A COMPARATIVE ASSESSMENT OF CLUSTER AND NON- CLUSTER BASED SMES IN ZAMBIA

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ABSTRACT: *This study focuses on the need to promote the development of industrial clusters as a means to counteract the challenges faced by the small and medium sized enterprises (SMEs) in Zambia and thereby enhancing their performance and competitiveness for increased industrialisation, job and wealth creation. A comparative assessment of the clustered SMEs from the Kalingalinga industrial cluster as a case study and the non-cluster based SMEs using firm level data from Zambia Development Agency (ZDA) was made by employing both qualitative and quantitative analysis. The study revealed that cluster based SMEs experienced similar impediments as the non-cluster based SMEs, however, due to agglomeration externalities and active collective efficiency gains, clustered SMEs were able to counteract the effects of the impediments and become more competitive. Therefore, the study recommended that Zambia considers adopting a "big push" cluster development approach in developing a robust SMEs sector. Specific interventions included: improving access to credit, improving the SMEs' entrepreneurial capabilities and facilitate knowledge creation/diffusion; easing the power supply challenges; establishing greenfield entrepreneurs' parks with common facilities and upgrading the existing cluster infrastructure; designing a stand-alone cluster development policy; and establishing an institutionalised public - SMEs dialogue.*

Keywords: Clusters, SMEs, Competitiveness.

1.   INTRODUCTION

Micro, Small and Medium-sized Enterprises (SMEs) have been known to be drivers of economic development and growth. In Zambia, SMEs are located either in a specific location together otherwise known as clustered SMEs or in stand- alone locations otherwise known as non-clustered with the former expected to leverage on their agglomeration externalities and collective efficiency gains to overcome the SMEs' common bottlenecks.

The SMEs in Zambia account for 97% of all enterprises [1] and contributes 84% of Zambia's total labour force [2]. Zambia has only 847,000 of its citizens engaged in formal jobs out of 6.3 million people labour force. This situation is worsened by high poverty levels where 54.4% of her people live below the poverty line with the rural areas at 76.6% (ibid). Additionally, income disparity stands at a gini coefficient of 0.69 meaning that the income gap between the rich and the poor remains extremely high in the country.

Zambia's Vision 2030 aims at becoming a prosperous middle-income country by the year 2030 and is premised on the assumption that more and more Zambians will engage in entrepreneurial activities to realise this vision. The current Seventh National Development Plan (2017 – 2021) themed 'accelerating development efforts towards vision 2030 without leaving anyone behind' has recognised the need to support the SMEs sector. Further, the United Nations Sustainable Development Goals (UN SDGs) from 2016 to 2030, have also acknowledged the fact that SMEs play a major role in transforming economies into sustainably developed countries [3].

To escape from a vicious poverty trap worsened by the entry of 300,000 people to its labour market emanating from school leavers, school drop outs and graduates [4], Zambia will need to develop its SMEs sector by employing a more sustainable and effective development model. SMEs in Zambia still faced challenges that have continued to chock their growth. The most recent survey on the manufacturing sector in Zambia, the Zambia manufacturing sector survey of 2003 revealed that the SME sector in Zambia had stagnated mainly because of a number of challenges they were facing that hindered their growth.

This has been supported by the recent data from the Central Statistics Office [5], showing a stunted manufacturing sector contributing on average 10% to the national GDP for the past decade. If this status quo persists, it will not change the hitherto, vicious circle of high poverty levels, low industrialisation and low per capita income as such, industrial clustering could be one of the development models that could be adopted to change this landscape for the better.

Porter the "father" of clustering refer to a cluster as a geographical concentration of enterprises that produce and sell a range of related or complementary products [6]. Earlier, Marshall alluded to the fact that clustered firms outperform non-clustered firms because the former benefited from (i) input market externality (ii) goods market externality, (iii) labour pooling and (iv) intra-cluster knowledge/information spill over [7]. His arguments were challenged and complemented by Sonobe and Ostuka who posited that clustered firms benefit from multifaceted innovations and reduction of transaction costs [8]. This kind of an arrangement requires that those in it possess a high level of mutual trust among themselves which is critical in the reduction of transaction costs such as searching for and reaching customers.

It is intriguing that SMEs in these clusters cooperate with each other but at the same time, they compete with each other otherwise known to as "coopetition". The high interaction level that occurs in the cluster and also linkages among the players in a cluster tend to result in an effective collective learning process that normally tends to lead into innovations. Marshall weighed in on this aspect and espoused that "if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus, it becomes the source of new ideas." In fact, competition in clusters may become more intensified among clustered than non-clustered firms, because cluster firms compete directly for human, financial and technological resources [9]. Another interesting phenomenon that occurs in a cluster is that a number of specialised suppliers can emerge through spin-offs (spin-offs are people that were previously employed in a

particular firm who decided to leave and start their own business activity), which then start to compete intensively with one another.

In non-performing clusters, the SMEs actually face challenges just like the non-cluster based SMEs and these cause them to stagnant. Marshall was of the view that due to congestion, agglomeration benefits may not be realised and hence de-agglomeration may set in over time because input costs, such as land/rent and wages (due to the cost of labour poaching) tend to rise and that firms in such instances exit the cluster. However, Sonobe and Otsuka, posited that entry of SMEs into a cluster is motivated by high profits, nevertheless, less competitive firms who fail to innovate are forced to exit the cluster despite benefiting from agglomeration externalities [8]. In his triple helix theory, Etzkowitz posited that for clusters to develop, there should be a close interaction among the three forces: - the academia, industry and government bodies [10]. The involvement of academia cluster development brings in research and development (R&D) which is an expensive investment for SMEs.

Industrial clustering in not a new concept in Zambia per se, a number of clusters dotted around that evolved spontaneously without government planning do exist. A case in point is the Kalingalinga industrial cluster located in the capital city of Lusaka that has been in existence for the last three (3) decades now. Zambia has had SMEs located this cluster, however, it is unclear whether the SMEs in this cluster have taken advantage of agglomeration externalities to graduate into larger firms and perhaps even exited the cluster to be an independent large company. This study will, therefore, focus on this industrial cluster that hosts over 200 firms, as a case study.

2. PROBLEM STATEMENT

SMEs' growth in Zambia be it in cluster or non-cluster based have stagnated and hence failing to effectively contribute to the country's industrialisation, job creation and poverty reduction agendas. In addition, many players in Zambia claim to support the SME sector, however, the sector has remained trapped in the vicious circle of low productivity, uncompetitive with short life spans. Therefore, there has been a mismatch between the quantity and quality of the services offered and what the SMEs actually receive on the ground. Further, there is a need to evaluate the paradox of an SME locating in a cluster where SMEs are expected to be competitive but are failing to grow and graduate. However, it must be noted that collective efficiency gains arising from clusters do not materialize in some countries which further justifies the need to assess the cluster induced presence or absence of efficiency gains – agglomeration benefits and their magnitude in Zambian clusters.

3. AIMS OF THE RESEARCH

The study seeks to evaluate the impact of using a cluster approach on SMEs' performance and competitiveness in Zambia by making a comparison of the cluster and non-cluster based SMEs and thereby assessing the extent Zambia is utilising the cluster approach as an industrial development strategy to ease major growth impediments of SMEs

The study hypothesised as follows:

H_1: Zambian cluster based SMEs benefit from agglomeration externalities, unlike the non-clustered SMEs.

H_2: Zambian cluster based SMEs are more competitive than non-clustered SMEs.

H_3: Zambian cluster based SMEs experience similar but lesser bottlenecks than the non-clustered SMEs.

4. RESEARCH METHOD

The study used a mixed method approach that combined a collection of both quantitative and qualitative data to give a more complete understanding of a research problem and increase the trustworthiness of the research.

A simple random sampling of a sample size of 80 SMEs operating in metal fabrication and woodworks was considered [40 cluster-based SMEs from Kalingalinga industrial cluster and 40 non-clustered SMEs obtained from ZDA]. Semi-structured interviews and in-depth interviews with the clustered SMEs and six (6) SMEs support institutions in Zambia were undertaken. In addition, 3 focus groups with at least 6 participants each were also undertaken. Further, the author's employed direct observation of activities of SMEs in the Kalingalinga cluster. For quantitative analysis, the study employed grounded theory and case study inductive approaches. Data was collected/coded until saturation was observed.

A deductive quantitative approach using Statistical Package for Social Sciences, SPSS was employed. An ordinary least square, OLS multiple linear regressions were used to test the hypothesis. Three regressions were undertaken i.e. (i) clustered SME, $_p$; (ii) non-clustered SMEs, $_{nc}$ and (iii) pooled data, $_p$. A cluster dummy was introduced in the pooled data taking the value 1 if located in a cluster and 0 otherwise. The study used productivity as a proxy for competitiveness, as a dependent variable. Independent variables being: years or operation of the firm, age of the manager, size of the firm/ number of workers, dummy if the firm obtained credit to start the business 1 = yes; 0 = otherwise, and the level of education of the manager. The linear equations were as follows:

- $Y_i \ln(PROD_c) = \alpha_o + \beta_1 \ln (Yrs \, of \, op_c) + \beta_2 \ln (Age_c) + \beta_3 \ln (Size_c) + \beta_4 (Credit_c) + \beta_5 (spin\text{-}off_c) + \beta_6 (Edu_c) + \varepsilon_i$ [Eq. 1]
- $Yi \ln(PROD_{nc}) = \alpha_o + \beta_1 \ln (Yrs \, of \, op_{nc}) + \beta_2 \ln (Age_{nc}) + \beta_3 \ln (Size_{nc}) + \beta_4 (Credit_{nc}) + \beta_5 (Edu_{nc}) + \varepsilon_i$ [Eq. 2]
- $Yi \ln(PROD_p) = \alpha_o + \beta_1 \ln (Yrs \, of \, op_p) + \beta_2 \ln (Age_p) + \beta_3 \ln (Size_p) + \beta_4 (Credit_p) + \beta_5 \ln (Edu_p) + \beta_6 (Cluster) + \varepsilon_i$ [Eq. 3]

5. ANALYSIS AND DISCUSSION:

As indicated in this research, 97 percent of the private firms in Zambia are SMEs. This entails that the SMEs need to be given the appropriate support in order for them to effectively contribute to national competitiveness, industrialisation and job creation and a sustained economic development.

From the focus group discussions and observations, it was deduced that geographical proximity creates competitive advantages to the SMEs that in many cases cooperate but compete at the same time. The SMEs that compete within the clusters also benefited from the Marshallian externalities such that they became more cost effective and had differentiated products and services than their competitors outside the clusters, **confirming the H_1**. This was evidenced in this research as the productivity for the clustered SMEs was greater than the non-clustered ones as deduced by the OLS regression that estimated that SMEs located in a cluster were 43.4 percent on average more competitive than a stand-alone non-clustered SMEs at 1 percent confidence level, **confirming the H_2,** as depicted in the SPSS output below, table 1.

Table 1: Comparative Assessment of Cluster Based SMEs in Zambia – OLS Estimation Results

Variables	Clustered	Non-clustered	Pooled data
	[Equation 1]	[Equation 2]	[Equation 3]
ln(years of operation)	0.376*	0.276*	0.367***
	(1.781)	(1.779)	(3.488)
ln(age of owner)	0.013	0.709**	0.175
	(0.056)	(2.056)	(0.993)
ln(size of firm)	-0.523**	-0.481***	-0.464***
	(-2.353)	(-6.302)	(-6.011)
Access to credit dummy	0.184**	0.128*	0.140***
	(2.116)	(1.855)	(2.618)
Spin-off dummy	0.041		
	(3.401)		
Level of education dummy	0.233***	0.088*	0.139**
	(3.401)	(1.999)	(3.359)
Cluster dummy			0.433***
			(8.449)
Adj. R^2	0.47	0.655	0.8
Number of observations	40	40	80

*Notes: t-values in parentheses; *, ** & *** indicate sig levels at 10, 5 and 1% levels, respectively (one-side test).*

The study revealed that SMEs in the clusters had multifaceted innovations in products, production processes, marketing, material procurements and reduced transaction costs arising from information asymmetry and imperfect contract enforcement. As Sonobe and Ostuka posited, transaction costs arising from moral hazard and hold-up problems are low in an industrial cluster because rumours of such opportunistic behaviours quickly become public knowledge by word of mouth in the cluster [8]. In addition, transportation costs in the cluster were greatly reduced through the procurement of goods and services from within the cluster. This again, contributed to the firm's cost competitiveness as compared to their counterparts outside the clusters.

Generally, it was deduced that the public polices supporting cluster initiatives had not been adequate hence the Kalingalinga industrial cluster has not yet experienced the Schumpeterian growth but has been stagnant on the quantity expansion stage otherwise known as the Smithian growth.

It was also observed that most SMEs entered the cluster in the last 10 years, although the cluster has been in existence last 30 years. The free entry of SMEs into the cluster is still visible albeit with space limitations. Interestingly, there were a number of spin-offs in the clusters that had acquired the skills through experience though, the regression gave an insignificant impact of these spin offs.

The study also revealed that human capital plays an important role in the efficiency of the firm as it facilitates the creation, dissemination and application of knowledge and technology for competitiveness. The education variable gave a positive and significant result with SMEs in clusters

giving a larger impact. Further, more experienced firm managers yielded higher productivity levels hence the longevity of firms played a role in contributing to the SMEs' competitiveness. The clustered SMEs again showed a greater impact than non-clustered SMEs.

The authors also analysed the marketing and advertisement methods that were employed by the SMEs in the cluster. It was revealed that SMEs by and large used "word of mouth" as their marketing and advertising tool. However, the SMEs were able to pull customers without investing in the advertisement.

As for locational determinants, the study found that the main reason the SMEs tend to agglomerate was to have access to the customers. Since these clusters by their nature attract a number of customers and as such, search cost for customers is minimised, profits are higher therefore, more SMEs are attracted to set up their firms in the clusters. The main customers for the Kalingalinga cluster are mainly private persons undertaking construction projects. None of the SMEs in the cluster exports to the region or surrounding countries.

In terms of main bottlenecks, the study found that access to credit was the most problematic challenge the SMEs in the clusters faced as they still faced challenges to access cheap loans that could enable them to expand their businesses despite being agglomerated. With interest rates hovering around 40%, it is prohibitive for SMEs to borrow from the commercial banks. The regression results gave a positive and significant impact to competitiveness for those firms that acquired loans to start up their firm with clustered SMEs giving a greater impact. The unreliable power supply was another major challenge. SMEs in the cluster complained of loss of business and increased the cost of doing business due to erratic power supply challenges. They also expressed deep concern about their obsolete machine and equipment that they were using. For example, it took one firm two (2) days to fabricate a gate that would have been otherwise done within hours had the right machinery and equipment were in place. As such, SMEs in clusters experienced similar but lesser bottlenecks than those that operated outside the clusters, **confirming the H_3.** Therefore, the study recommends that Zambia should consider adopting a "big push" cluster development approach in developing a robust SMEs sector that would ultimately industrialise the economy and create jobs whilst reducing the poverty levels. The "big push" approach to SME cluster development entails that government invests a massive amount of resources in easing the access to finance that has been hitherto, the most problematic constraint of SMEs in Zambia. Specific interventions include: improving the SMEs' entrepreneurial capabilities and facilitate knowledge creation/diffusion through business development services (BDS)/Kaizen – quality and productivity improvement, a triple helix approach and incubation services. Enhance the business environment by easing the power supply challenges; establishing greenfield entrepreneurs' parks with common facilities and upgrading the existing cluster infrastructure. Develop a pro-cluster institutional and regulatory framework by designing a stand-alone cluster development policy; and establishing an institutionalised public - SMEs dialogue. Below depicts a proposed development model, figure 1.\\
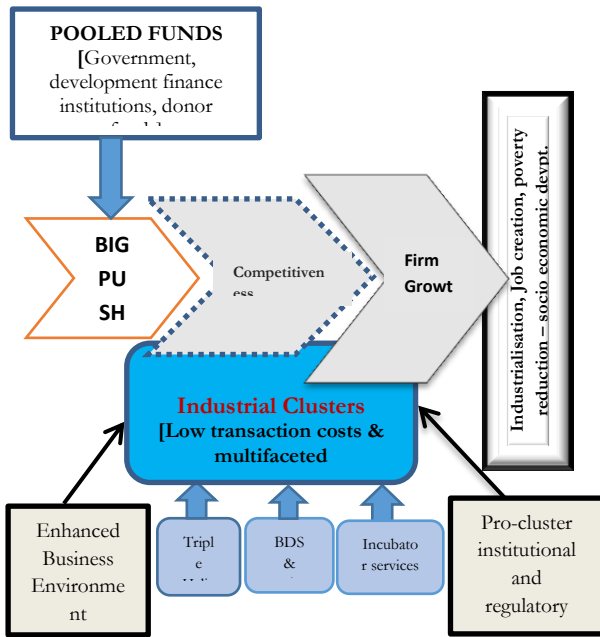
Source: Developed by the Authors, 2017

Figure 1: A proposed cluster development model for Zambia.

Before the clustered SMEs are considered for loans, it is important that training of SMEs is undertaken in order to increase the impact of the loan on the productivity, competitiveness and growth of the SMEs. The triple helix aspect as shown in figure 1 above brings in the needed research and development in the cluster whilst attaching to a cluster, a trained technician/ engineer otherwise knowns as a cluster facilitator. In addition, clustered start-up firms require to be incubated in the initial stages as such, incubation services are critical in the success of a cluster.

Furtherance to the UN SDGs, The World Economic Forum has acknowledged the fact that cluster formation contributes to the countries' competitiveness [11]. Competitiveness of clustered SMEs ultimately enhances the countries competitiveness at a national level. Zambia is ranked 118 on the global competitiveness out of 144 countries with its ease of doing business on 98 out of 190 countries [12] as depicted in figure 2 below. The figures would have been better if, among others, the SMEs sector was robust.

Source: World Bank and WEF, 2017

Figure 2: Zambia's Ranking on Ease of Doing and Global Competitiveness from 2008 to 2017

6.   CONCLUSION:

By clustering, SMEs are able to overcome constraints in capital, skills, technology and markets. Clusters help enhance SMEs' growth and competiveness by encouraging more knowledge and technology diffusion, labour specialisation, leveraging on the local comparative advantage and achieving collective efficiency. In so doing, clusters contribute to a nation's growth, industrialisation, job creation and poverty reduction.

SMEs in the Kalingalinga industrial cluster proved to partly overcome a number of constraints that were common among the SMEs as they exhibited high levels of competitiveness than non-clustered SMEs albeit faced with challenges of overcrowding. Clusters provide the low-lying fruits that could be supported and natured into larger firms and ultimately contribute to industrialisation, job creation, poverty reduction and socio-economic development.

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