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The Status, Growth and Labor Productivity of Agro-Processing Firms in Tanzania: Opportunities and Limited Factors

By

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The Status, Growth and Labor Productivity of Agro-processing Firms in Tanzania: Opportunities and Limiting Factors

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ABSTRACT

Considering the dominance of agriculture in Tanzania, agro-processing stands out as a critical path for transformative industrialization. Tanzania has had several attempts at promoting industrialization. Nonetheless, the outcomes in terms of employment creation and wealth creation have fallen short of expectation. This paper looks at the role of agro-processing firms as avenues for industrialization in Tanzania; examining past performance in order to discern factors which have limited the growth of agro-processing firms and their contribution towards employment creation. Looking ahead, the paper scans the prevailing opportunities as the country positions to transform and become a middle level economy with the industrial sector tacking a leading role. The performance of 107 agro-processing firms in Mbeya and Morogoro regions was assessed using cross sectional and time series data. The findings reveal that 63.6% of the firms operated under capacity due to various factors, hence using primary resources and labour below their installed capacity. Understanding the underlying factors for such low performance is important as the leadership and the people of Tanzania position to play their respective roles in creating an industrial Tanzania that has socio-economic impacts, which will reach far and wide across all segments of the population.

1.0 INTRODUCTION

Agro-processing is important in developing countries for its role in generating employment and income, is also a base for industrialization of many countries. The developed and industrialized countries started by improving agriculture and agro-processing sector. Through this, many people are directly employed in firms that process agricultural products and in servicing processing machines (Nambbodii *et al.,* 2003; URT, 2008; Lazaro *et al.,* 2008; Da silva *et al.,* 2009). Moreover, the sub-sector generates backward employment linkages by creating markets for raw materials from agriculture (Hawassi, 2006; Khosla and Sharma, 2012; Eze *et al.,* 2013). At the same time forward employment linkages are generated as people are engaged in supplying processed products to the market. This is consistent with eeconomic development theory, which envisages that agrarian economies would promote productivity and production of the agriculture sector to become the backbone for the transformation of the economy from agricultural to industrialization through agro-processing activities (Balcha *eta el*., 2014).

Since independence the government of Tanzania has made various efforts for industrialization. This was done though development of agro-processing and other industries. Some of the earliest efforts involved establishing the National Milling cooperation (NMC) in 1968 to facilitate procurement, milling and storage of grains for internal and external markets. The NMC also provided laboratory facilities and other services for grain and flour analysis. All these were done to facilitate timely transportation and marketing of processed grain products (World Bank, 1980; Skarstein, 2005). In 1996, the government introduced the Basic Industries Strategy (BIS) as a roadmap towards industrialization.

The main achievements of the NMC included; procuring crops from farmers at reasonable fixed price and distributing the same to urban consumers at subsidized prices. The NMC however faced problems due to inefficiency in marketing and distribution which led to underperform in terms of sales and incentives to famers. Following economic liberalization in 1986, some firms were eventually sold to various buyers, local and external. Some of the processing facilities under the NMC were privatized while others were retained for storage of strategic grain reserves (Skarstein, 2005). The market share of the NMC dropped to less than five percent by 1983/1984 (Onsongo, 2002; ADBG, 2001 and PMO, 2001).

During the 1970s the government initiated vertical integration of various agricultural sub-sectors including; cashew nut, tea, coffee, sisal, grain, oil, beef and dairy by developing agro-processing firms for each commodity. Some of the achievements involve, establishment of milk processing firms in Mbeya, Tanga and Mara regions under DAFCO, cooking oil firms under GAPEX, textile mills in Dar-es-Salaam, Mwanza and Musoma, and meat packaging firms in Dar-es-Salaam. These firms performed relatively well up to the

end of the1970s after which their performance declined (ADBG, 2001 and Skarstein, 2005). A report by the World Bank (1980) indicated that poor performance was due to which used protectionism, by which the state subsidies public firms to sustain underperforming ones, which introduced inefficiency in resource allocation throughout the economy. Thus, policies that were rather hostile or at least ambiguous towards the private sector were introduced.

However, economic liberalization since the mid-1980s led to policy and institutional reforms, which resulted in growth of the private sector. A good example is milling firms, where more than 95% of the milling of grain was done by individual investors and private firms (PMO, 2001). The growth observed after 1980 reversed the negative or stagnant growth rates of agro-processing firms, which characterized the pre-reform period of the late 1970s up to the mid-1980s. From this period, positive growth was experienced and relatively high real Gross Domestic product (GDP) growth rates have been observed; recording on average 4.4% real GDP growth per annum compared to only 0.8% real GDP of pre-reform period (Shitundu, 2000 and Skarstein, 2005). However this growth was only realized by some firms, many others collapsed. Cooking oil processing firms and textiles are obtrusive examples.

Current policies and strategies clearly spell out the national desire to transform the economy in Tanzania to an industrial one by 2025 i.e. within the next nine years. This desire has been reiterated by both leading political parties during the previous national election; and the current government has expressed determination to ensure that the national vision is realized. As the leadership and the people of Tanzania strive to purse an industrialization trajectory, it is important to step back and learn from past experiences in order to discern factors that contributed to poor growth and underperformance of the industrial sector in the past so that remedial actions may be instituted right from the beginning of future plans. Currently the manufacturing sector accounts for 8% of the Gross Domestic Product (GDP), growing at 4%, coming in second after services and tourism, which rank higher (Mordor, 2015). This study presents findings from a study, which examined the performance of selected agro-processing firms in Mbeya and Morogoro regions, focusing on trends of firm growth and the productivity of labor, a key component of industrial growth.

2.0 METHODOLOGY

The study is descriptive in nature where survey research method was adopted; data were collected from 107 agro-processing firms in Mbeya and Morogoro regions to assess their performance in terms of growth based on various indicators and the productivity of labor. While secondary data for this study were collected over a longer period, primary field data were collected between May and June 2011. Time series data were collected from TRA, SIDO and Local government offices to assess the trend of growth in terms of the number of firms, employment creation and the value of output produced. Cross sectional data were

collected TRA, SIDO and District council to provide background information regarding the performance of firms and other relevant information. Tools for data collection included structured questionnaires, secondary sources and discussion with key informants. All these data were compiled, summarized and analyzed using Excel software and the Statistical Package for Social Sciences (SPSS) to compute various indicators of firm growth as reported in the next section. Comparison of performance indicators between the two regions and four districts was achieved using the t-test.

3.0 RESULTS

3.1 Type of Agro-processing firms

In East African countries, agro-processing firms account for more than 80% of manufacturing firms, but these firms are capable of processing only 28% of the agricultural produce (EAC, 2011). The remaining agricultural products are sold in raw form or lost. Such a low level of processing is due to an unreliable supply of good quality and an adequate quantity of raw materials that are too scattered to reach processing firms (EAC, UNIDO and FAO, 2011). Long distances between producing areas and the location of agro-processing firms, coupled with the poor state of transportation infrastructure also contributes to the small percentage of agricultural produce being processed. This study similarly established that the agro-processing sub-sector is dominated by small manufacturing firms, which are generally characterised by poor physical infrastructure, limited human capital endowment and unskilled labour with low levels of education. This finding is consistent with the reports of (UNIDO 2000, Shifer *et al.,* 2012, Daniel *et al.,* 2012 and Kipene *eta el.,* 2015). The large agro-related firms are few which are often labour-intensive, especially those for food processing (FAO, 2008). Very few of large agro-processing firms exist, and they focus on regional and international markets.

The results indicate that out of 860 firms registered in the four districts, Mbeya City had the highest proportion (41.7%) followed by Mbeya rural (23%), Kilombero (19.6%) and lowest in Morogoro urban (19.6%). Firms that processed maize flour dominated (59%) followed by rice mills (28.7%), oil extraction mills (7.6%), animal feed mills (2.2%), Bakeries (1.5%) and milk processing plants (1%). The distribution of firms varied across district depending on the availability of raw materials, electricity and the market. For example, maize mills were dominant in Mbeya city, rice mills in Kilombero, and bakeries in Morogoro municipality. Milk processing firms were only found in Mbeya city and Morogoro municipality. These findings indicated that Mbeya region, and Mbeya city in particular was more active as an agro-processing centre than Morogoro region, accommodating more than 50% of the milk plant, maize and animal feed mills and almost 50% of the oil extraction mills.

Table 1: Composition of firms according to products processed (%)

District	Firm						
	Milk (n=9; 1%)	**Oil extraction (n=65; 7.6%)**	**Animal feeds (n=19; 2.2%)**	**Maize flour (n=507 59%)**	**Rice (n=247 ; 28.7%)**	**Bakeries (n=13; 1.5%)**	**Total (n=860 ; 100%)**
Mbeya (c)	56	49.2	52.6	50.7	20.2	38.5	41.7
Mbeya (r)	0	33.8	31.6	22.5	22.7	0	23.0
Morogoro (m)	44	16.9	15.8	13.8	16.2	46.2	15.6
Kilombero	0	0	0	13.0	40.9	15.4	19.6
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**

C= City; r = Rural; m = Municipal.
[1]The figure in brackets (n) represents number of firms. Source: (Kipene 2014)

Out of 860 firms, constituting the population for this study, 107 were selected for data collection. Out of these, 45 (42%) were in Mbeya city, 23 (21.5%) were in Mbeya rural district, 30 (28.1%) were in Morogoro municipality and 9 (8.4%) were in Kilombero district. The findings indicated that only 14% were registered as private company firms, the majority (84%) were registered private non-company firms while 1.8% were not registered. In Morogoro municipality about a quarter of the firms were registered companies the other districts had less than 15% of the firms.

Table 2: Ownership of small agro-processing firms

Types of firms	District									
	Mbeya city		**Mbeya rural**		**Morogoro municipality**		**Kilombero**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Registered private Company	5	11.1	0	0	8	25.8	2	10.5	15	14.0
Registered private non Company	40	88.9	11	91.7	23	74.2	16	84.2	90	84.0
Un registered firms	0	0	1	2.2	0	0	1	5.3	2	1.8
Total	**45**	**100**	**12**	**100**	**31**	**100**	**19**	**100**	**107**	**100**

Source: (Kipene 2014)

3.2 Type of Technology Used

In relation to the technology use, the machines were classified as locally made, improved or modern. The machines are classified based on their ability to produce products that preserve the nutritional quality and structure. Locally made machines were operated manually, often performing on a single activity, such as rice hurling, maize grinding or

pressing oilseeds. Other processes such as cleaning sieving and packing were done manually. Meanwhile, improved machines performed two or more activities such as hulling, shelling and polishing rice; cleaning, milling and sieving in the case of maize. Modern machines are more complex, performing more activities than improved machines. Modern machines have sensors to detect defects during operations. They process products according to standards, which could be in the form of size, texture or moisture content. Improved machines are operated by electricity.

Table 3: Machinery used for processing agricultural products

	Machines currently used for processing		Machines required for processing	
	N	**%**	**N**	**%**
Locally made machines	8	8.5	1	1.2
Improved machines	68	72.3	28	33.7
Modern machines	18	19.1	54	65.1
Total	**94**	**100**	**83**	**100**

Source: (Kipene 2014)

According to firm managers who were interviewed for this study, most of the firms (72.3%) use improved machines (Table 3). A lower proportion (19.1%) use modern machines and only 8.5% used locally made machines. This findings is consistent with Tiisekwa *et al.,* (2005*)* and Hawassi, (2006) who reported that, over 90% of these firms are characterised by low technology, undertaking semi-processing of products that are sold in the local market. This is in contrast to Kenya's agro-industry which accounts for more than 30% of export values, and also constitutes 70% of the value of processed products coming from medium sized and large agro-processing firms (URT, 2012; FAO, 2008 and Wangwe, 2002).

Furthermore, Mbelle (2005) observed that, Tanzania lags behind in using modern technology to improve productivity and growth of firms. However, majority of firm managers (65.1%) indicated preference for modern machines because of efficiency and production of high quality of products. About one third (33.7%) of the managers preferred improved machined because of availability of and services, many local artisans and technicians can repair them. A small proportion (1.2%) of managers showed preference for locally made machines due to affordability and durability, but, as it was noted earlier, such machines produce lower quality products. There are many firm managers, who would like to convert to better performing machines but they are limited due to financial (credit & equity) or technical (spare parts and expertise for repair and maintenance) reasons. Hence, there is a need for private and government institutions to invest more in facilitating firms to adopt modern technology for growth of firms and development of the agro-processing sub-sector.

For firms to remain competitive, besides producing products of good quality that are well packaged, consumers require assurance that the products, especially food products have the approval or relevant government institutions. In Tanzania, the law requires processing firms and processed products that are sold in formal markets should meet standards that are set by the Tanzania Bureau of Standards (TBS) and the Tanzania Food and Drug Agency (TFDA) respectively. The TBS registers and grants the license for processing products while the TFDA regulates the standard of processed products. According to

results presented in Table 4, only 30.8% of the firms had approval from TBS and TFDA. The majority of firms (69.8%) operated without approval. Compliance for TBS and TFDA was highest in urban centers (Mbeya city and Morogoro municipality and lowest in Mbeya rural.

Table 4: Firms' Status in relation to TFDA and TBS approval (%)

Types of Approval	District				
	Mbeya city (n = 45)	**Mbeya rural (n= 23)**	**Morogoro municipality (n = 30)**	**Kilombero (n = 9)**	**Total (n = 107)**
TFDA and TBS approval	37.8	13	36.7	22.2	30.8
No TFDA and TBS approval	62.2	87	63.3	77.8	69.8
Total (%)	**100**	**100**	**100**	**100**	**100**

[2]The figure in brackets (n) represents number of firms : Source: (Kipene 2014)

Consistent with firms' low compliance to processing and quality standards, only 2.8% of the agro processing firms in the study sold their products in the export market, the proportion being higher in Morogoro region. This means 104 out of 107 forms sold in the local market. This however may not necessarily be viewed negatively since the local market can be used as a platform for preparing to enter the export market as the product quality and packaging is improved and tested in the local market in accordance to Porter's model of competitive advantage (Bakan and Dogan, 2012). In this study however, firm managers reported that low compliance was driven by a number of constraining factors they faced as reported in Table 5.

Table 5: Factors hindering compliance to TFDA and TBS standards

Reason	District				
	Mbeya city (n= 45)	**Mbeya rural** (n= 20)	**Morogoro municipality** (n = 19)	**Kilombero** (n = 23)	**Total** (n=107)
Knows importance but costly to implement	53.3	65.2	50	42.1	53.3
Knows importance but does not know how to get the service	28.9	21.7	20	42.1	28
Sub-total %	**82.2**	**87**	**70**	**84.2**	**81.3**
Does not know the importance of standards	17.8	13	30	15.8	18.7
Total %	**100**	**100**	**100**	**100**	**100**

[3]The figure in brackets (n) represents number of firms: Source: (Kipene 2014)

According to results in Table 5, only 18.7% of the firm managers did not know the importance of adhering to TBS and TFDA standards. District wise, the highest proportion

being in Morogoro municipality (30%). The remaining 81.3% of the managers knew the importance but 53.3% felt it was too costly to adhere to the standards, especially respondents from Mbeya rural district. The remaining 28% did not know where to get the services to facilitate implementation of the standards. These findings imply that the cost of compliance should be considered as an important element as the government strives to promote compliance to processing and quality standards in order to meet the demands of local consumers but also to facilitate producers to venture into external regional and global markets as a necessary step for firm growth. Such facilitation may include training, technical support as well as reducing the cost of compliance, which can be programmed to suit different categories of firm owners.

3.3 Processing Capacity Utilization

Before assessing the trends of firm growth and labor productivity, the study examined the state of capacity utilization and the frequency of operation over a five year period up to the time of data collection in the year 2011. Results in Table 6 show the average processing capacities of firms in the interval of 2006-2011. Bakeries had the highest average capacity utilization rate, but it was only 45% of their installed processing capacity per year. This was followed by rice mills which utilized only 35% of their installed capacity. Cooking oil and flour firms also utilized 29% of their installed capacity. Other results including milk and animal feed processing firms were operated under capacity by 14.7% and 4.1% respectively. Respondents mentioned lack of raw-materials and limited markets for processed products to be the leading causes of capacity underutilization.

Table 6: Processing capacity and capacity utilization of small agro-processing firms

Types of firms	Average installed processing capacity (Tones)/year	Actual capacity utilization (Tones)/year	Percentage of capacity utilization (Tones)/year
Animal feeds	3220	131	4.1
Milk	1680	241	14.7
Bakeries	196.4	88.9	45
Flour	1850	533	29
Rice	2881	1005	35
Cooking oil	1055	308	29
Average for all firms	**10882.4**	**2306.9**	**21.2**

Source: (Kipene 2014)

Table 7: Operation status of small agro- processing firms

Operation status	District				
	Mbeya city (n = 45)	**Mbeya rural (n = 23)**	**Morogoro municipal (n = 30)**	**Kilombero (n = 9)**	**Total (n=107)**
Frequently operated	31.1	34.8	46.7	33.3	36.4
Infrequently operated	68.9	65.2	53.3	66.7	63.6
Total	**100**	**100**	**100**	**8.5**	**100**

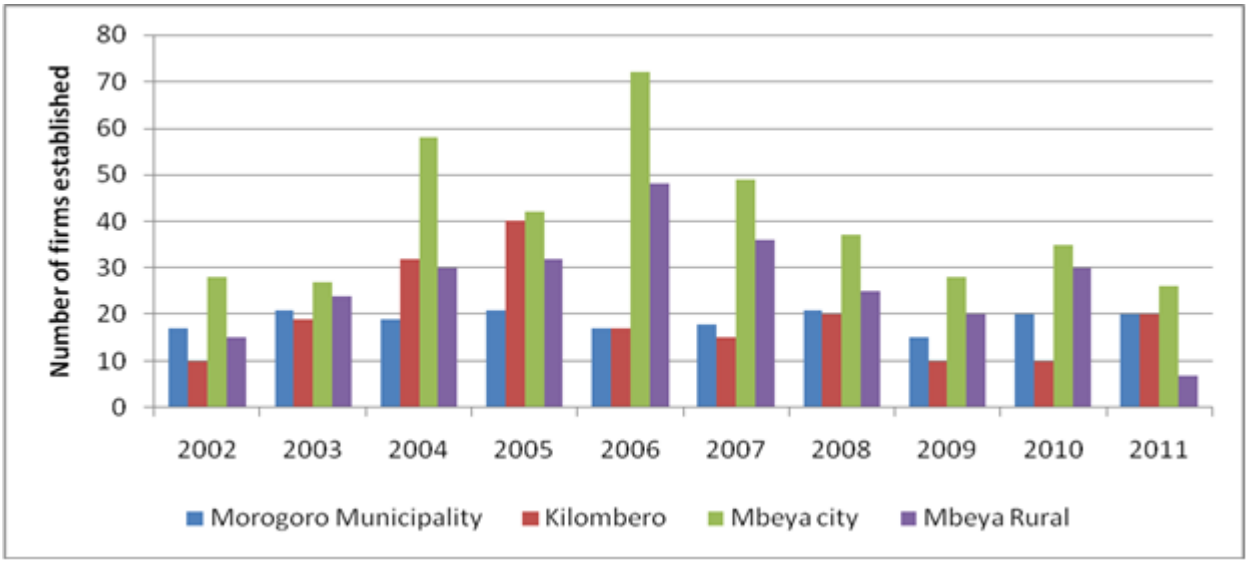
[4]The figure in brackets represents number of firms: Source: (Kipene 2014)

In the case of operation status, managers and owners reported that only 36.4% of firms operated throughout the study interval (Table 7). The remaining 68 (63.6%) operated three to five times per week due to low availability of raw-materials and electricity, leading to capacity under-utilization. The proportion of firms operating under capacity within the whole sample was higher in Mbeya city 31 (29%) and lowest was in Kilombero district 6 (5.6%) but when compared within districts, the proportion of firms with low capacity utilization was highest in Mbeya city, which also had a higher proportion (69%) and the lowest was Morogoro municipality 16 (53%). Firms that operated throughout the period from 2002 to 2011 had alternative source of electricity. They also had the capability to buy and store raw-materials for processing during scarcity. Unreliable availability of raw-materials accelerated the collapse of many agro-processing firms established during the interval to collapse as presented in the next section.

3.4 Trend of Firm Growth

The number of new firms that are established and those which collapse is an important indicator that is monitored to gauge the performance of the industrial sector. The numbers show in Figure 1 was increasing trend up to 2006. Thereafter there has been a consistent decline as shown in Figure 1. The trend of newly established firms indicates a general increasing trend from 2002 up to 2006, followed by a declining trend. Mbeya city and Mbeya rual had a higher number of firms that were established per year, followed by Kilombero and lowest in Morogoro municipality. As presented in Table 8, out of 1050 firms that were established between 2002 and 2011, 38.2% were located in Mbeya city where on average about 40 new firms were established per annum. Mbeya rural accounted for 25.4% of the new firms with an average of 27 per annum. Morogoro and Kilombero accounted for about 18% of the new firms, with 19 firms per annum.

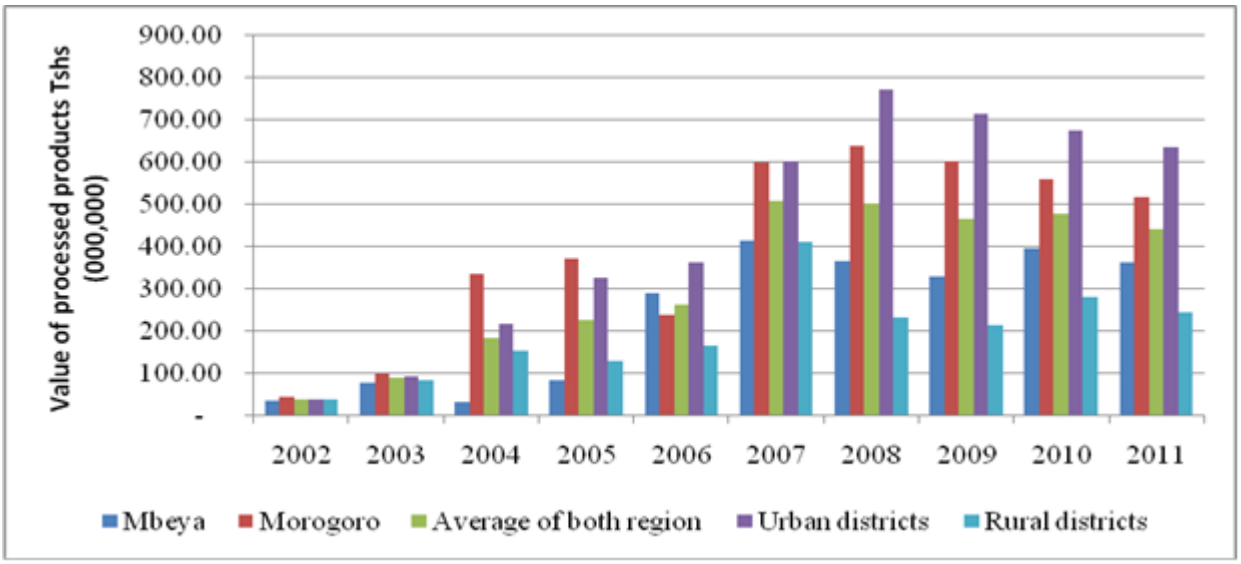
Figure 1: Number of new established agro-processing firms per year



Source: (Kipene 2014)

The growth of firms was also assessed in terms of the average value of products assessed per annum, comparing production from Mbeya and Morogoro regions as well as between rural and urban districts. The results in figure 2 show that the value increased up to 2008, after which a declining trend is observed. Moreover, firms in Morogoro reflected a higher value of processed products per year compared to Mbeya, and as expected urban districts processed products of higher value than rural districts. The better performance of Morogoro region in this respect could be due to the fact that it is nearer to Dar-es-Salaam, which is the source of most imported inputs and a major market for processed products.

Figure 2: Average value of product per year according to location



Source: (Kipene 2014)

Table 8: Persistence of small agro-processing firms 2002-2011

District	Total New firms established (2002/11)	Percentage of new firms established (N=1050)	Average No. firms established per annum	Number of firms survived by 2011	Percent of surviving firms per district	Overall (%) of survived firms by 2011 (N=860)
Morogoro Municipal	189	18	19	134	70.9	15.6
Kilombero	193	18.4	19	169	87.6	19.7
Mbeya city	401	38.2	40	359	89.5	41.7
Mbeya Rural	267	25.4	27	198	74.2	23
Overall number	**1050**	100	**105**	**860**	81.9	100

[5]The figure in brackets represents number of firms: Source: (Kipene 2014)

Results in Table 8 indicate that Mbeya city had higher propopotion of surviving firms (89.5%) followed by Kilombero (89.5%), Mbeya rural (74.2%) and lowest in Morogoro municipality (70.9%). For the whole sample, on average 81.9% of the 1050 firms established and registered in the study area during that interval survived. As expected, Mbeya city accounted for most of the surviving firms (41.7%) and Morogoro municipality had the lowest (15.6%). However, Mbeya city also had the highest proportion of firms that collapsed as shown in Table 9. For the whole sample about 18.1% of the new firms during the study interval collapsed. As reported earlier (Table 7) only 36.4% of the surviving firms operated frequently. The remaining 63.6% operated only three to five times per week due to various constraints. related to availability of raw materials, energy among other things.

Table 9: Number of collapsed small agro-processing firms 2002-2011

District	Total number new firms	Percent new firms (N=1050)	Number new firms per annum	Total No. collapsed firms	Percent collapsed firms per district	Proportion of collapsed firms (N=190)	No. firms collapsed per annum
Morogoro Municipality	189	18	19	55	29.1	28.9	6
Kilombero	193	18.4	19	24	12.4	12.6	2
Mbeya city	401	38.2	40	42	10.5	22.1	4
Mbeya Rural	267	25.4	27	69	25.8	36.3	7
Overall Sample	**1050**	**100**	**105**	**190**	**18.1**	**100**	**19**

Source: (Kipene 2014)

Table 10: Reasons for collapse of small agro-processing firms

Types of firms	Number Respondents per Firm Type	Percent Respondents per Firm type	Reasons for Collapse of Firms Within Category (%)					
			Poor Market for Products	Poor Access to capital	Human capital	Poor technology	Poor availability raw-materials	High Energy cost
Rice mills	114	40.4	14	19.3	1.8	4.4	49.1	11.4
Maize flour mills	72	25.5	11.1	33.3	0	1.4	44.4	9.7
Animal feeds	6	2.1	16.7	16.7	0	0	33.3	33.3
Milk processing	12	4.3	8.3	8.3	0	33.3	41.7	8.3
Overall Sample Total (Number)	282	100	11 (31)	24 (68)	4 (10)	5 (13)	46 (131)	10 (29)

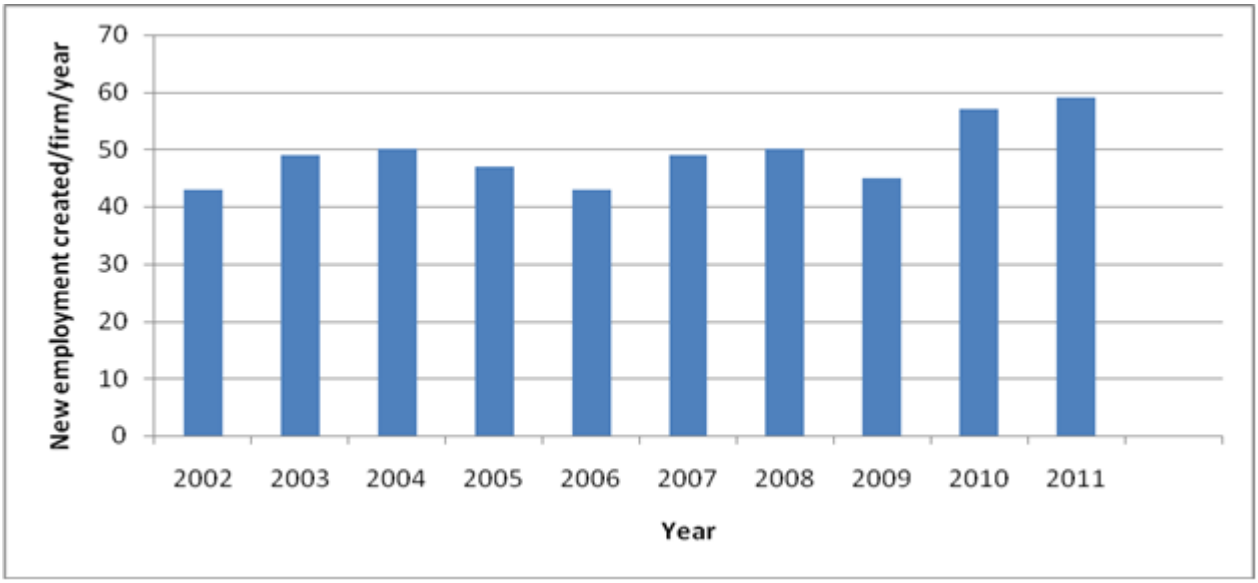
[6]The figure in brackets represents number of firms: Source: (Kipene 2014)

Firm managers were asked for reasons that lead to the collapse of firms. Poor availability of raw materials was the most prominent, mentioned by 46% of the firm managers (Table 10). This was followed by poor access to capital (24%), poor market for products (11%), high energy cost (10%). Poor technology and low quality of human capital was mentioned by 5% and 4% of the respondents respectively.

3.5 Employment Creation trends and labor productivity

The most significant contribution of firms to poverty reduction is linked to wages paid to employees. Hence monitoring the trend of jobs created by existing and newly established firms is important. Figure 3 shows that the trend for the average of new jobs created per firm per year mirrored that of the number of firms presented earlier (Table 1). These findings show that during the study interval, the firms under study created 492 new jobs, being 49 per firm per year. Bakeries had the highest annual average (17), followed by rice mills (11), milk processing firms (9), sunflower mills (6), animal feed mills (4) and maize mills (3). Following the decline in job creation in 2009, which was probably attributed to poor weather, the trend in job creation shows an increasing trend after 2010, which should be nurtured an improved.

Figure 3: New employees hired per firm: 2002 - 2011



Source: (Kipene 2014)

Table 11: Number of new jobs created per year by type and by sex

Item	Number of New Jobs			
	Male workers	Female Workers	Permanent Workers	Temporary Workers
Total No. new workers	229	473	254	448
New workers/Year	23	47	25	44
% New workers/Year	32.6	67.4	36.2	63.8

Source: (Kipene 2014)

Table 12: Percent of new workers by level of education

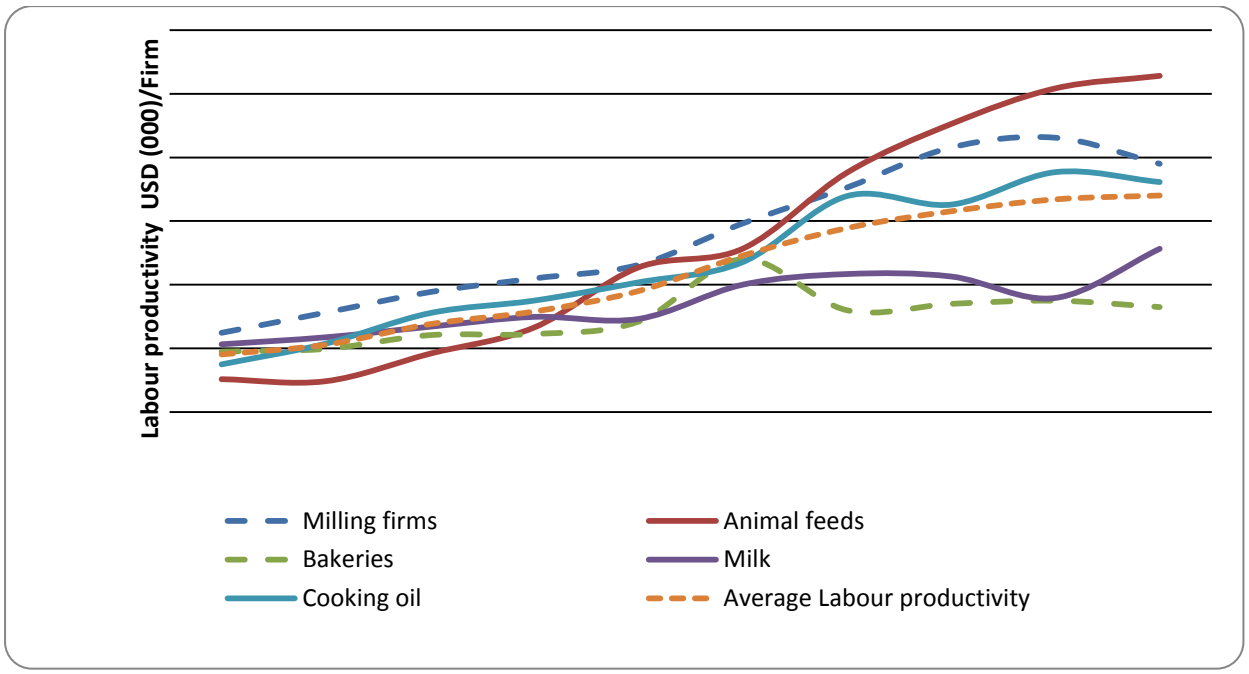
Region (n)	Below standard 7 (11)	Standard 7 (362)	Form 4 (98)	Workers with Form 6 and above (21)	Total (492)
Mbeya	1.4	30.3	12.8	3.1	47.6
Morogoro	0.8	43.3	7.1	1.2	52.4
Total	**2.2**	**73.6**	**19.9**	**4.3**	**100**

Source: (Kipene 2014)

However, most of the new jobs were temporary (63.8%) compared to 36.2% permanent jobs, and most of the new employees were female (67.4%) implying that most of the new employees were female. Majority (75.8%) of the new workers also had standard seven level of education or below. Form four graduates accounted for about 20% and less than 5% had form six education or above. Moreover, about 80% of the new workers were unskilled and 70% had only received on the job training. It has been observed that the type of jobs by most of the firms, being temporary and employing standard seven leavers or below are prone to low wages and high risks of job loss since many jobs are seasonal,

therefore contributing only seasonally to poverty reduction. More than 50% of the new jobs were created between June and November, considering with the harvest season.

Figure 4: Labour productivity trend in relation to types of firms



Source: (Kipene 2014)

The managers complained that many of the workers lacked processing skills and there are few institutions even under the vocational Education and Training Authority (VETA), which provide the right skills for each firm. For this reason most of the firms provided on the job training. The productivity of a firm's labor reflects its efficiency and the level of investment. The ILO, (2011) has indicated that labor productivity in Tanzania is very low, growing at on 3.1% per annum, compared to 5.32% for other African countries. Results from this study (Figure 4) show that the productivity of labor (expressed as USD/Labour) showed an increasing trend up to 2008, but reflect a decreasing rate from 2008, especially for milk firms and bakeries.

Table 13: The effect of human capital factors in labour productivity

(2002-2011)

Variable	Expected Sign	Coefficient	t	P>|t|	VIF
Constant	(+)	7.338**	2.237	0.028	
Location of a firm (1 if urban)	(+)	0.089	1.087	0.280	1.152
Manager's educ. above F4	(+)	0.076	0.927	0.356	1.185
Managers trained on agro-processing	(+)	0.173**	2.014	0.047	1.271
Number workers with experience< 1yr	(-)	0.012	0.120	0.905	1.829
Number workers with experience > 1 yr	(+)	0.457***	4.758	0.000	1.570
Average wage per worker	(+)	0.042	0.505	0.615	1.194
Number workers educ <. F4	(-)	-0.282***	-2.795	0.006	1.737
Number workers educ > F4.	(+)	0.243***	2.828	0.006	1.277

Ratio of capital added per worker	(+)	0.275***	3.089	0.003	1.378
Manager's experience above 1 yr	(+)	0.119	1.469	0.145	1.129
Dummy (1 if firm manager male)	(+)	0.032	0.394	0.694	1.140
Number of observation	=	105			
R2 = Adjusted R^2	=	0.383			
F-value	=	5.96			
Prob > F	=	0.000			
Model VIF	=	1.4			
Condition Index	=	3.71			
Durbin-Watson statistic	=	2.121			

* Significant at α= 0.1; ** significance at at α= 0.05 and *** significant at α=0.01

Source: (Kipene 2014)

Table 14: Factors affecting growth of small agro-processing firms (2011-2012)

Explanatory variables	Expected Sign	Coefficient	T test	P>(t)
Constant	(+/-)	-5.915***	5.307	0.000
Labor productivity	(+)	0.522***	8.811	0.000
Value of raw-materials	(+)	0.308***	5.221	0.000
Number of years in operation	(+)	0.313***	5.264	0.000
Capital invested per firm	(+)	0.011	0.190	0.850
Cost of energy per firm	(-)	-0.167***	-2.751	0.007
Firm operated infrequently (weekly)	(-)	-0.006	-0..100	0.921
Firm was not managed by owner	(+)	0.062	1.098	0.275
N		106		
R^2 Adjusted		0.68		
Compute F-values		33.794***		
Durbin-Watson		2.589		
VIF		1.13		
Condition Index		2.3		

Source: (Kipene 2014)

Results from regression analysis (Table 13) to assess the effect of human capital on labor productivity showed that the manager being trained in agro processing, the number of workers with experience above one year, the number of workers with education above form four and the manager having experience of one year or more all had a positive significant effect on the productivity of labor. However the number of workers with education at form four or below had a significant negative effect on labor productivity. The number of workers with less than one year of experience also had a negative effect on labor productivity that was not significant. Results in Table 14 show that the productivity of labor had a positive significant effect on the growth of agro processing firms in the study area during the study period (2002 – 2011). Other factors that contributed significantly to the growth process included the value of raw materials, the number of years a firm had been in operation, and

the value of capital invested. However firms that operated infrequently due to lack of electricity or raw materials had a significant negative effect on growth of the sub-sector. All the factors in the model (Table 14) accounted for 68% of the variation in the growth of agro processing firms during the study period. The results also show that while Mbeya region had more new firms, the firms in Morogoro grew faster than those in Mbeya in terms of value of goods produced, implying that Morogoro produced products of higher value relative to Mbeya.

4.0 CONCLUSION AND RECOMMENDATION

This study evaluated the growth of small agro-processing firms in relation to labour productivity and employment creation in Mbeya and Morogoro regions of Tanzania. The study pursued four objectives; (i) to establish the trend of establishing and collapsing small agro-processing firms in the study area, (ii) to analyze the performance of small agro-processing firms in relation to employment creation and labour productivity, (iv) to determine factors which have accounted for variation in the growth of small agro-processing firms.

The trends of established and collapsed small agro-processing firms in Mbeya and Morogoro was analysed descriptively and presented in graphics and tabular forms. Mbeya city and Mbeya rural district had a higher number of newly established firms per year compared to Morogoro municipality and Kilombero district. New firms were dominated by cereal mills for maize flour and rice products. Meanwhile Mbeya rural and Morogoro municipality had a higher number of firms that collapsed than Mbeya city and Kilombero district. Reasons for firms to collapse were given as; inadequate and untimely raw-materials, low access to capital, limited use of modern technologies by firms, poor access to markets for processed products, high cost and low access to energy (including fuel and electricity), poor road infrastructures for transportation and limited access to water.

The performance of small agro-processing firms in terms of employment creation was also presented in graphics and tabular forms. The majority of firms recruited workers with standard seven and below who represented 70% of all workers in the sample and about 67.4% of workers were female. It was also observed that small agro-processing firm employ more temporarily workers than permanent workers to mitigate against losses that could occur when raw-materials become scarce or during prolonged power outage.

Labour productivity as an indicator of firm's performance was analysed descriptively and presented in graphics. Factors affecting labour productivity were assessed using a Cobb-Douglas regression model. The trend of labour productivity fluctuated throughout the study interval from 2002 to 2011due to combined factors including human and physical capital factors. Milling firms showed progressive increase in labour productivity from 2002 up to 2010. Milk processing and bakery firms indicated lower labour productivity than other types of firms. The study established that, human capital factors that include managers training,

workers education and the number of workers with experience contribute significantly to improving labour productivity improvement.

The growth of small agro-processing firms was expressed as the value of processed products per year. Based on these criteria, the growth of small agro-processing firms has continued to increase at a decreasing rate throughout the study period. This has been attributed to limited availability and high cost of raw-materials, followed by inadequate working capital, unreliable market of processed products, and low level of technology. Other factors include workers with a low level of education and training in agro-processing. All these, contribute to low growth of firms, with subsequent low potential for creating jobs.

These factors continue to affect current firms even today, as the nation is positioning to accelerate the journey towards an industrial Tanzania. This paper has highlighted factors that are important to consider in facilitating agro-processing firms as part of the industrialization process. On the basis of these findings it is therefore recommended that the government and other actors should support the production of adequate and quality raw materials. These have been found to account for about 30% of the variation in the growth of firms. Improving the productivity of labour is also important since it accounted for more than 50% in the variation of firm growth. Furthermore improving the availability of capital to facilitate acquisition of technology for producing quality products that adhere to local and global standards should be emphasized in future so that most of the emerging local firms eventfully grow to serve both the local as well as regional and global markets

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