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# The Prospects of SMEs in Promoting Sunflower Oil Processing Activities in Dodoma Urban, Tanzania

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***Abstract:*** *Enterprises dealing with sunflower oilseeds processing prospects in the creation of backward and forward linkages can be examined by their ability to offer a reliable market for farm produce while also fulfilling demand for cooking oils by the local population. The philosophy of this paper by design is pragmatic which accommodates both quantitative and qualitative design. A survey method with a cross-sectional design was used to collect data from 50 owners-managers of enterprises processing sunflower oilseeds located around Dodoma city's hot spots, which are Chamwino, Kikuyu, and Majengo. Under cluster, disproportional, and purposive sampling, a sample size of 50 respondents was selected to represent the owner-managers of the enterprises. Meanwhile, key informants from organizations like Small Industries Development Organization (SIDO), Tanzania Private Sector Foundation (TPSF), the City Council, Tanzania Food and Drugs Authority (TFDA), and leadership from the enterprise association were also included in the study. Through the data analysis instrument which is the Statistical Package for Social Science (SPSS), it was revealed that the backward linkage created by the enterprises is weak with respect to the constant availability of potential raw materials, sunflower seeds in particular, subsequently amounting to capacity underutilization of infrastructures which are already being set up. On the other hand, the findings report that the forward linkage created by the enterprises is weak in the sense that sunflower oil output is far less than the demand for cooking oil in the local market. The essence is that enterprises dealing with processing sunflower oilseeds are producing and supplying sunflower cooking oil in a less competitive environment in terms of quantity, quality, and price. According to the study, the ministry of agriculture, in collaboration with counterpart sector ministries such as trade, infrastructure, and industries, should harmonize existing sector policies in order to have all relevant sectors and stakeholders prioritize and allocate resources, i.e., financial, human, and material resources, in a coordinated response to address existing shortfalls in the realization of backward and forward linkages.*

**Keywords:** Backward and forward linkages, Capacity utilization, Competitive advantages

## 1.0 Background of the study

The dilemma of whether agro-processing firms in the world have contributed towards improving the livelihoods of people or not has attracted the attention of many scholars. Currently, it is well understood that agro processing firms stand in the position of creating forward and backward linkages in the economy along the existing value chain. The United Nations (UN, 2014) and Ekblom (2016) confirm that agro-processing firms increase incomes, improve living standards, and create jobs. Experience shows that small and medium enterprises (SMEs) in Ukraine, Bulgaria, Poland, Romania, and Australia have benefited from processing sunflower oil seeds in terms of generating income, employment, and food security for many people in these countries. The forward and backward linkages have pushed the livelihoods of most small and medium enterprises through the exchange of goods and services (Kipene, Lazaro & Isinika 2015; Ekblom 2016; Isinika & Kipene, 2016).

According to the Food and Agriculture Organization (FAO, 2016), Africa's agro-processing sectors have been growing fastly, as manifested by an increase in entrepreneurship activities. Furthermore, Adam Smith International (2014), the Ministry of Industries and Trade (MITI, 2016), and Augustino (2017) agreed that entrepreneurship activities on the continent constitute SMEs, which employ the vast majority of people. It is highly anticipated that the mushrooming of SMEs can address the question of forward and backward linkages to the commodity sector and offer the most viable channel towards achieving sustainable industrialization in Africa. This is because it has been noticed that practicing linkages between the agricultural and industrial sectors opens the window for the growth of job opportunities, while establishing a strong foundation for sustained growth (Ampadu-Ameyaw, R. & Omari, R. 2015).

Food imports are rising rapidly in Africa. Annual overall growth in food imports for the continent was 3.4% from 1999 to 2013, faster than the rate of population growth (Reardon et al. 2013; Byerlee and Haggblade 2013; Tschirley et al. 2015b). Optimism about agribusiness opportunities on the continent and concern about its ability to feed itself in an increasingly globalized economy are simultaneously widespread (Dorosh, P.A. and Babu, S.C. 2017). On the

other hand, edible oils encapsulate both optimism and concern. Demand for these oils is rising rapidly on the continent, at about 2% per capita per year from 1999 to 2013, and they can be produced from a wide range of crops, many of which are grown in Africa. The agribusiness potential is thus clear. Yet at the same time, edible oil imports have been increasing at about 10% per year, and accounted for 34% of the growth in food imports in Africa from 1999 to 2013, the highest share of any food category. Palm oil accounts for about 65% of all edible oil imports to the continent. Nearly all these imports come from two countries, Malaysia and Indonesia (45% and 37%) respectively (UN, 2014). Competing with these two massive producers of low-cost palm oil is a tall order for local firms depending on domestic raw material supplies, often primarily from large numbers of dispersed smallholder farmers, in under-developed supply chains. (ibid.).

In light of the potential of SMEs, efforts have been made by public and private agencies to support the growth and development of SMEs. For instance, between 2018 and 2020, 32% of women and 54% of youths were trained across Kenya, Tanzania, and Uganda on how to establish and run SMEs. The nature of training pertains to aspects like acquiring technological adaptation to climate change, innovations towards improving sunflower oil production, and the use of yield-enhancing technologies such as planting high-yield sunflower seeds. As a result, about 237,250 smallholder farmers improved income and food security (Owoo & Quayefio, 2018). Despite the efforts, in general terms, the adoption of improved crop varieties among smallholder farmers in sub-Saharan Africa (SSA) remains low (Hyder & Bhargava, 2016). In one way or another, there could be disruption in the supply of sunflower seeds to enterprises engaged in producing sunflower cooking oil, affecting negatively not only backward linkages but also forward linkages in the economy.

Furthermore, in Tanzania, like in other countries in Africa, sunflower oil processing activities are one of the emerging agro-processing industries with great potential to provide nutritious and cholesterol-free cooking oil in both rural and urban areas (Ekblom, 2016, and Isinika, 2021). According to the Tanzania Private Sector Forum (2017), agro processing firms generate higher added value for agricultural commodities by converting raw materials from agricultural produce into intermediate inputs or readily consumed products. The Agro sector in Tanzania contributes about 29.1% of Tanzania's Gross Domestic Product (GDP) and is the main source of raw materials, food and foreign exchange. Despite having a favourable agricultural climate, Tanzania is still lagging in processing activities and as a result, the country is highly dependent on imported processed goods (Augustino I. 2017).

The Bank of Tanzania (BoT, 2015) asserted that Tanzania's demand for edible oil was estimated at 570,000t per annum in 2018, and is projected to grow to 700,000t by 2030. Local production only meets about 30–45 per cent of the demand. Thus, the country imports nearly 320,000t annually, worth over US$83 million. Imports of crude edible oil have been increasing annually, reaching 500,000 in 2015. Crude palm oil dominates the volume of imports, accounting for about 44 per cent of total imports during 2015, mostly coming from Singapore and Indonesia. Other imports of edible oil include olive oil, vegetable oil and sesame. Tanzania also imports a small amount of sunflower oil, accounting for 1.7% of total imports in 2015 (BoT, 2017).

The Government of Tanzania (GoT) is interested in the growth of the sunflower sector for at least three reasons. First, as a means to reduce the country's food import bill. Though production of sunflower oil and the share of sunflower oil in total edible oil consumption have grown rapidly over the past decade, the country still spends $120 million annually on edible oil imports. These imports account for about 20% of the country's total food import bill. Rising incomes mean that, unless local production continues to rise strongly, this import gap will not be closed (FAO, 2018). Second, the government wishes to promote industrialization, and sees oilseed processing as one important contributor to that goal. Promoting the competitiveness of the local processing industry is thus a key goal, as reflected in the country's Sunflower Sector Development Strategy (United Republic of Tanzania, 2016). Finally, the government remains committed to eliminating poverty. Since sunflower is produced almost entirely by smallholder farmers, increasing farm productivity and linking farmers to industrial demand is seen as an important avenue towards reaching that poverty reduction goal.

This study intends to examine the prospect of SMEs in promoting sunflower processing activities, particularly forward linkage in the sense that SMEs can meet customer satisfaction in different respects (availability, accessibility, and preference). On the other hand, backward linkages in the sense that to what extent they can offer market to farmers engaged in producing sunflower seeds in the study area.

## 2.0 Theoretical Review

Competitive advantage refers to factors that enable a company to produce goods or services more efficiently or affordably than competitors (Barney, 1991). These factors allow the productive entity to generate more sales or

superior margins compared to its market rivals (Wijetunge, 2016). Therefore, competitive advantages are attributed to a variety of factors, including cost structure, branding, the quality of product offerings, the distribution network, intellectual property, and customer service (Ramaswami et al., 2006). The theory was pioneered by Michael Porter in the 1980s. The competitive advantage theory suggests that businesses should pursue policies that create high-quality goods to sell at high prices in the market. When an organization acquires or develops an attribute or combination of attributes that allows it to outperform its competitors, it gains a competitive advantage. These attributes can include access to natural resources. The competitive advantage results from an organization's ability to perform the required activities at a collectively lower cost than rivals, or perform some activities in unique ways that create buyer value and hence allow the organizations to command a premium price (Mahmood and Hanafi, 2013). The theory makes the following assumptions: (i) Competitive advantage is what makes an entity's products or services more desirable to customers than those of any other rival. (ii) Competitive advantages can be broken down into comparative advantages and differential advantages. (iii) Comparative advantage is a company's ability to produce something more efficiently than a rival, which leads to greater profit margins. (iv) A differential advantage is when a company's products are seen as both unique and of higher quality, relative to those of a competitor. A number of avenues can be considered when it comes to appraising the strengths and weaknesses of the theory. With regard to the strengths of the theory, (i) once the resource base is well identified, effective utilization can take effect; (ii) it does not allow room for idle resources. (iii) economies of scale can be realized with competitive advantages; and, in terms of weaknesses, (i) competitive advantages can be jeopardized by unfriendly government policy; (iii) limited management and technical skills; and (iii) negative attitudes among employees at all levels of an enterprise, i.e., lower, middle, and top. This theory is being employed in this study out of the quest to portray a theoretical view of what it takes to effect forward and backward linkages as expected to be realized by enterprises processing sunflower cooking oil in the study area.

## 3.0 Research Methodology

The study was conducted in Kikuyu, Chamwino, and Majengo wards in the Dodoma region. The choice of this area was due to the fact these locations represent hot spots where enterprises processing sunflower oil can be found in Dodoma urban in which backward-forward linkages can be well investigated. The methods used so as to ensure triangulation of data in order to achieve validity and reliability of data were Observation Guides, Interview Schedules, Documentary Review, and Questionnaires as tools were employed. The school of thought used in this study is pragmatic, which helped with the selection of the study design. Because it comprises both qualitative and quantitative methods. The selected design used was the cross-sectional design. The reason for selecting this type of design was due to its role, which allows the use of both qualitative and quantitative approaches (Multiple Approach of data collection). The use of these two approaches helps to triangulate data from different sources. The sampling unit of the population were the owners of the SMEs that were sunflower producers. Beyond the identification of the unit of analysis, key informants were identified and became respondents during the interview. The key informants comprised officials from Tanzania's Private Sector Forum (TPSF), City council officials, agricultural extension officers, Small Industries Development Organization (SIDO), and Tanzania Food and Drugs Authority (TFDA).

Therefore, the study used a sample size of 50 respondents. The sample size of the respondents was obtained through purposive sampling. Purposive sampling was used to select respondents based on the researcher's prior judgment and determination of who to include in the sample. This sampling method helped to triangulate information from the field (Taherdoost, 2017). The study assessed SMEs' perceptions of forward and backward linkages in sunflower agribusiness using a five-point Likert scale (1= Strongly Disagree, 2= Disagree, 3=Neutral, 4=Strongly Agree, 5= Agree) and developed a Mean Index (x) that indicated the magnitude of the actual percentages (%) of the measured attributes. In this study, qualitative data were analyzed by coding and organizing them into themes and concepts of manageable units, while quantitative data were analyzed by the Statistical Package for Social Scientists (SPSS. 23), resulting in a descriptive and quantitative analysis. Quantitative data were presented in the form of tables and figures to show the relationship between the roles of involving stakeholders in addressing forward and backward linkages in sunflower agribusiness in the Dodoma Region.

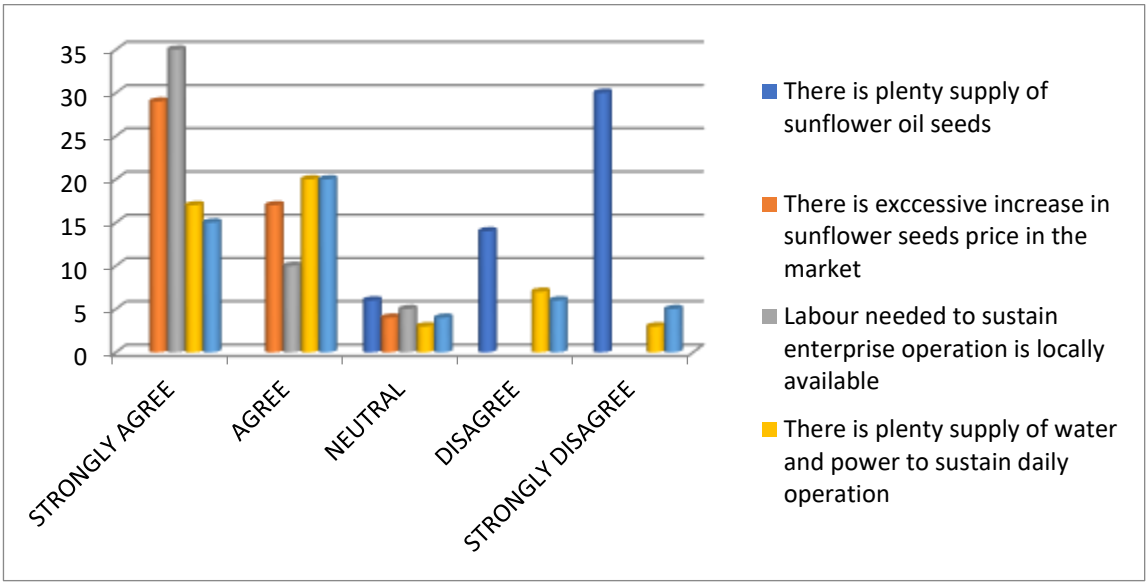
## 4.0 Findings and Discussion

### 4.1 Supply status of inputs needed by sunflower oil processing enterprises

The backward linkages created by the enterprises entail all inputs which are necessary for production of sunflower cooking oil and are to be supplied. They include sunflower seeds, labour, power, water and capital to cover running costs. The study's intent was to find out the level of significance of each input in terms of its availability and accessibility. As indicated in figure 1 below, 35 respondents strongly agree with the statement that labour needed to sustain enterprise operations is locally available. However, respondents indicate opposite views with regard to the

other factors of production, like sunflower seeds' availability and accessibility. In this context, 30 respondents strongly disagreed with the statement that there is a plentiful supply of sunflower seeds. The study also calculated that Mean Index (x) =68.5% of the respondents reported labour needed to sustain enterprise operations is locally available, but Mean Index (x) =36.5% of the respondents disagreed strongly that there is plenty of supply of sunflower oil seeds. The implication is that the two factors of production machines and labour are subject to underutilization due to the short supply of raw materials, which is sunflower seeds.

**Figure 1: Supply status of inputs needed by sunflower oil processing enterprises**




**Source:** Researchers Survey, 2020

In general, the expectation of making sunflower oil processing enterprises to provide a market for sunflower seeds has failed to be fulfilled, implying that backward linkages have not taken effect. This finding collaborates with a previously conducted study by Mirani, A. and Memon, M. (2015), which reported that small-scale farmers engaging in sunflower production fail to produce enough sunflower seeds to meet demand by sunflower oil processing enterprises, ultimately affecting negatively the output level of sunflower cooking oil. Both studies conducted by Rahu, M., Bhatti, M., & Shaikh, U. (2015) and Nkwabi, (2019) complimented on findings of the same nature by presenting challenges facing the sunflower oil processing subsector, including climatic conditions and pests, which affect much of the production of sunflower oil seeds. On the other hand, it reduces the capacity of the processing industry to work effectively. In this case, backward linkages have become a dream yet to be realized. Either way, when reflecting on the aspect of capacity utilization, the study reveals that enterprises under investigation are yet to utilize resources in their dispersal, namely machines and labour. SMEs in the study areas appear to disregard their competitive advantages.

### 4.2 Factors for short supply of sunflower seeds

Respondents were asked to provide their views in relation to what factors are responsible for the shortage of supply of sunflower seed in the market. The extreme cases are 22 respondents, equivalent to 34%, who are of the view that the use of low-yield sunflower seeds is predominant; the other 13 respondents, equivalent to 20%, are of the opinion that the area under cultivation of sunflower crop is not compatible with increasing demand for sunflower seeds; whereas 11 respondents, equivalent to 17% and 12 respondents equivalent to 18%, are of the view that there is an increased number of sunflower oil processing enterprises and sunflower seed supply manipulation respectively, as indicated in table 1 below.

**Table 1: Factors for short supply of sunflower seeds**

| Factors for shortage of sunflower seeds supply in the market | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| Drought | 3(5%) | 12(18%) | 11(17%) | 14(28%) | 10(20%) |
| Excessive rainfall | 4(6%) | 13(20%) | 10(20%) | 7(14%) | 16(32%) |
| Predominant use of low yield sunflower seeds | 22(34%) | 10(20%) | 5(10%) | 8(16%) | 5(10%) |
| Area under cultivation of sunflower crop not compatible with increasing demand | 13(20%) | 15(30%) | 2(4%) | 14(28%) | 6(12%) |
| There is increased sunflower oil processing enterprises | 11(17%) | 9(18%) | 6(12%) | 13(20%) | 11(17%) |
| Sunflower seeds supply manipulation | 12(18%) | 10(20%) | 3(5%) | 15(30%) | 10(20%) |

**Source:** Researchers Survey, 2020

The implication of the findings is that there are multiple factors contributing to the shortage of supply of sunflower oil seeds in the market. The finding aligns with other studies by Vasylkovska *et al.,* (2021) study in Ukraine who underscored the potential factors for a shortage of supply of sunflower seeds in the market. 15.9% of the respondents in Ukraine reported changes in cultivation technology and the selection of sunflower hybrids that are better adapted to climate change. Furthermore, Kweka (2018) and Mgeni, Muller and Sieber (2019) reported that sunflower raw materials are often of lower quality and thus unfit for processing. This reduces the market for exportation to different countries. Kosmowski et al., (2018), Adam Smith International (2014), MITI (2016), and BoT (2017) all concluded that the use of low-yield sunflower seeds has negative implications for the production and supply of sunflower oil seeds required by enterprises processing sunflower oil.

In the same vein, the study conducted, in-depth interview with a woman aged 49, reported, had this to say:

> *"You know, most sunflower farmers in this area are affected by the limited use of sunflower hybrid seeds and by climate change, which is friendly to this seed. Yielding of sunflowers has become a challenge because of low acreage and bad hybrid seeds which we are using on our farms."*

Furthermore, the study conducted FGD with the Key Informants by using multiple responses as shown in table 2 below

**Table 2: Responses of the FGD from Key Informants**

| S/N | Responses | No. Responses | Percentages (%) |
|---|---|---|---|
| 1 | Low acreage | 56 | 14.6 |
| 2 | Limited use of sunflower hybrid seeds | 109 | 28.5 |
| 3 | increased number of sunflower oil processing enterprises | 72 | 18.8 |
| 4 | Climate change | 103 | 26.9 |
| 5 | Sunflower seeds supply manipulation | 43 | 11.2 |

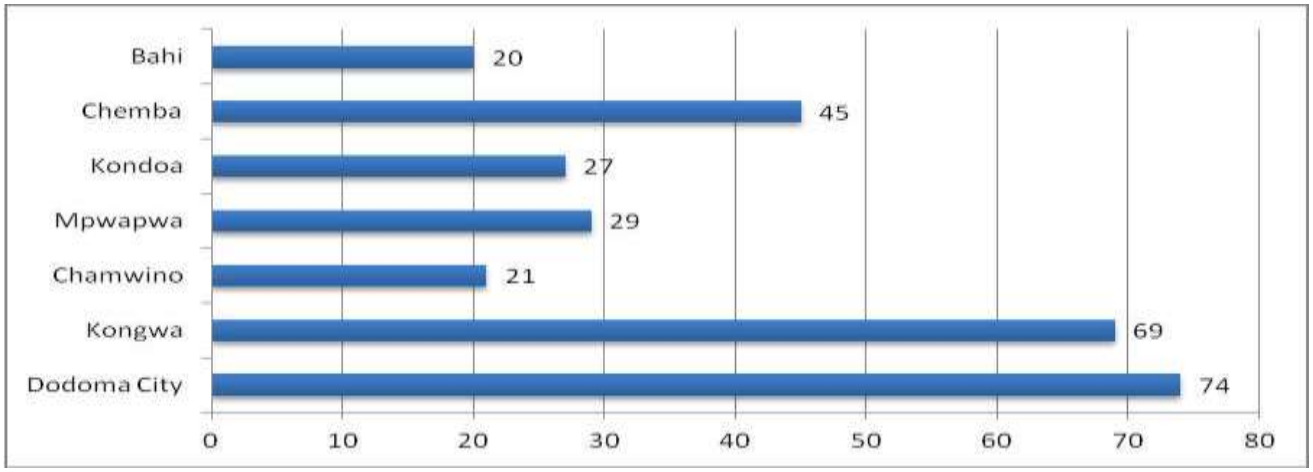
| | | | |
|---|---|---|---|
| | **Total** | **383** | **100.0** |

**Source:** Researchers Survey, 2020

Table 2 results are parallel to Nhundu *et al.*, (2021), which revealed that the study estimates sunflower supply response in South Africa using time series data from 1947 to 2016, suggesting that farmers do not easily adjust acreage devoted to sunflower given price changes, indicating the influence of other non-price factors. An adjustment coefficient of 0.272 indicates that the time taken to adjust from the actual to the desired acreage level is slow, at 27% per year.

In relation to respondents' opinions during focus group discussion on the increasing numbers of enterprises processing sunflower oil seeds in the study area, the information summarized in Figure 2 is used to illustrate the relative number of sunflower oil seed processors compared to other districts in the Dodoma region.

**Figure 2: Distribution of Sunflower processors in Dodoma region**

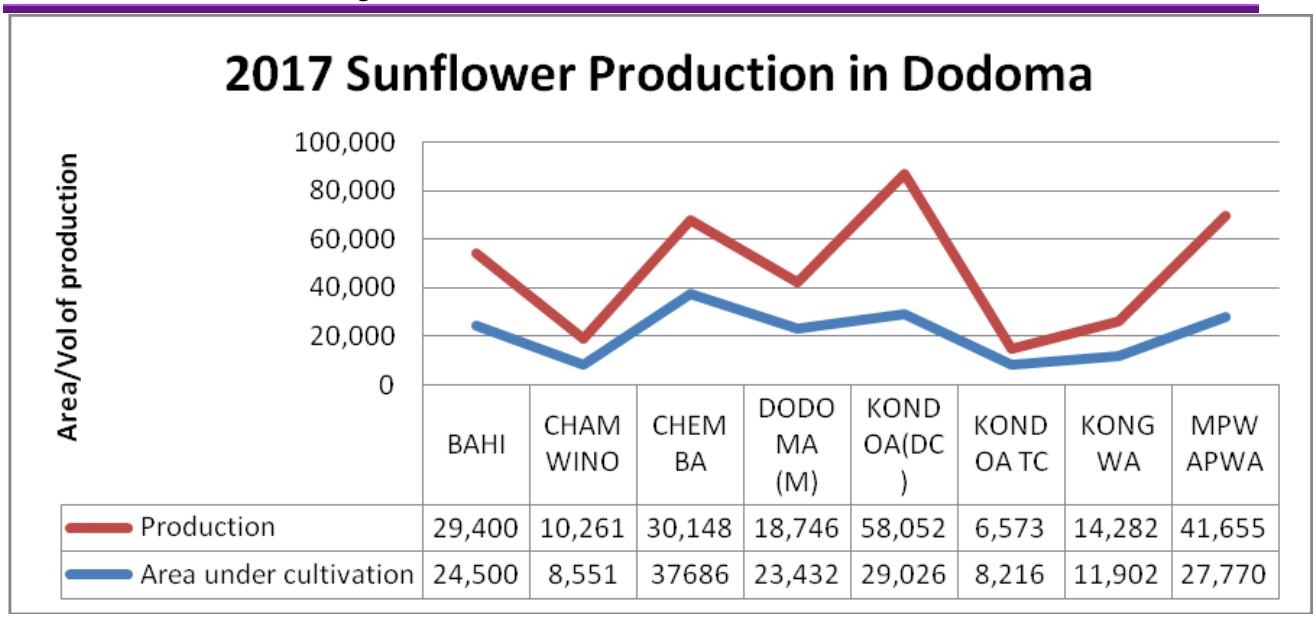



**Source:** Calculated from figures obtained from Dodoma LGA's and MITI, May 2018

### 4.3 Sunflower seeds production level by harvest season

The study reveals that sunflower seed production varies seasonally due to multiple factors. According to the documentary review, during harvest season 1917, production was about 20,000 tons, with other districts experiencing higher production levels**.** Figure 3 below demonstrates the position of Dodoma urban in relation to other districts producing sunflower seeds. According to data obtained from Dodoma regional secretariat (see figure 2 below), Kondoa District Council is not only the leading producer of sunflower seed kernels in the region, but it also has the highest productivity (yield per hectare) level. Mpwapwa is the second highest producer and, correspondingly, has the second-best productivity level. Kondoa Town Council and Dodoma Municipality had the lowest productivity levels. However, the total production of sunflower in Dodoma Municipal during the 2016/17 season was still higher than the volume produced in Kongwa district council despite the lower productivity level (Kongwa's productivity was estimated at 1.2 tons per hectare). The results through documentary review suggest that as production of sunflower oil seeds becomes low, the backward linkage is negatively affected in the sense that enterprises dealing with processing sunflower oil seeds in the study area are being supplied with a shortage of raw materials, which is the case in the case of sunflower seeds. The results are also supported by Adam Smith International (2014), MITI (2016), and BOT (2017) research, which concluded that there are a number of factors that contribute to the failure of backward linkages, including the shortage of raw materials.

**Figure 3: Sunflower oil seeds production patterns across Dodoma region**

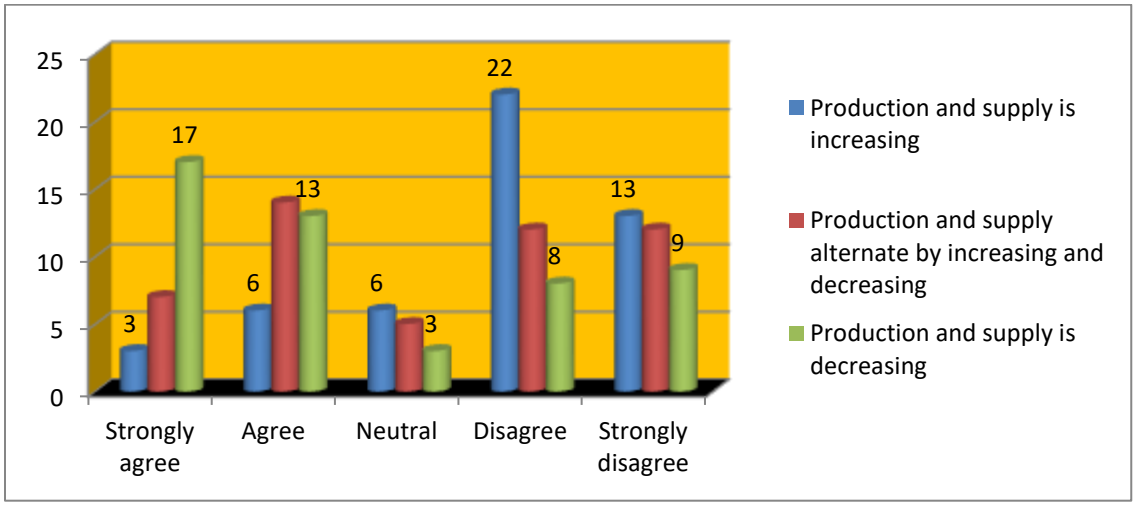



**Source:** Dodoma Regional Secretariat,2018

### 4.5 Sunflower oil production pattern

Sunflower oil production patterns in terms of increasing, decreasing or alternating decreasing and increasing are determined by the amount of supply of raw materials and the production capacity of installed machines. The assumption is that increased supply of sunflower seeds would positively affect increased production of sunflower oil and vice versa. The study is intended to examine the co-relationship between the supply of sunflower seeds and the production of sunflower oil. The survey on sunflower oil production patterns indicated that 22 respondents disagreed with the statement that sunflower oil production and supply is increasing. Thirteen respondents strongly disagreed with the same statement. On the other hand, 17 respondents strongly agree with the statement that production and supply of sunflower seeds is decreasing, as indicated in figure 4 below. The findings suggest that the number of sunflower seeds produced and supplied is directly proportional to the output level of sunflower oil. The argument is supported by studies conducted by Ampadu-Ameyaw & Omari (2015) in Ghana, revealing that inadequate enforcement of agricultural and industrial policies, poor industrial integration, technological inadequacies, failure to access international markets, poor infrastructures, quality assurance challenges, and weak financial capacities stand in the way of the development of the agro-processing sector.

**Figure 4: Sunflower oil production pattern**



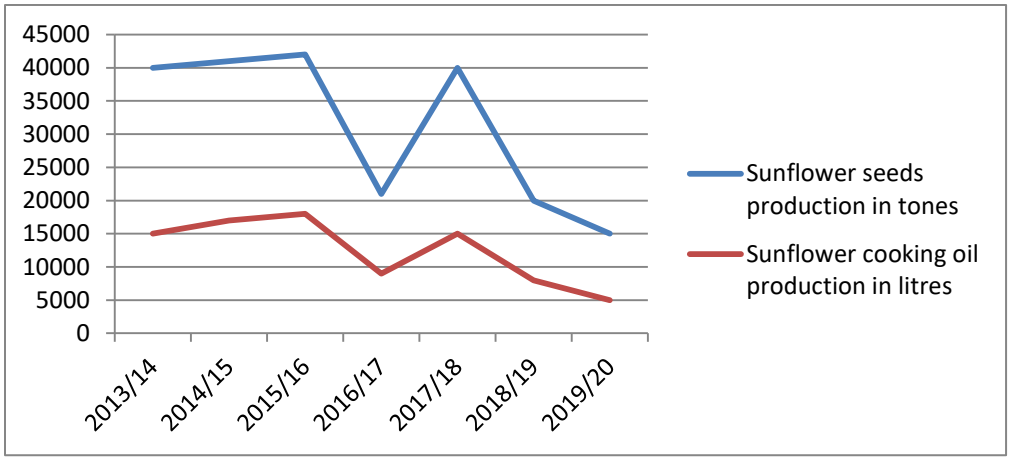

**Source:** Researchers Survey, 2020

### 4.6 Direct proportionality nature of sunflower seeds production and sunflower oil production

In the last seven harvest seasons, between 2014 and 2020, sunflower oil processing enterprises' production levels have been reacting to sunflower seed production in the sense that, as sunflower seed production levels are on the rise, sunflower oil production levels also rise, as illustrated in figure 5 below. In this respect, sunflower seed production and sunflower oil production affect one another either positively or negatively. The results suggest that sunflower seed production is directly proportional to sunflower oil production, assuming all other factors remain constant. This tendency was acknowledged by respondents who participated in Focus Group Discussion. For instance, one of the respondents had to say:

> *"Sunflower oil processing enterprises in Dodoma city depend on the supply of sunflower seeds, which are an essential raw material needed to produce sunflower oil. To a large extent, sunflower oil production levels depend on the supply of sunflower seeds in the market. The amount of supply of sunflower seeds is facilitated by sunflower seed production, assuming there is accessibility to sunflower seeds."*

**Figure 5: Direct proportionality of sunflower seeds production and sunflower oil production**




**Source:** Researchers Survey, 2020

### 4.7 Performance of sunflower oil processing enterprises in backward linkages

The performance of sunflower oil enterprises was measured with respect to different parameters. For instance, respondents were asked to provide their remarks with regard to the storage of sunflower seed stocks. In this aspect, 18 respondents argued that the performance is poor. With regard to the other parameters, like fulfilling local demand for sunflower cooking oil, 16 respondents argued performance is very poor with regard to supplying sunflower cooking oil at a competitive price. 20 respondents argued that performance is very poor with regard to the utilization of installed machines in the production of sunflower cooking oil. 19 respondents argued that the performance is very poor as well as indicated in the table 3 below. Furthermore, the Mean Index (x) = 85.6% of the respondents reported that there was poor performance of sunflower oil processing enterprises in backward linkages in the studied area. The finding implies that enterprises dealing with sunflower oil processing are yet to explore and utilize competitive advantages at their disposal. In the studies conducted by Chong, H. G. (2008), Ampadu-Ameyaw & Omari (2015), Owoo & Quayefio (2018), and Dalberg (2019), they also reported on limited processing capacities, in turn compromising backward and forward linkages. According to Dalberg (2019), most small and medium-sized processing operations reach only about 45 percent of their capacity during the peak season (May–October), and only 5 percent during the off-season (November–April).

**Table 3: Performance of sunflower oil processing enterprises in backward linkages**

| Performance indicator | Very good | Good | Moderate | Poor | Very poor |
|---|---|---|---|---|---|
| Stock of sunflower seed | 3(6%) | 7(14%) | 7(14%) | 18(36%) | 15(30%) |
| Fulfilling local demand for cooking oil | 4(8%) | 6(12%) | 10(20%) | 14(28%) | 16(32%) |
| Competitiveness of price | 3(6%) | 5(10%) | 10(20%) | 12(24%) | 20(40%) |
| Market for sunflower seeds farmers | 15(30%) | 14(28%) | 11(22%) | 6(12%) | 4(8%) |
| Installing machines for processing | 16(32%) | 15(30%) | 8(16%) | 5(10%) | 6(12%) |
| Utilization of machines | 6(12%) | 5(10%) | 5(10%) | 15(30%) | 19(38%) |

**Source:** Researchers Survey, 2020

The illustration in Table 3 above is parallel with the views of one respondent who is the owner of an enterprise processing sunflower oil seeds. During the interview, he said,

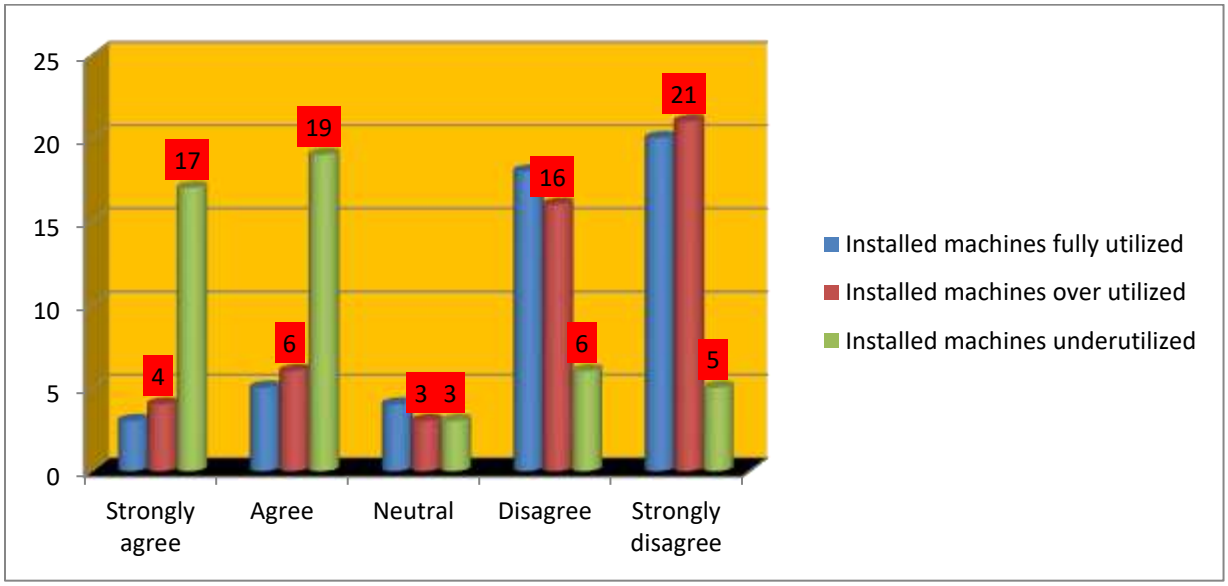
> *"Our position as a market for farmers who grow sunflower seeds is affected by inadequate production of sunflower seeds, which ultimately makes it difficult to fulfill local demand for sunflower oil. Under these circumstances, we usually sell sunflower oil at a less competitive price in comparison with the imported cooking oil from outside the country."*

### 4.8 Capacity utilization of the installed sunflower oil processing machine

Sunflower oil production requires the installation of machines for pressing sunflower seeds. The study is intended to measure the utilization of installed machines so as to suggest the machines are being operated and sunflower oil production is effective. The results reveal that utilization of installed machines is not impressive. For instance, 21 respondents strongly disagree with the statement that installed machines are over utilized, whereas 19 respondents agree on the issue of underutilization of installed machines, as indicated in figure 7 below. The calculated Mean Index ($\bar{x}$)= 76.4% of the respondents disagreed that the capacity of utilization of installed sunflower oil processing machines was not impressive. The implication of the results on capacity utilization of installed machines is that most respondents in the studied area consider it not satisfactory due to the fact that raw material supply is inadequate. The same case was revealed in studies of the same nature conducted. The implication is that installed machines are utilized below capacity. In general terms, the country's capacity to fulfill local demand for sunflower cooking oil is troubled by a short supply of sunflower seeds as a potential input to enable production of cooking oil, but in specific terms, the backward and forward linkages fail to take effect.

For instance, Tanzania's demand for edible oil was estimated at 570,000t per annum in 2018, and is projected to grow to 700,000t by 2030. Local production only meets about 30–45 per cent of the demand. As a result, the country imports nearly 320,000t of goods each year, worth more than $83 million (Food and Agriculture Organization (2016), and MITI (2016). Imports of crude edible oil have been increasing annually, reaching 500,000 in 2015 (Figure 3.3). Crude palm oil dominates the volume of imports, accounting for about 44 per cent of total imports during 2015 (BOT 2017), mostly coming from Singapore and Indonesia. Other imports of edible oil include olive oil, vegetable oil and sesame. Tanzania also imports a small proportion of sunflower oil, accounting for 1.7 per cent in 2015.

**Figure 7: Capacity utilization of installed sunflower oil processing machines**




**Source:** Researchers Survey, 2020

The concern over the short supply of sunflower oil seeds to enterprises dealing with the production of sunflower cooking oil was acknowledged during an interview conducted with SIDO officials in Dodoma office, saying;

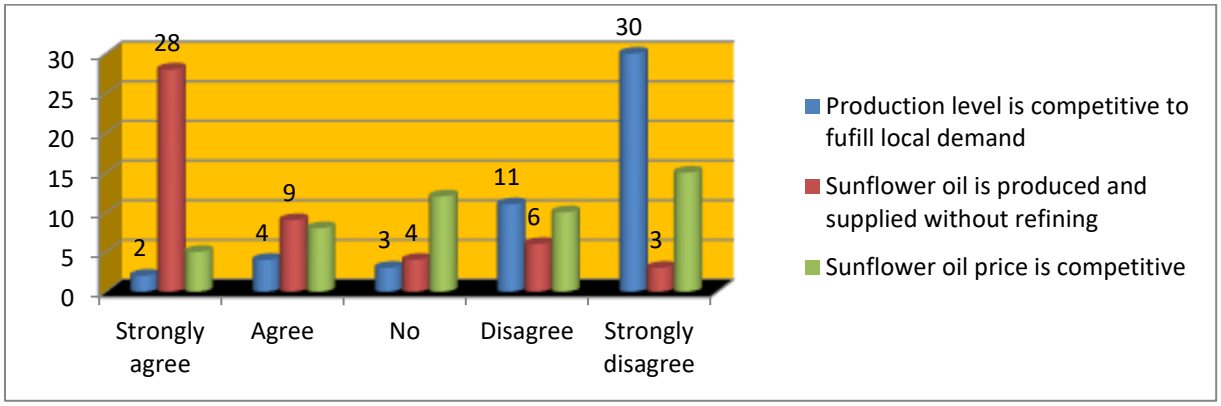
> *"The majority of enterprises which engage in the extraction of sunflower cooking oil in Dodoma are small and medium-scale enterprises. The quantity of sunflower oil seeds needed is small compared to large-scale enterprises around the country. Despite the amount of sunflower oil seeds needed being small, the supply is short, subsequently creating underutilization of capacities simply because, at the point of short supply, machines remain idle."*

### 4.9 Competitive advantages of sunflower oil seeds processing enterprises

Utilization of competitive advantages requires awareness of the existence of presumed competitive advantages. Enterprises' utilization of competitive advantages is what makes them stay in business in a free market environment. Competitive advantages can even make an enterprise extend market share and earn more revenues out of sales. With respect to parameters like fulfilling local demand for sunflower cooking oil, quality assurance portfolio, and price competitiveness of sunflower cooking oil, perceptions of respondents were measured. The results showed that an overwhelming number of respondents, equivalent to 60%, strongly disagree that sunflower oil seed processing enterprises' production levels are competitive to fulfill local demand for cooking oil, whereas 28 respondents, equivalent to 56%, strongly agree with the statement that sunflower oil is produced and supplied without refining. With respect to price competitiveness, the majority of respondents oppose the view that sunflower oil prices are competitive, as illustrated in Figure 8 below.

The essence of the finding is that sunflower oil seed processing enterprises' forward linkage is highly compromised with respect to the three investigated parameters, which are; (i) output level or quantity; (ii) quality of sunflower oil; and (iii) price of sunflower cooking oil. Despite having a favourable agricultural climate, Tanzania is still lagging in processing activities and as a result, the country is highly dependent on imported processed goods (Augustino, 2017). Various studies have shown Sunflower cooking oil producers have not yet taken care of rivals who engage in production and supply of cooking oil within and outside the country. For instance, in 2016, Tanzania's edible oil consumption was estimated at 570,000 MT, of which 64% was palm oil, 30% sunflower oil, and 6% cottonseed, with a projected growth rate of 7% per annum in overall oil consumption (Dalberg 2018; TPSF 2017). Domestic production of edible oil is estimated at 270,000 MT in 2016, of which sunflower production accounts for 83%, cottonseed 5%, and palm 2%.

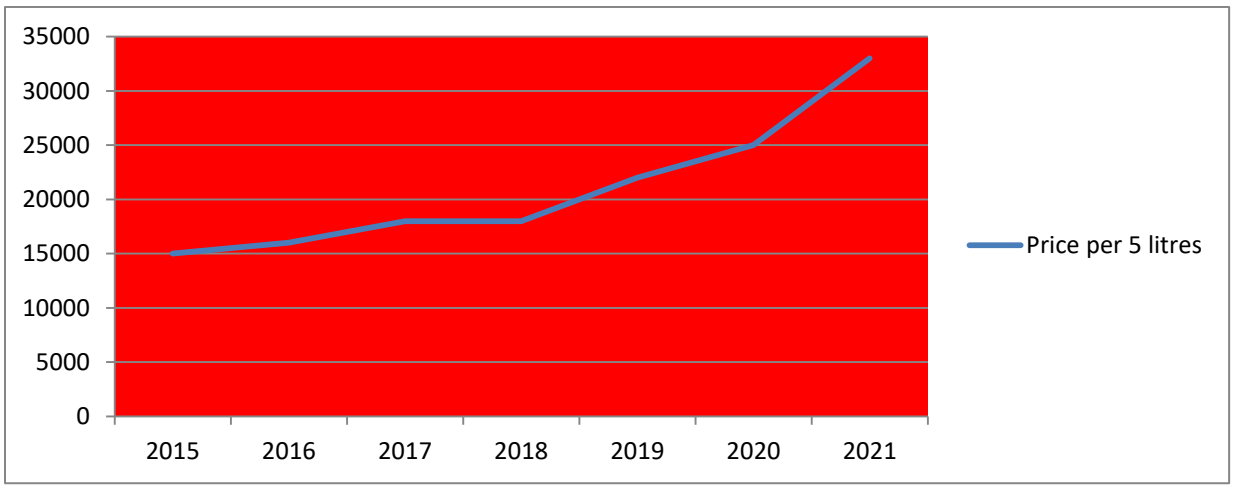
**Figure 8: Competitive advantages of sunflower oil processing enterprises**




**Source:** Researchers Survey, 2020

The price competitiveness of sunflower cooking oil was investigated in this study. The price trend of sunflower cooking oil in Dodoma appears to be increasing at an increasing rate over the past five years between 2015 and 2021. Compared with imported cooking oil, sunflower cooking oil produced locally seems to be sold at a higher price, specifically per 5 liters, as illustrated in figure 9 below. The essence of the finding is that enterprises which produce sunflower cooking oil are competitive based on price perspective, negatively affecting forward linkage as customers may opt to buy imported cooking oil as a potential substitute.

**Figure 9: Sunflower cooking oil price trend per 5 litres between 2015 - 2021**




**Source:** Researchers Survey, 2020

The interview conducted with key informants from Tanzania Private Sector Forum (TPSF) authenticated the argument that sunflower cooking oil producers in Dodoma urban are yet to attain competitiveness by saying;

> *"Cooking oil extracted locally from sunflower oil seeds is sold at a higher price than imported ones in terms of litres. This is making imported edible oil to win market share in the local market. As consumers become sensitive to price levels, they opt to substitute locally produced sunflower cooking oil with imported edible oil. When locally produced sunflower cooking, oil is left to compete with imported edible oil, the imported edible oil wins the market when all the other factors remain constant. "*

### 4.10 Market channels as used by sunflower oil processing enterprises

In examining the prospects of sunflower cooking oil processing enterprises in creating forward linkage, the study measured the market channels utilized by the enterprise. The finding reveals that, in large part, local sunflower

cooking oil processing enterprises have managed to penetrate the market in retail shops and mini-supermarkets. For instance, 19 respondents, equivalent to 38%, confessed that retail shops are their major market, whereas 9 respondents, equivalent to 18%, reveal that their market is mini supermarkets, as indicated in table 4 below. The case of a few enterprises being able to penetrate market channels like super markets suggests local sunflower cooking oil processing enterprises have not been able to attract customers who visit super markets to buy cooking oil with preferences like quality and packaging standards. Among local processors of sunflower cooking oil, the prospect of penetrating the international market even creates a great deal of concern with respect to Tanzania's last five-year development plan, 2020/21 – 2024/25, with its focus on export-oriented growth. This finding is in collaboration with conducted studies by the Food and Agriculture Organisation (2018), Amin (2015), and Dalberg (2018), which both reported on the nature of the quality standard and price of locally produced sunflower cooking oil being in such a brand not capable of penetrating the super market.

The concern about the quality standards of locally produced edible oil has been reported in various studies. According to Thurasamy, Mohamad, and Aznur (2016), there is demand in the local market for semi-refined oil, Covin, Wales, (2019). Both unrefined and semi-refined sunflower cooking oil face serious quality challenges, and poor or a lack of branding. The quality of sunflower oil sold by the roadside in most of the sunflower producing regions is most likely compromised due to prolonged exposure to sunlight, but there is little consumer awareness about such quality and health effects. This finding aligns with the study conducted by Kaswuri, (2016).

**Table 4: Market channels as used by sunflower oil processing enterprises**

| Market channel | Frequency | Percentage |
|---|---|---|
| Local restaurant | 4 | 8 |
| Mama lishe | 6 | 12 |
| Super market | 3 | 6 |
| Whole sale traders | 5 | 10 |
| Retail shops | 19 | 38 |
| Individuals | 4 | 8 |
| Mini super market | 9 | 18 |

**Source:** Researchers Survey, 2020

According to an interview conducted with an official from the Tanzania Food and Drug Authority, it was reported that enterprises dealing with sunflower cooking oil processors are yet to comply with higher quality standards by saying;

> *"Locally produced sunflower cooking oil is sold in a combination of both refined and semi-refined, but the majority of processors are small enterprises supplying sunflower cooking oil without refining, ultimately making them miss market share in the super market, a market in which higher-income consumers prefer to buy cooking oil."*

## 5.0 Conclusion and Recommendations

Although it is anticipated that enterprises engaging in processing sunflower oil seeds to produce sunflower cooking oil can bring into effect the backward linkage by offering a market to farmers growing sunflower seeds, the study reports that there is a shortage of supply of sunflower oil seeds due to low production of sunflower seeds. The study report says multiple factors are drivers of inadequate production and supply of sunflower oilseeds, including climate change, sustained use of traditional low-yield sunflower seeds among farmers, and small area under cultivation. However, manipulation of sunflower oil seed prices appeared to be a minor factor in the shortage of supply of sunflower oil seeds. The study reported that due to inadequate supply of sunflower oil seeds in the market, enterprises suffer low production of sunflower cooking oil, creating a shortage of sunflower cooking oil in the

market which is potentially a breeding ground for a rise in sunflower cooking oil price per 5 litres. Under these circumstances, the forward linkage is negatively affected in the sense that customers find it difficult to afford the market price. The worst-case scenario is that enterprises lose market share simply because a fraction of customers seem to opt to buy imported cooking oil at lower prices per litre and, equivalently, per 5 litres.

In light of the finding, investment in sunflower oil seed production is vital to foster increased and improved output levels of sunflower oil seeds. The best way to achieve this goal is to pursue: i) expansion of cultivation area; ii) use of high-yielding and certified sunflower seeds; and iii) mechanization of sunflower oil production. iv) expanded and enhanced access to extension services. Secondly, there is a need to increase and improve access to both financial and non-financial incentives needed by both sunflower oil producers and enterprises engaging in sunflower oil processing. All these can be achieved through the active involvement and participation of stakeholders across different levels. To the government, it is hence recommended that the ministry of agriculture, in collaboration with counterpart sector ministries like trade, infrastructure, and industries, harmonize existing sector policies in order to have all relevant sectors and stakeholders prioritize and allocate resources, i.e., financial, human, and material resources, in a coordinated response to address the existing shortfalls in realization of backward and forward integration. On the other hand, farmers producing sunflower oil seeds and producers of sunflower cooking oil need to have coordinated responses among themselves and regular consultation with respective government agencies to have arranged and coordinated policies, programs, and plans in order to realize backward and forward linkages in the sunflower cooking oil production sub sector.

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