Measuring Micro and Small Enterprises (MSEs) Market Performance in Zambia

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Abstract

Given the role of Micro and Small Enterprises (MSEs) in developing economies in terms of job creation, poverty reduction, production and distribution of goods and services, and foreign exchange earning, it is important to understand the determinants of firm performance. Business firm performance is usually measured by revenue, profitability, employment, stock price, production efficiency. This paper considers profitability as a major indicator of firm market performance. By conducting an empirical study using 187 micro and small sized firms from Lusaka and Central provinces of Zambia, the paper analyzed the determinants of firm performance by considering profitability as a proxy variable. This study seeks to look at the role of firm-specific factors in profitability of MSEs by employing a quantitative method from qualitative responses collected on the performance of enterprises. The analysis is done by using both Descriptive statistics and a Ordered Probit Regression Model. Explanatory variables, to explain changes in profit across time by a business firm, included are sales/revenue, cost, market coverage, competition, training, and owning more than one business. The Ordered Probit Regression result showed that increase in sales and expansion in market coverage over time are the significant variables that explain variations in firm's profitability.

Keywords: Firm Performance, Profitability, Ordered Probit Model, Zambia.

1. Introduction

Over the past decade, Zambia's economy has been one of the fastest growing in Africa. Gross Domestic product (GDP) per capita rose by 80% between 2000 and 2010 (Sutton and Gillian, 2013). Over the same period of time, Zambia's GDP rose by a factor of 1.8 in real terms. Sector wise, the construction grew by a factor of 4.0, Mining grew by 2.7, Manufacturing by 1.5, wholesale and retail trade by 1.5. Agriculture grew by a factor of 1.3. Behind these impressive performances of Zambia economy, the role of Micro and Small Enterprises (MSEs) has been indisputably significant.

The major contributions of MSEs to the economy is measured in terms of employment creation, income generation and expanding national output by both formal and informal enterprises. The total number of MSEs in Zambia, known number of MSEs in the formal sector and the estimated ones from the informal sector, is a basis to understand their contribution. For this purpose, the most recent source available is the Zambia Business Survey (ZBS) which was conducted in 2008. This nationally representative survey covered urban, peri-urban and rural areas in all provinces of the nation with a sample of 4,800 businesses employing 1 up to 50 individuals. Based on ZBS and Labor Force Survey (LFS), it is estimated that the total number of MSEs in Zambia was 1,050,000 which is composed of 1,020,000 (97%) from the informal[i] sector and 29,350 (3%) from the formal sector (George et al, 2010).

According to the same survey, 70% of the MSEs are in agriculture, 21% in retail or wholesale trade, 3% in manufacturing, 2% are in hotels, food, and beverage, and the remaining 4% are engaged in other economic activities. The majority of them, 65 percent, are based in rural parts of the country. The MSEs contribution to the national GDP, according to some recent estimates, ranges from about 4% to as much as 20%.

MSEs comprise a variety of firms which possess a wide range of skills and operate in all sectors of the economy with different market, social and institutional arrangements. The critical question in this sphere of study is what determines the market performance of firms which in turn determines their survival and existence in the market (or industry)? Most empirical researchers looked at the problem from two angles, those factors which are internal (controllable) to the firm and the external market environment factors in which they are operating. From this perspective, understanding the economic, market environment, and firm-level characteristics in which the MSEs are operating in Zambia is vital to investigating the challenges and opportunities these firms are facing.

The major objective of this study was to investigate the firm-level determinants performances of MSEs in Zambia specifically based on sampled and surveyed enterprises from Lusaka and Kabwe towns. The study specifically had the following two objectives. To assess the performance of business enterprises as measured by indicators like sales/revenue, cost, profit, market coverage and competition; and to look at the determinants of profitability using a regression model.

Three complementary research methods were employed under this study. Initial semi-structured interviews were conducted to help identify key issues (including perceptions) pertaining to MSE development in Zambia. Focus group discussions with a cross-section of stakeholders from the MSE, and private, public and

non-governmental offices working with MSEs were also carried out to help validate and understand issues emerging from literature review and from the semi-structured interviews, and to inform the design of the main research method and tool. The main research method under the study was in-depth one-on-one interviews conducted on sampled MSE enterprises from Lusaka and Kabwe. These interviews were largely structured, but included some semi-structured questions to allow for probing and explore for emerging issues not previously envisaged during research design.

The remainder of the research is organized as follows. Section two examines the theoretical and empirical evidence of business enterprise performance with a focus on the performance of MSEs in developing economies. Section three and four discusses the data collection process and the econometric model. Results and discussions are presented in section five. Section six is for summary and conclusions.

2. Theoretical Literature Review
Firm financial performance (growth) and profitability
Business firm's performance and profitability are positively related and profitability in turn determines growth. Profitability is positively correlated with market share and sales (Scherer and Ross 1990). A stylized fact in many literature reviews is that more profitable firms grow but whereas the less profitable firms decline (Alex Coad and Werner Holzl, 2010). Profitable (efficient) firms have the means to finance expansion, aspire to growth, employing more people, and survive longer than the inefficient ones.

Contemporary bodies of literatures explain firm performance in terms of profitability either using the Structure-Conduct-Performance (SCP) model or the Firm Effect model. According to the SCP model, the underlying industry (or market) structure[ii] determines firm conduct[iii] (behavior/strategy), which concerns the firm's ability to differentiate its goods and services and thus to influence the price it can charge. Industry structure and firm conduct combine to determine firm performance. Under this model, firms are considered more or less the same and the difference in performance is because of the market structure. This is to say firms enjoy profitability in a tight Oligopoly kind of market structure than a very competitive market structure. In short, SCP model assumes that there are relationships between the structure of markets, the conduct of firms, and the performance of firms (Carlton and Perloff, 2000, P.4).

On the other hand, the Firm-effect model captures the influence of the unique firm-specific characteristics such as heterogeneity in resources and competences and also the differences in corporate and competitive strategies on performance. These constitute both tangible and intangible (measurable and immeasurable) competencies of the firm. Resources that are valuable, rare, inimitable, and non-substitutable can achieve sustainable competitive advantage by implementing fresh value-creating strategies that are difficult for competitors to duplicate (Barney, 2002). These could include intellectual property, process know-how, customer relationships, and the knowledge possessed by groups of specially skilled employees.

Previous empirical researches studied the determinants of profitability with either SCP or firm-effect or using both frameworks. By and large, these studies are from the non-third-world economies on established business enterprises using official financial reports. Only a limited number of researches are conducted in developing countries, where financial reports are not easily accessible, on the performance of MSEs. This study seeks to look at the role of firm-specific factors in profitability of MSEs by employing quantitative methods from qualitative responses collected on the performance of enterprises.

3. Variables and Data
3.1 Determinants of financial performance (profitability)
The explanatory variables considered to explain the variability in financial performance are sales/revenue, market coverage, cost, business related training, and ownership of more than one business. (Refer Annex I: Table 1 Description of variables)

3.2 Data Collection
Data was collected from two districts of Zambia, from Lusaka in Lusaka province and Kabwe in Central province. The data collection time was in December 2012. Lusaka is one of the oldest districts in Zambia, having been established about 100 years ago. It is now the country's administrative, commercial and industrial center, with a population of 1.75million, density of 4,841per km^2 and growing at a rate of 4.9 percent per annum. The district includes what should be the widest spectrum of income and occupation categories. Kabwe is the provincial center of the Central Province and is on the main highway connecting Lusaka to the country's copper producing areas of the Copperbelt and North-west provinces. With a population of 203,000 and density of 129 per km^2, Kabwe has experienced one of the slowest population growth rates (1.7 percent per annum) due to the demise of mining industries due to depletion of ore. Inhabitants have had to identify alternative livelihoods, resulting in the emergence of a wide range of small-scale enterprise activities.

In selecting the sample, the study stratified the MSEs by industrial sector. The sectors chosen were

Agricultural, Manufacturing, Trading and Service sectors. Although, the study initially intended to use a proportionate random sample from the 4 sectors, this proved difficult as the comprehensive list of the MSEs provided by the Zambia Chamber of Commerce (ZCC) and Zambia Development Agency (ZDA) were found to be inadequate as most enterprises had either collapsed or could not be accessed. As a result, the study randomly selected 187 MSEs with each MSE having an equal chance of being included in the sample. Of the total 187 MSEs sampled, 127 were from Lusaka and 60 from Kabwe.

4. Econometric Model

An econometric model is applied to investigate factors influencing the performance of the enterprise in terms of profit level (Decreased, Has not changed, or Increased) as reported by the respondents from the time of establishment against the current period. Since getting responses for profit levels is difficult, the researcher used an alternative approach to get ordered responses and respondents were asked to describe the change from then to now. Choices, decisions or assessment in which the responses for the dependent variable are qualitative are better analyzed with Non-linear models often by probit or logit models[iv]. The two most common and widely applied models for ordered dependent variables are ordered probit and ordered logit. The two models are by large similar and the difference comes when the regression coefficients are interpreted.

The ordered probit model involves qualitative responses for the dependent variable in which the response categories have some order or ranking. The application of ordering probit is usually done by coding the responses as 0,1,2,3,4,5 and so on. In this case, if the business experienced a decrease in profit now as compared to the establishment period, it was coded as 0, if there was no change in profit 1, and finally if the profit had increased 2. The codes 0, 1, and 2 simply reflects the ranking and does not mean the difference between 1 and 2 is the same/equivalent to the difference between 2 and 3.

The Ordered Probit Model

The ordered probit model can be shown as follows. Suppose y* is an unobservable index determined as;

$$y^* = \alpha + \sum \beta_i X_i + u_i \tag{1}$$

Where is the summation is over i=1,…,k, the X_i's are k independent variables and u is the disturbance term. The dependent variable has J + 1 categories so that instead of observing y* we observe

$$y = 0 \ if \ y^* < \delta_0$$
$$y = 1 \ if \ \delta_0 < y^* \le \delta_1$$
$$y = 2 \ if \ \delta_1 < y^* \le \delta_2$$
$$.$$
$$.$$
$$.$$
$$y = J \ if \ \delta_J - 1 < y^*$$

the δ's are unknowns 'threshold parameters that must be estimated along with α and the β_i's. Estimation is undertaken by Maximum Likelihood, which in the case of the ordered probit model requires that u be assumed to be distributed as a standard normal.

The probability of obtaining an observation with y = 0 is equal to

$$Prob\ \{y^* = \alpha + \sum \beta_i X_i + u \le \delta_0\} \tag{2}$$
$$= Prob\{u \le \delta_0 - \alpha - \sum \beta_i X_i\}$$
$$= \int_{-\infty}^{\delta_0 - \alpha - \sum \beta_i X_i} f(u) du$$

Where $f(u)$ is the standard normal density function. The probability of obtaining an observation with y = 1 is equal to

$$Prob\ \{\delta_0 < y^* = \alpha + \sum \beta_i X_i + u \le \delta_1\} \tag{3}$$
$$= Prob\{\delta_0 - \alpha - \sum \beta_i X_i < u \le \delta_1 - \alpha - \sum \beta_i X_i\}$$
$$= \int_{\delta_0 - \alpha - \sum \beta_i X_i}^{\delta_1 - \alpha - \sum \beta_i X_i} f(u) du$$

and so on.

The likelihood function is the product of such expressions for each of the data points, maximizing this function with respect to α, the β's, and the δ's produces the maximum likelihood estimates. When α≠0 so that an intercept is included in the equation for y*, identification is achieved by setting δ$_0$ equal to zero; specifying that Ɛ has mean zero and variance one is also done for purposes of identification.

5. Results and Discussion
5.1 Descriptive Statistics

As a measurement of enterprise performance, respondents were asked to compare their current position against the startup time in terms of business performance parameters total sales/revenue, total cost, profit, market coverage and level of competition. 73.6%, 65%, 69.2%, and 74.7% of the respondents said their enterprises had experienced an increase in total sales/revenue, profit, market coverage, and competition respectively. In comparison to the enterprises total cost of running the business against the start-up time, 76.4% of the respondents said cost has increased. In general, more than two-third of the respondents felt that all the indicated parameters had increased when they compared to the start up position. On the other hand, the remaining one-third said the business had experienced either a decrease or no-change for the specified indicator.

Though the increase in total sales/revenue, profit, market coverage and competition can be seen as a good performance for the MSEs role in employment creation, income generation, and economic growth, the large percentage of firms experiencing increased total cost of running their business could have inversely affect their role in the economy.

Table 2: Comparison of current enterprise's position to start-up time

		Total	Lusaka	Kabwe
Total sales/revenue	Has increased	73.6	50	23.6
	Has decreased	14.3	11.5	2.7
	Not changed	11.5	7.1	4.4
Total cost	Has increased	76.4	52.7	23.6
	Has decreased	6.6	4.9	1.6
	Not changed	16.5	11.5	5
Profit	Has increased	65	43.9	21.1
	Has decreased	17.8	15.6	2.2
	Not changed	16.7	10	6.7
Market coverage	Has increased	69.2	49.4	19.8
	Has decreased	11.1	8.7	2.3
	Not changed	17.4	14.5	2.9
Competition	Has increased	74.7	51.7	22.9
	Has decreased	3.5	3.5	0
	Not changed	21.2	17.1	4.2

The above table shows a descriptive statistics of some of the variables used in the regression model below. Of the 179 complete responses for the above variables, 64 percent of the respondents said their profit has increased and of whom 35% has received one or more than one type of business training.

As a proxy variable to measure the role of Business Development Services (BDS)[v] in the development of business enterprises, we asked respondents whether they have received any business related trainings or not. 51 percent of the respondents received at least one business related training, whereas the remaining 49 percent did not receive any. While 35 percent of the respondents received training and their current profit level is higher than the start up period, 29 percent of the respondents did not receive training but experienced increased profit. A further comparison shows that 16 percent of the respondents received business related training and their profit either decreased or had not shown a change. On the other hand, 19 percent of the respondents did not receive any business related training and their profit either decreased or had not shown any change. Though it is with small margins, more training recipients have increased profits and less training recipients have decreased or no change in profit as compared to non-recipients of training.

Table 3: Cross tabulation of current profit performance of enterprises against other performance indicators

		Current profit level as compared to start-up level		
		Decreased	Not changed	Increased
Received any business training	Yes	7.87	7.87	35.39
	No	10.67	8.99	29.21
Own other business	Yes	5.44	7.48	27.89
	No	12.24	10.2	36.73
Market coverage	Decreased	8.24	1.18	4.12
	Not changed	5.29	5.29	7.06
	Increased	5.29	10.59	52.94
Total sales/Revenue	Decreased	10.56	3.89	3.89
	Not changed	2.22	5	9.44
	Increased	2.22	2.78	60

5.2 Regression Result

Table 4: The ordered probit regression result

Ordered probit regression				Number of obs	=	138	
				LR chi^2 (5)	=	80.34	
				Prob > chi2	=	0.0000	
Log likelihood = -83.557455				Pseudo R^2	=	0.3247	
Profit	Coefficients	Std. Err.	Z	P>|Z|	[95% confidence interval]		
Training	.0277482	.240053	0.12	0.908	-.5905873	.6460837	
Own other bussiness	.4447567	.2547327	1.75	0.081	-.2113911	1.100905	
Market coverage	.4431451	.1683549	2.63	0.008*	.0094916	.8767986	
Sales	1.131434	.1686125	6.71	0.000*	.6971171	1.565751	
Cost	-.1503185	.2016099	-0.75	0.456	-.6696311	.3689942	

*The Variables are statistically significant at 99% of confidence level

The regression analysis is made using STATA statistical software. The likelihood ratio chi-square of 80.34 with a p-value of 0.0000 shows that the model as a whole is statistically significant, as compared to the null model with no predictors. The output further shows that an increase in current market coverage as compared to start-up stage is a significant variable with p-value of 0.008 in explaining the variation in the profit level experienced by the enterprise across time. Given the profit change is ordinally measured by respondents as decreased, no-change, or increased; the ordered pobit maket coverage coefficient 0.443 is positively related to upward change in profit level and can be interpreted as a one unit increase in market coverage (i.e., as the enterprise's market coverage increases across time) profit level changes by 44 percent. The other variable which is statistically highly significant with a p value of 0.000 is total sales/revenue. On average, for enterprises who have experienced an increase in total sales/revenue in current periods as compared to the start-up time, their profit had also increased roughly by 110 percent. The result showed a very strong relationship between sales/revenue and profit.

The other important indicator variable of economic performance was the total cost of running the business. The higher the cost the tougher for enterprises to increase profits. The variable holds a negative coefficient as expected. But the variable is not statistically significant. Though the variables Owning other business and Training are not statistically significant, their positive coefficients show that they are directly related to the dependent variable profile. This means that to a certain extent business training helps recipients to improve their profit level.

6. Summary, Conclusion, and Policy Implications

MSEs comprise a variety of firms which possess a wide range of skills and operate in all sectors of the economy with different market, social and institutional arrangements. In developing economies like Zambia, MSEs operate with limited access to capital, infrastructures, market information, and other technical supports and incentives. From this perspective, understanding the economic, market environment, and firm-level characteristics in which the MSEs are operating in Zambia is vital to investigate the challenges and opportunities these firms are facing.

The objective of this study was to analyze the determinants of business firm market performance (profitability). Measuring factors that contribute to success of business enterprises in the market is very important to capitalize from the role of MSEs in the economy. Using data collected from 187 micro and small firms from two districts of Zambia, from Lusaka in Lusaka province and Kabwe in Central province, the study examined the impact of specific firm level factors like sales/revenue, market coverage, and cost on firm profitability across time.

Descriptive statistics result illustrates that more than two-third of the firms experienced an increase in sales, market coverage, competition and profit level between the start-up stage and currently. The regression result also showed that firm-level characteristics, sales and market coverage are significant variables in explaining variations in profitability of the micro and small firms. This finding can be interpreted as the performance (profitability) of a firm largely depends on the firm's competence (conduct/behavior) to reach more buyers and sell more than other competing firms in the industry.

Based on the findings, the research draws the following policy implications.

- The government should assist MSEs by introducing policies directed towards alleviating the cost of doing business.
- The government should support MSEs to scale-up their business by using different incentives, like by creating accessible financing schemes and tax reductions.
- Creating and facilitating markets for MSEs business is important. This can be done by creating more

platforms, in addition to the existing ones, to MSEs to promote their activities for the general public.

Annex I

Table1: Description of variables used in the regression model

Variable	Description
Dependent Variable	
Profit	Ordinal variable equals 0 if the business experienced a decrease in profit as current period compared to startup period, or equals 1 if the business experienced no change in profit as current period compared to startup period, or equals 2 if the business experienced an increase in profit as current period compared to startup period.
Independent Variables	
Training	Dummy variable equals 1 if the business got any business training and 0 otherwise
Own other bussiness	Dummy variable equals 1 if the owner owns another business/es and 0 otherwise
Market coverage	Ordinal variable equals 0 if the business experienced a decrease in market coverage as current period compared to startup period, or equals 1 if the business experienced no change in market coverage as current period compared to startup period, or equals 2 if the business experienced an increase in market coverage as current period compared to startup period.
Sales	Ordinal variable equals 0 if the business experienced a decrease in sales as current period compared to startup period, or equals 1 if the business experienced no change in sales as current period compared to startup period, or equals 2 if the business experienced an increase in sales as current period compared to startup period.
Cost	Ordinal variable equals 0 if the business experienced a decrease in cost as current period compared to startup period, or equals 1 if the business experienced no change in cost as current period compared to startup period, or equals 2 if the business experienced an increase in cost as current period compared to startup period.

Endnotes

[i] The informal sector is defined as those not registered by Patents and Companies Registration Agency (PACRA) or any other similar organization in Zambia.

[ii] Market structure is mostly explained by variables like number of firms (sellers), barriers of entry, and degree of product differentiation. Other factors like location and availability of essential raw materials, nature of production technology, degree of work force unionization, durability of product, price elasticity of demand, availability of substitutes, growth and variability of demand also determine the market structure (Carlton and Perloff, 2000).

[iii] Variables explaining conduct include pricing strategies, collusion, advertising, research and development, and capacity investment (Ibid).

[iv] Probit or Logit model is used when the responses are binary or dichotomous. On the other hand when the responses are more than two but limited, the analysis requires consideration of another special model of Probit or Logit (Maddala, 1983; William and Peter, 1992).

[v] Any non-financial service, mostly in form of business training, provided to business on either formal or informal basis.

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