most of them were relatively new.

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**Measurement Model and Internal Validity Justification**

Table 2 reflects the measurement model, including all questionnaire items and their corresponding reliability statistics.

Table 2 Measurement model

| Variable | Items | Cronbach's Alpha |
|---|---|---|
| Government policy on SSMEs | • Policy influences the cost of borrowing<br>• The policy facilitates the development of new technology<br>• Tax exemptions on SSMEs sector trigger performance<br>• Policy on infrastructure investment is crucial to SSMEs development<br>• Ease of formalisation is critical to SSMEs performance<br>• Financial policies support the establishment and performance of SSMEs<br>• Lower regulations favourable to SSMEs performance | 0.918 |
| Government programmes and support to SSMEs | • Access to working capital critical to SSMEs performance<br>• Government financial subsidies to SSMEs improve their performance<br>• Tax administration is favourable to SSMEs operations<br>• Market development and linkages enhance SSMEs performance<br>• Capacity-building programs are favourable to SSMEs performance<br>• Ideal infrastructure is favourable to SSMEs performance<br>• Government assistance to SSMEs improve their performance<br>• Land tenure programs for SSMEs enhance performance | 0.852 |
| SSMEs Performance | • How has your enterprise turnover changed over the last five years?<br>• How have your enterprise assets changed over the last five years?<br>• How has the enterprise profit changed over the last five years?<br>• How has the cash flow changed over the last five years?<br>• How has the number of employees changed over the last five years?<br>• How have the levels of employee competence and work performance changed for the last five years in your enterprise? | 0.756 |

Note: (R) Items were reversed before reliability analyses and mean scores calculated

Table 2 illustrates the regulatory institutional environment questionnaire items used to measure perceptions of Government policy, Government Support and SSMEs performance. In the study, there are two independent variables, namely government policies and government support/programmes with a total of fifteen items. All the variable items were measured on a five-point Likert scale with levels 1 = "strongly disagree" to 5 = "strongly agree". Government policy on SSMEs was measured with 7 items (Cronbach's alpha is 0.918), and Government programs and support to SSMEs with 8 items (Cronbach's alpha is 0.852). Concerning SSME performance, the measurement model had 7 items with a Cronbach's alpha of 0.756; on a Likert scale of 1 to 5 from decreased very much (5) to increased very much (5).

Correlation and regression analyses were carried out using the Statistical Package for Social Sciences (SPSS version 23). Multiple linear regression was applied in this study to test hypotheses. Reliability and internal consistency of the measurement tool were conducted using Cronbach's alpha. This is an internal consistency measure that determines how closely related a collection of items is. All Cronbach's Alpha values were above the minimum threshold of 0.70 indicating a high degree of internal consistency. The rules of thumb for acceptable Cronbach's alpha are a>0.90 excellent, a>0.80 good, a>0.70 acceptable, a> 0.60 questionable, a>0.50 and a<0.50 unacceptable (Wadkar et al., 2016).

## RESEARCH FINDINGS, INTERPRETATION AND DISCUSSION

The research findings are reported and interpreted before delving into the discussion, contributions to knowledge, limitations of the study and directions for future research.

### Correlation Analyses

Table 3 reflects the standard deviations, research variable means, and correlations amongst the dependent, independent, and control variables. Correlations help in determining the degree to which the variables are related to one another. In correlation analysis, the values range from -1 to +1. A negative correlation depicts an inverse relationship between the variables, whereas a positive correlation indicates that the relationship is in the same direction. According to Pallant (2016), a correlation value of 0.1 to 0.29 indicates a weak correlation between the variables. A correlation between the variables of 0.30 to 0.49, on the other hand, suggests a medium correlation. Finally, a value between 0.5 and 1 indicates a high correlation between the variables. In Table 3, correlations can be significant at two levels: $p<0.05$ and $p<0.01$.

Multi-collinearity occurs when two or more predictor variables in a multiple regression model are so highly correlated typically above 0.90. Multicollinearity entails that the dependent variable can be predicted linearly from one of the independent variables with a reasonable degree of accuracy without requiring the other variable (Pallant, 2016).

This phenomenon implies that certain variables are measuring the same thing and that only one of them is required to predict the outcome. In Table 3, none of the variables correlates with 0.90 or above and therefore multicollinearity is not problematic.

Table 3 Correlation among all Variables

| Variables | Mean | Std. Deviation | N | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|
| SSMEs performance | 2.076 | .7160 | 408 | - | | | | | |
| Gender | 0.601 | .4866 | 408 | .041 | | | | | |
| Age | 3.369 | .8433 | 407 | -.118* | .307** | | | | |
| Education attained | 3.772 | .9711 | 408 | .145** | -.060 | .184** | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Government Policies | 3.9424 | .82860 | 408 | .111* | -.071 | .131** | -.182** | | |
| Government Programs/support | 3.5460 | .77839 | 408 | .153* | -.103* | .143** | -.092 | .881** | 1 |
| *. Correlation is significant at the 0.05 level (2-tailed). | | | | | | | | | |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | | | | | | | |

**Correlation Between Control Variables and SSMEs Performance**

The set of demographic control variables for this study includes Gender, Age Group and Education attained. Table 3 shows that the gender differences have no significant effect on the dependent and independent variables, r=0.041. However, Age group differences (r= -0.118*) show a significant direct relationship. This is expected because the majority of respondents 50% (205) were in the age group 41 - 50 years, while 28.7% (117) fell between the ages of 31- 40. This shows a high percentage of young, middle-aged people in Zambia were involved in SSMEs and was therefore economically active. This showed that an average entrepreneur is young and so there is a great opportunity for expansion, which may be facilitated with good government support. Furthermore, SSMEs require youthful miners due to the intensity of energy required and the enthusiastic youthful population in local areas is strategically fit.

Education attained (r=0.145**) shows a significant relationship. This means that the higher the level of education, the better the SSME performance. This may be attributed to the high unemployment rate in Zambia where many graduates find it difficult to find jobs as confirmed by the findings of Arthur et al. (2022) and so they resort to engaging in mining activity. Another study by Arthur-Holmes et al. (2022), found that a growing number of graduates have entered the SSMEs industry as a result of the rising graduate unemployment rate. Conversely, this contradicts the findings of previous studies (Hilson, 2015), that SSMEs mostly employ people who have fewer specialities, often found in rural areas with poor educational levels. Baddianaah et al. (2022), found that when compared to individuals with no formal education, people with a first degree are 0.24 times less likely to participate in SSME undertakings. Most of the respondents selected for the study had at least some years of experience in SSMEs. The correlation coefficient might be any value between –1.00 and 1.00. The strength of the relationship between the two variables will be indicated by this value. A correlation of 0 implies there is no relationship at all, a correlation of 1.0 implies there is a perfect positive correlation, and a correlation of –1.0 implies there is a perfect negative correlation. Cohen (1988, pp. 79–81) recommended effect sizes to be interpreted as follows: small r=0.10 to 0.29, medium r=0.30 to 0.49, and large r=0.50 to 1.0 (Pallant, 2016).

**Correlation Between SSMEs Performance and Institutional Regulatory Environment Variables**

Table 3 confirms that the proposed conceptual model is largely supported. Just like the construct for the regulatory environment (government policies) was positively significantly related to SSME performance (r=.111, p<0.05), the government support was also positive and statistically significant (r=0.153, P<0.05). The Correlations Matrix in Table 3 shows various correlations among variables and the effect sizes are mainly small to medium based on Cohen's criteria.

**Hypotheses Testing Results and Interpretation**

The results of the hypothesis tests, as interpreted using multiple regression analyses, are discussed hereunder.

**Regression Analysis Between SSMEs Performance and Government Policies on SSMEs**

Table 4 depicts a multiple hierarchical regression undertaken with three blocks of variables to determine the effects of the control and independent variables on the dependent variable. The control variables are gender, education and age. The independent variables are government policies on SSMEs and government programs for SSMEs (regulatory environment), while the dependent variable is SSME performance.

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The significance of relationships using comparable beta values in Table 4 should be interpreted at sig<0.05 (5 percent). The multiple correlation coefficients (R) and the coefficients of determination ($R^2$) values give the combined effect of the variables in each model to explain the dependent variable. After controlling for the influence of gender, education and age, preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity, the overall results showed that the first model was significant, $F = 7.487$, $p = .0001$, adjusted $R^2$=. 046. Thus, in the first model, while gender was not significant, age and education were significantly associated with SSME performance (Gender, *Beta*= 0.041, *t*= 0.595, p = .150; age Beta=-.184, *t*= 2.033, *p*= .043, and education, Beta= .260, *t*= 3.752, p = .023, respectively). The second model ($F = 9.597$, $p< .000$, adjusted $R^2$=.078), which included government policies on SSMEs (Beta=0.212, *t*= 3.891, *p*< .021) showed significant improvement from the first model $\Delta F = 15.141$, $p< .000$, $\Delta R_2$=0.034.

Based on descriptive statistics and regression analyses in the final model (model 3), which included government support programs to SSMEs as an additional independent variable, the results indicate that government policies (Beta=0.209, p<0.05) and government support programs (Beta= 0.226, p<0.05), are predictors of SSMEs performance (adjusted multiple R squared= 0.087 and the R= 0. 313), representing a combined medium effect size.

Table 4 Hierarchical Multiple Regression Analyses with SSMEs Performance as Outcome

| | Model 1 | | Model 2 | | Model 3 | | VIF |
|---|---|---|---|---|---|---|---|
| | | SE (1) | | SE (2) | | SE (3) | |
| | Beta | | Beta | | Beta | | |
| **Control variables** | | | | | | | |
| Gender | 0.041 | .075 | .021 | .075 | .011 | .075 | 1.121 |
| Age | -.184* | .044 | -.164* | .044 | -.153* | .044 | 1.157 |
| Education level attained | 0.260* | .037 | .251* | .037 | .245* | .037 | 1.051 |
| **Independent variables** | | | | | | | |
| Government policies on SSMEs | | | .212* | .043 | .209* | .089 | 1.089 |
| Government support programs on SSMEs | | | | | .226* | .094 | 4.623 |
| F | 7.487*** | | 9.597*** | | 8.732*** | | |
| F change | 7.487 | | 15.141 | | 4.898 | | |
| R | .230 | | .295 | | .313 | | |
| R Squared | .053 | | .087 | | .098 | | |
| R Squared adjusted | .046 | | .078 | | .087 | | |
| R Squared change | .053 | | .034 | | .011 | | |

Significant at 5%

Based on the multiple regression results above, Table 5 reflects the hypotheses testing results.

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Table 5 Summary of Hypothesis Testing

| | **Hypotheses** | **Supported not Supported (Yes/No)** |
|---|---|---|
| $H_1$ | presence of favourable policy on small-scale mining enterprises is positively associated with their enterprise Performance | Yes |
| H2 | The availability of government support programs to small-scale mining enterprises is positively associated with their Performance | Yes |

Hence based on the foregoing, it can be concluded that $H_1$ and $H_2$ are both supported.

## DISCUSSION AND CONTRIBUTIONS

The findings of this study, supported by multiple regression and correlation analyses, demonstrated that a favourable regulative environment has a significant effect on the performance of small-scale mining enterprises (SSMEs). This effect was measured through two variables of the regulatory environment, namely government policies and government support programs for SSMEs. The two variables had a total of fifteen items that measured the effect of the regulatory environment on SSME performance. The regression results of the two variables were as follows:

Based on the findings, it can be concluded that favourable government policies on SSMEs, have a notable effect on SSME performance. The findings imply that government policies on SSMEs play an important role in developing and enhancing the growth and performance of SSMEs. These findings are consistent with previous research that found that favourable government policies on SSME development positively influence their performance and growth. For example, Bruton & Ahlstrom, (2003) and Scott, (2007) all assert that entrepreneurs are both constrained and enabled by the institutions in their environment. A hostile policy on SSMEs, may impede the level of capital investment, place fiscal and regulatory barriers, and dissuade the rise of the entrepreneurial spirit that is characteristic of certain cultures.

The policy pillar of the regulatory environment gives incentives and sanctions to organizations and individuals from a government or other authoritative body that regulates individual and organizational action (Scott, 2007). For example, Ali Saleh Alshebami and Abdullah Hamoud Ali Seraj (2022), investigated how the regulatory institutions are linked to the nascent stage of entrepreneurial activities in the context of Saudi Arabia and found a negative relationship between unfavourable business-related legislation/policies and the ambition to establish a new small business. In India, Ram et al., (2017) elucidate that the implementation of encouraging and appropriate business rules and policies is meant to enhance entrepreneurial activity and thereby lead to the creation of new businesses, which in turn results in new job opportunities accompanying economic growth and development. In contrast, countries that impose high taxes and onerous business laws and restrictions, particularly concerning the labour force, having high bureaucratic tendencies or red tape, discourage people from starting and managing small businesses (Van Stel et al., 2007; Raza et al., 2018). Survey data has shown that corruption poses a heavy burden on small and medium-sized firms. On average, 38% of small and medium-sized enterprises surveyed in the World Bank and IFC Enterprise Survey identify corruption as the major constraint for doing business (World Bank & IFC, 2010).

Martini (2013), notes that excessive bureaucracy imposes a disproportionate bureaucratic burden on small and medium-size enterprises, creating both incentives and opportunities for bribery and corruption. This can manifest itself in the form of excessive or overly rigid administrative procedures, requirements for unnecessary licences, protracted decision-making processes involving multiple people or committees and a myriad of specific rules that slow down business operations.

In Ghana, Odouro (2017) asserts that bureaucracy, unfriendly customs, corruption and excessive tax regimes, workforce and labour regulations negatively affect SME growth. He suggests that the government should create relaxed policies that support the development of entrepreneurship by simplifying loan conditions, easing

the registration processes for SMEs, and simplifying the tax systems while maintaining transparency and accountability among public officials in charge of SME regulation.

In Georgia aspects regarding the reduction of red tape are demonstrated in the country's improvement in global assessments such as the World Bank and IFC Doing Business and the World Economic Forum Global Competitiveness Report. (World Bank & IFC, 2012). The country scored particularly well in the rankings closely related to anti-corruption reforms. Concerning government support programs for SSMEs, the findings have shown a significant relationship with SSMEs' performance. The results indicate that government support programs have a significant influence on the growth, development and performance of SSMEs. The findings are consistent with some of the extant literature on the impact of government support programs on small business development and growth. For example, a study by Sophiko Skhirtladze et al. (2022) found that public subsidies for micro and small businesses in Georgia had positive effects on their survival, job creation, capital investment, and revenues. Similarly, a report by Lin et al. (2022) highlighted the benefits of national champion programs that provide financial and non-financial support to SMEs with high growth potential in various countries. These Government Support Programs help SMEs build capabilities, access markets, and network with experts and peers, leading to improved performance and competitiveness. In short, government programmes can help small businesses grow and develop.

Overall, the findings indicate that the regulatory environment can be used effectively to predict Zambian SSMEs' performance. In terms of contribution to knowledge, this study is among the pioneering studies that have incorporated the institutional theory to underpin conceptualisation that examines SSME performance in the under-researched Zambian context.

**Research Limitations and Future Directions**

Like all research, this study has some limitations. The study was conducted in Zambia only, which is a developing economy, and hence, the findings may not represent all developing economies. Therefore, more evidence needs to be collected from other developing countries as each nation has its unique categories of subsidies, and incentives, which can affect SSME performance.

The findings and implications discussed above offer valuable insights for future research. The success of businesses is heavily influenced by the regulatory and governmental structures in place, which create an environment that is conducive to the growth and start-up of new businesses (Kloosterman and Rath, 2001). Therefore, it is imperative to investigate the structures that are established by governments and other stakeholders in developing economies to promote an enabling business environment for Small Scale Mining Enterprises (SSMEs). This study also encourages scholars to undertake comparative and experimental studies that examine the effects of all other institutional dimensions on the performance of small-scale mining enterprises.

## FINAL CONCLUSION

The primary objective of this research was to assess the effects of the regulatory environment on the performance of Small and Medium-Sized Enterprises (SSMEs) in Zambia. The study utilised a quantitative correlational research design to collect data from 408 SSMEs in fourteen districts of Zambia, where small-scale mining activities are predominant. Data was gathered through a five-point Likert scale questionnaire and subsequently analysed using multiple regression and correlation models in the Statistical Package for Social Sciences (SPSS).

The findings indicate that the regulatory environment, specifically within the institutional theory, significantly influences the performance of SSMEs in Zambia. Moreover, government policies and support programs for SSMEs were identified as crucial factors in explaining the effect of the regulatory environment on the operations and performance of SSMEs in Zambia.

Despite the study's cross-sectional nature and its focus on Zambia, the identified elements of the regulatory environment can effectively help to predict the performance of SSMEs. These findings carry significant implications for the development of training programs and entrepreneurial support for support institutions, policymakers, and scholars.

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