Collective Efficiency and the Small Enterprise Growth in Kenya

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Abstract

Small enterprises contribute to economic dynamism, entrepreneurship and have potential to anchor sustainable industrial development in least developed countries. However, they are constrained by the lack of capacity to develop infrastructure and acquisition of technologies with consequent loss of competitive advantage in the global market. This paper explored collective efficiency as a paradigm that could inform infrastructure planning and development to support small enterprises. Data gathered from 203 wood-based enterprises in Kenya revealed collective efficiency to be positively related to growth of the enterprises. The relationship between collective efficiency and growth of the wood-based enterprises was found to be logarithmic. These findings demonstrate the vitality of collective efficiency in growth of small enterprises especially in the early stages.

Key words: Collective efficiency; collective efficiency index, enterprise growth index, infrastructure planning and development

INTRODUCTION

Small enterprises – that is, enterprises employing less than 50 employees – have been noted to play a significant role in economic growth of many countries (Liedholm & Mead, 1999). As United Nations Industrial Development Organization (UNIDO, 1998) puts it, sustainable development implies meeting the current needs and finding solutions to present problems without jeopardizing the ability of future generations to meet their own needs. In least developed countries, sustainable development has to target eradication of extreme poverty by extending the benefits of economic and industrial development to the poor.

Since the 1980s, African economies have sought to create and promote growth of small enterprises through direct assistance in form of finance, technology and skills upgrading. Yet, the envisaged growth and transition, graduation of small enterprises to medium and large enterprises appears to have faltered (Lukac, 2005). Such transition is necessary if small enterprises are to make meaningful and significant contribution in the growth of African economies. For growth and transition to take place, small enterprises must be self-sustaining through technological

innovations and building of competitive advantages. Unfortunately, most small enterprises in less developed countries are stuck in traditional activities generally with low levels of productivity, poor quality products and serving small localized markets. Since most small enterprises in least developed countries are unable to build competitive advantages on their own, collective efficiency could contribute to their survival and growth (Schmitz, 1995). In this study we sought to explore how collective efficiency informed the growth of the wood enterprises in Kenya.

In Kenya, the wood industry has continued to decline leading to the closure of some large wood dependent industries like Pan Africa Paper Mills that was producing 80% of the pulp and paper products in Kenya. Between 2001 and 2002, the wood and cork subsector performance dropped by 56% while import of timber increased from 78.2 m^3 to 606 m^3 in the same period (Government of Kenya, Working paper, 2003). While poor performance in the wood industry has been attributed to other factors such as the ban on logging – itself a manifestation of poor infrastructure planning, little attention has been paid to collective efficiency as a framework that could inform infrastructure and technology development in wood-based small enterprises. Ergo, our objective in this study was to discover the contribution of collective efficiency in the growth of wood-based small enterprises in Kenya.

Collective Efficiency and growth of Small Manufacturing Enterprises

Small manufacturing enterprises usually cluster together in urban centers and have the potential to gain from local external economies and collective efforts (Schmitz, 1995, Nadvi *et al*, 1994; Capechi, 1989; McCormick, 1988). These enterprises engage in flexible specialization where they perform certain operations or produce certain parts for other enterprises (Capechi, 1989; McCormick, 1988). These joint actions enable the small enterprises to derive competitive advantage in certain operations with benefits accruing from improved production methods and enhanced capacity. Collective efficiency is a term used to refer to "competitive advantage derived from local external economies and joint action" (Schmitz, 1995, p.530). Our thesis here is that these joint actions need to be taken into account when planning and developing industrial infrastructure and technology targeting SMEs.

The joint actions, as noted by Nadvi *et al*, (1994), work better when small manufacturing enterprises work/operate close together in clusters. Collective efficiency is facilitated by the clustering on a number of factors including product specialization, rapid production of specialized products, emergence of suppliers, emergence of service providers, emergence of marketing agents, pooling of skilled labour and formation of consortia or associations for specific services and lobbying (Schmitz, 1995). Infrastructure and related services aid the development of networks within the clustering SMEs that support the creation and sustainability of the clusters. Infrastructure planning begins with industrial location choices that place spatial distribution of industry in reference to other social aspects. A spatial planning approach ensures the most efficient use of land by balancing competing demands within the context of sustainable development (Rozee, 2003). It becomes an ongoing, enduring process of managing change by a range of actors, in the interests of sustainable development (Tewdwr, 2004). The network-based approach in infrastructure planning combines co-operative mechanism with competitive rules of behaviour and takes advantage of collective differentiation and learning (Ombura, 1997). It emphasizes pooling together to create infrastructure for use in network economies. Small manufacturing enterprises represent systems where interactions between infrastructure and

technology determine enterprise development trends in a collective and networking environment. This brings to the fore the need for infrastructure planning and development to take into account promotion and development of requisite technologies.

Small enterprises – in Kenya, enterprises employing less than 50 employees – account for the bulk of industrial employment in most African countries (Liendholm & Mead, 1987). Beyond creation of employment, small enterprises stimulate entrepreneurship and innovation. Indeed, in many developing countries as well as developed countries, small enterprises have become focal point of growth and self-employment (Lukács, 2005). In the European Union small enterprises account for roughly two thirds of employment (Eurostat, 2008) while in Pakistan small enterprises employ nearly 80 per cent of the non-agricultural labour force contributing about 40 per cent of annual GDP (Bashir, 2008). In low-income countries, it is estimated that small and micro-enterprises account for more than 60 per cent of the GDP and provide over 70 per cent of employment opportunities (Lukács, 2005). However, Lukács noted that a significant number of small and micro-enterprises in these countries were stuck in low productivity levels, poor quality products, and serving small, localized markets. He further pointed out, the lack of technological dynamism had led to their stagnation and little or no transition to medium or large enterprises. Research on growth of small manufacturing enterprises in least developed countries reveals two types of small enterprises; a) geographically dispersed enterprises, mainly rural based small firms, whose growth prospects largely depend local agricultural activities and, b) clusters of small and micro enterprises mainly in urban and sub-urban areas (Nadvi, 1999).

In Kenya, small and micro manufacturing enterprises normally cluster together in *Jua Kali* sheds – Swahili for hot sun, since they operate in open air exposed to the sun – that could be used to create collective efficiency (Nadvi, 1999; Schmitz, 1995). The clusters facilitate gains in efficiency and flexibility, which individual producers can rarely attain. The cluster model is concerned with local growth processes, which arise from regional concentration of small and medium sized firms. It is therefore important to explore how collective efficiency among the Kenyan small manufacturing enterprises could facilitate their growth and transition to medium or larger enterprises. A policy consequence for this approach is to move away from targeting assistance to individual firms to providing support to cluster of enterprises (Schmitz, 1995).

Cappechi (1989) identified three growth mechanisms of small enterprises in such a cluster namely; a) imitation/complementarities, b) progressive subdivision of the production line and, c) specialization. Schmitz (1995) reasoned that collective efficiency could be facilitated by clustering through division of labour, specialization, specialized production. Further, he noted that emergence of suppliers, marketing agents, specialised services, and formation of consortia and associations among these small enterprises as derivatives of collective efficiency. SANCHU & KRI (2007) suggest that clustering approach should be used in planning and support for micro, small and medium manufacturing enterprises. There are two sets of benefits believed to arise from clustering of producers. First, the efficiency gains, in other words external economies that firms can reap simply by being located near each other (McCormick, 1998; Nadvi, 1996). Secondly, there are gains made by firms acting together to achieve some desired end (Nadvi, 1996; Schmitz, 1997; McCormick, 1998). Such joint action would enhance individual enterprises access to better markets; acquire better productive assets and be able to expand. The adoption of collective efficiency as a framework in planning and development of infrastructure and technological development thus becomes critically important for survival and growth of these small enterprises.

Most wood-based enterprises in Kenya trade in unprocessed logs and is dominated by sawmillers who sometimes combine the processing of timber with manufacturing of furniture and joinery production (EPZA, 2005). While success of the wood industry has been noted in developed and developing countries such as America, China and to some extent South Africa, the same cannot be said of the wood enterprises in Kenya. Our argument is that adoption of a collective efficiency framework in small enterprises clusters in Kenya, specifically the wood-based ones, may facilitate their growth and expansion. We thus posit;

H1: Collective efficiency positively influences the growth of wood enterprises.

RESEARCH METHODS

The Sample and Data Collection

Data was sourced from owners/managers of wood enterprises located in three districts; Uasin Gishu, Kericho and Nakuru in the Rift Valley province of Kenya. The three districts were selected purposively because Rift Valley province has 47% of Kenyan forests with the three districts having slightly more than 60 per cent of the small wood enterprises (Government of Kenya, 1999). Wood-based enterprises in the districts were sampled through multi-stage sampling using a sampling frame provided by the forestry department and snowball sampling for some micro enterprises whose sampling frame was non-existent. A sample of 284 wood enterprises was identified and the owners/managers contacted.

A survey instrument was prepared and used to collect data. Prior to commencement of the actual survey, the survey instrument was reviewed by peers for content validity and then pre-tested to assess its suitability. Further, we used test-retest method to examine the reliability and consistency of the instrument. The test-retest administered over a two-month period gave correlation coefficient of 0.931 indicating high reliability of the instrument. At the data collection stage, the data collected was verified using past records and repeat visits to ascertain the data's reliability and validity. Out of the 284 wood enterprises, 203 completed the survey instrument indicating an impressive 71.5% response rate

Measurement instruments: Collective efficiency was measured using a collective efficiency index while growth of small enterprises was measured using the growth index. The collective efficiency Index **(CEI)** variable was used to measure the extent to which the wood enterprises were engaged in collective efforts as evidenced by their backward and forward linkages, subcontracting, sharing of equipment, information sharing, networking and involvement in associations and partnerships. The growth index **(GI)** was computed by considering change in a firm's assets, number of customers, volume of raw materials used, production volume, sales within the local market, export sales, number of employees, and profitability. Both indices used a scale of zero to one expressed as a percentage.

Data Analysis

To stabilize and normalize the data, a logarithmic transformation of the collective efficiency and growth indices was necessary. Regression analysis of the transformed data was carried out.

Regressing log (GI) against log (CEI) yielded a significant slope ($\beta = 0.350$, $p < 0.001$) and intercept ($\alpha = 0.663$, $p < 0.001$) and R-square value of 0.123. Standardized residual plots of the transformed data indicated that a log-linear relationship was reasonable. The log-linear model obtained is

$$\log(GI) = 0.663 + 0.350 \log(CEI)$$

This leads to a non-linear exponential model;

$$GI = 1.941(CEI)^{0.350}$$

Therefore, support for the hypothesized relationship was found although our results suggest that the relationship is not linear.

DISCUSSION

This study sought to explore how collective efficiency would influence the growth of small enterprises in Kenya. Schmitz (1995) and McCormick (1999) have articulated the benefits of clustering including division of labour, specialization among small producers, emergency of specialized producers of services such as financial, technological, financial and auditing, skilled wage workers and formation of consortia and associations. They argue that such clusters facilitate collective efficiency by exploiting external economies and joint actions. In this study, we hypothesized collective efficiency would have a positive influence on growth of small enterprises. Our results suggested that collective efficiency has a non-linear positive effect on growth of small enterprises. These results support the arguments of McCormick (1999) and Schmitz (1995) demonstrate the importance of collective efficiency in the growth of small enterprises in Kenya.

McCormick (1999) posited that clustering has an unrealized potential to drive industrialization. McCormick further noted that many clusters were stuck at low levels of production and distribution. We concur and propose that the realization of this potential is possible through planning and development of infrastructure and technologies within the clusters to facilitate collective efficiency. Schmitz (1995) observed that clustering in developing countries was not an outcome of planned interventions but emerged spontaneously in an endogenous process. Development of Infrastructure and technology requires huge capital outlay presenting a major challenge for small enterprises. Consequently, intervention by social, political and economic institutions is required in order to facilitate development of requisite infrastructure and technology.

The use of a collective efficiency framework in planning and development of supportive infrastructure and technologies should be a continuous process that draws in various actors to stimulating the growth of small enterprises (Tewdwr, 2004). Such a framework for infrastructure planning and development should combine co-operative mechanisms with competitive rules of behaviour as well as encouraging differentiation and learning among small enterprises clusters (Ombura, 1997).

On the other hand, the collective efficiency-growth relationship model emerging urges caution in our expectations of the contribution of collective efficiency to growth and survival of small enterprises. Our results indicate that the benefits of joint action increasingly accrue most in the initial stages but in later stages incremental benefits die off. We speculate that at this point, small enterprises have developed sufficient internal capacity and capabilities. Small enterprises whose growth has reached the tipping point would therefore be expected to operate more

independently. The non-linear model also fits McCormick's (1999) characterization of clusters. Our findings indicate that clusters laying groundwork for industrialization and those in early stages of industrialization have higher increment gains as they leverage collective efficiency and joint action than those that have become part of the industrialization process. This suggests that planning and development of infrastructure geared towards growth of small enterprises should seek to leverage collective efficiency of the emerging clusters.

In spite of passionate appeal for the adoption of the collective efficiency framework, some critiques have questioned its efficacy in explaining the growth or stagnation of clusters. McCormick (1999) argued that collective efficiency itself does not explain why the clusters themselves do not advance and maybe insufficient in illuminating our understanding of cluster development. Schmitz (1995) points out that collective efficiency does not always imply collective capacity to compete, adapt and innovate since it does not lead to an island of unity and solidarity and that the nature of inter- and intra-firm relationships range from exploitative to strategic collaborations. Perhaps, this can be attributed to the fact that the clustering and collective efforts – especially in Kenya – have not been outcomes of deliberate and planned support structures for the small enterprises. Nevertheless, we do concur with SANCHU and KRI (2007) who propose that clustering approach should be adopted in support and planning for small manufacturing enterprises in Kenya. Essentially, there is need to facilitate rapid and sustainable industrial development by providing small manufacturing concerns supportive infrastructure, extending institutional support for technology up grade and proactive framework for catalyzing entrepreneurial and creative capabilities of human resources adequately catered for in the networking, systems approach, constructivism and collective efficiency paradigms in infrastructure, technology development and SMEs growth.

Conclusion

This study has several limitations. First, the use of wood-based enterprises limits the generalization of the findings to small manufacturing enterprises in other sectors. Secondly, the collective efficiency framework is not eminent in literature and practice of small manufacturing enterprises. Consequently, its low application may not be an adequate indicator of its efficacy in facilitating the growth of small enterprises. Finally, the measures of collective efficiency have not been adequately operationalized and delimited in the study. Further, research is needed to validate the measures within different sectors and regions. The limitations notwithstanding, this study prepares the ground for further empirical investigation of collective efficiency as a framework for developing supportive infrastructure for small manufacturing enterprises.

In conclusion, our results indicate that wood-based small enterprises operating in clusters and engaged in local external economies and joint actions benefit differently depending on the level of growth. More gain initially accrued with increased levels of collective efficiency before levelling off implying that at some point in an enterprise growth, increased joint actions may not necessarily lead optimal growth. For policy makers this is important since it calls for policies to supplement development of supportive infrastructure, institutions and structures that will enable small manufacturing enterprises gain from collective efficiency. For the owners/managers of the small manufacturing enterprises, they should know when their enterprises have outgrown the clusters and move on, may be to different locations after incremental benefits of the joint action have been fully exploited.

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