

# Profit Margin for Small Maize Business: A Comparative Study of Green Roasted and Dry Maize in Mbeya, Tanzania

Visent Kipene (Corresponding author), Asheri Mwidege  
P.O. Box 131, Mbeya – Tanzania, Department of Business Management  
Mbeya University of Science and Technology (MUST)

## Abstract

Roasted fresh green maize harvested from farms is one of a growing small business in many towns in Tanzania. Yet, little information is available on the profit margin differences between roasted fresh green maize and dry maize. This study therefore was conducted to investigate the profit margin differences between roasted fresh green and dry maize in Mbeya City and Mbeya District. The study employed both snowballing and random sampling plan whereby a sample of 70 respondents was collected. Present study used SPSS in data analysis while descriptive and multiple regression techniques were employed. As a result, the mean of profit margin, operation cost and capital invested were compared. Results showed that the profit margins of both businesses, the operation cost, as well start-up capital were statistically significant at ( $P<0.01$ ), ( $P<0.05$ ) and ( $P<0.01$ ) levels, respectively. Suggesting that profit margin of roasted green maize was higher than of dry maize as well as the operation cost. Contrary to these, the start up capital for roasted green maize was lower than that of dry maize business. Based on survey findings it was concluded that business of roasted green maize had higher profit margin than dry maize. It is therefore recommended that the government should not restrict the green roasted maize business and that the decisions should be left to the producers and business dealers. Further, it is also recommended that the government should register all roasted green maize dealers and find a way of taxing them equally to dry maize businesses in regard to the profit generated.

**Key Words:** Roasted fresh green maize, dry maize, profit margin, operation cost, startup capital, Mbeya University of Science and Technology

## 1. Introduction

Maize is a cereal crop that is grown throughout the world in a range of agro-ecological environments. Maize was introduced in Africa in the 1500s and has become one of Africa's dominant food crops (Jame, 2001). Like many other regions, it is consumed as a vegetable although it is a grain crop (Singh *et al*, 2012). The maize grains are rich in vitamins A, C and E, carbohydrates, and essential minerals, and contain 9% protein (Mboya *et al*, 2011; Gwartz and Maria, 2013). They are also rich in dietary fiber and calories which are good source of energy (Mboya *et al*, 2011).

Worldwide production of maize is 785 million tons per year, with the largest producer being United States, producing 42% of maize (IITA, 2009). Africa produces 6.5% and the largest African producer is Nigeria with nearly 8 million tons per year, followed by South Africa. It is because of low maize productivity in Africa with regard to its demand, therefore it imports 28% of the required maize from countries outside the continent (IITA, 2009; Gwartz and Maria, 2013).

Worldwide consumption of maize is more than 116 million tons per year, with Africa consuming 30% while 21% is consumed by Sub-Saharan Africa (IITA, 2009). However, Lesotho has the largest consumption per capita with 174 kg per year. Eastern and Southern Africa uses 85% of its production as food, while Africa as a whole uses 95%, compared to other world regions that use most of its maize as animal feed (IITA, 2009; Gwartz and Maria, 2013).

Ninety percent of white maize is consumed in Africa, Central America and Southern Africa where it represents the main staple food (Ranum *et al*, 2014). On the other hand, yellow maize is preferred in most parts of South America and the Caribbean. It is also preferred as animal feed in many regions as it gives a yellow color to poultry, egg yolks and animal fat (Ranum *et al*, 2014).

Maize is processed and prepared in various forms depending on the country. In Eastern, West and Southern Africa, ground maize is prepared into porridge (Smallstarter, 2014). Ground maize is also fried or baked. In all parts of Africa, popcorn is used as a popular snack while green (fresh) maize is boiled or roasted on its cob and served as a snack (Abdulrahman and Kolawole, 2006; Smallstarter, 2014).

In Tanzania roasted fresh green maize, just harvested from farms, is one of a growing small business in many towns of the country (Mjasiri, 2012). Town's residents consider the green maize sold in the streets as alternative meal or, in some cases, full afternoon meal, due to its affordability (Wiens, 2011 and Mjasiri 2012). Despite the government efforts to restrict selling roasted maize in the streets claiming to be unhygienic, unprofitable business than dry maize business and causes hunger to farmers because it is assumed that they sell all maize without storing them. In other way around roasted green maize was seen to generate income to unemployed people (Xinhua, 2013).

It has also been argued that harvesting and selling green maize does not provide profit as harvesting and selling them after drying. Some parts of Tanzania including Iringa region and Mbeya the government imposed barriers to sell green maize as means of reducing hunger as farmers could harvest maize at green stage and ending up without little food to sustain the family. In the side of farmers and small maize business argued that green maize provides profit than dry maize hence it helps in obtaining basic needs including food (Xinhua, 2013). However, there is little documentation pertaining comparison between profit generated by green roasted and dry maize.

All these arguments have not been justified by strong reasons since very few study performed in regard to this business in Tanzania. Most of study regarding to this crop are specified in production, processing and marketing the dry maize (Katinila *et al* and Kaliba *et al*, 1998). This study therefore evaluated the profit margin of roasted green maize business in comparison with dry maize in Mbeya region represented by Mbeya city and rural. The findings will contribute to the policy makers and practioners to improve the business for employment and income generation.

## 2. Methodology

The study survey was conducted in all wards in Mbeya city and some wards in Mbeya rural (Usongwe, Inyala and Utengule), which involved both roasted green and dry maize business. It has used the primary cross section data. However, secondary data from different sources were used for the purpose of gathering background information to support the study. The primary data was collected through well-structured and pre-tested questionnaires. Three sets of questionnaires were used to collect data through interview schedule. A face to face interview was held using the first set of questionnaires to small dry maize business men. Furthermore, snowballing approach used to collect data from small roasted green maize business men and customers in which the second and third sets of interview schedule questionnaires were used, respectively. The questionnaire were developed to assess the following variables average amount of sales per month/year in (Tshs), producers price, selling price of maize, profit earned, customer's satisfaction, operating costs, taxes, quality of products, location of market, variety of maize sold, cleanness of roasted maize, roasting hygienic and registration of a business.

Snowballing approach was used as a sampling technique because it was difficult to identify maize roasted street vendors. The researcher therefore contacted one or two cases in the streets and they were asked to identify further new cases. This technique was useful for locating hard to access small green roasted maize participants as there was no sampling frame. However, random sampling technique was used to select dry maize sellers among dry maize traders in different markets in the study areas meanwhile customers interviewed were selected conveniently in the time of buying the maize. The sample consisted of 50 respondents who are 40% of all small business people selling roasted green maize in the study area and 20 who are 51% of all small business people selling dry maize.

Descriptive analysis involving percentages, tabulation, and graphics was used to compare the profit margin between business of dry maize and roasted green maize. Econometric model was also used to assess the determinants of profit margin in maize business.

### 2.1 Model specification on profit margin

Profit margin is a measure of the net gain (or loss) of revenue minus expenses (Graff, 2006). It is a ratio of profitability calculated as net income divided by revenues, or net profits divided by sales. It measures how much out of every shilling of sales a business actually keeps in earnings. It is very useful when comparing businesses in similar industries. A higher profit margin indicates a more profitable business that has better control over its costs. Profit margins are indicators of efficiency or inefficiency of a business (Dongsae, 1999, Achike and Anzaku, 2010).

The model used for this study was modified from Olokoyo (2011) specifying that Profit margin is a function of operating costs, location of market, education level and experience of sales person, and size of capital invested in a business. The profit margin is obtained by taking net profit divide to net sales times one hundred represented as:

$$\frac{l_i}{k_i} * 100 = y_i \dots\dots\dots(1)$$

Where  $l_i$  = Net profit obtained after subtracting net sales cost from net sales.

$k_i$  = Net sales represented the total sales

$y_i$  = Profit margin

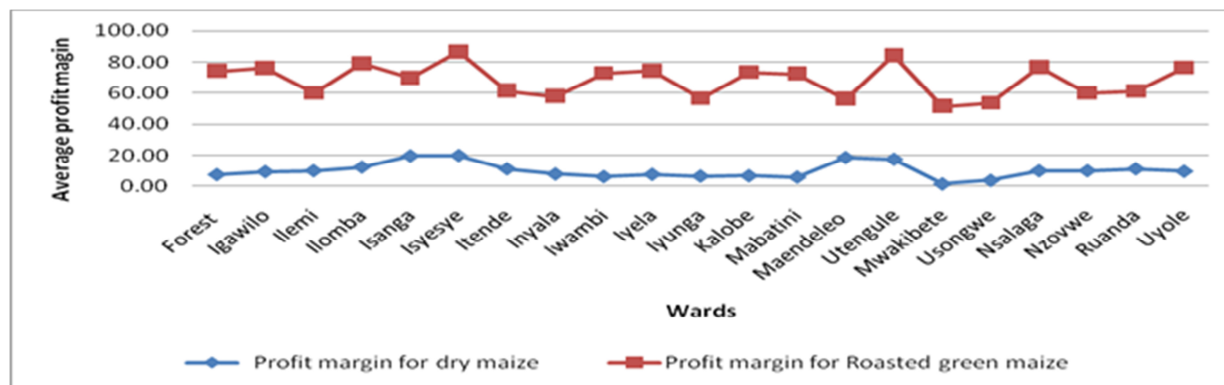
Since Profit margin is affected by different factors which are represented by  $x_i$  as indicated in equation (2)

$$y_i = \beta_{1i}x_{1i} + \beta_{2i}x_{2i} + \beta_{3i}x_{3i} + \beta_{4i}x_{4i} + \beta_{5i}x_{5i} + \epsilon_i \dots\dots\dots (2)$$

Where:  $y_i$  is the profit margin,  $x_{1i}$  = Capital invested in a business,  $x_{2i}$  = Operating costs,  $x_{3i}$  = Experience of sales person,  $x_{4i}$  = Location of a business,  $x_{5i}$  = Employment status of sales person,  $\beta$  = Magnitude coefficient,  $\epsilon_i$  = error term.

**3. Findings**

Various average profit margin performance of micro-small business of roasted green maize and dry maize of Mbeya District were computed. The results are presented in figure 1 below.



**Figure 1. The average profit margin between dry maize and roasted green maize**

The profit margin between roasted green maize and dry maize are parallel in the study area. Roasted green maize have higher profit margin than dry maize business. This suggests that green maize provides more profit than dry maize. Moreover, when compared in terms of capital invested was opposed to the profit margins obtained. The dry maize business was seen to have higher capital than roasted green maize. This reflects that dry maize needs higher capital with low profit margin while green roasted maize utilizes low capital with higher profit margin.

**Table 1. Comparison of roasted green maize and dry maize businesses**

Variables	Mean	Standard Deviation	t-statistics
Profit margin of roasted green maize Vs Dry maize	1.882	0.631	13.668***
Operational cost of roasted green maize Vs Dry maize	1.236	0.558	10.144**
Capital per business of roasted green maize Vs Dry maize	-2.969	0.823	-16.525***

\*\* Difference between means is significant at the 0.05;

\*\*\* Difference between means is significant at the 0.01 levels

Comparing the mean number of profit margin, operation cost and capital invested, there was a significant difference between dry and roasted green maize business (Table 1). The profit margin of both business, the operation cost, as well as for capital invested were statistically significant at (P<0.01), (P<0.05) and (P<0.01) levels. Suggesting that profit margin of roasted green maize was higher than of dry maize as well as the operation cost (Table 1). Contrary to these, the capital invested of roasted green maize was lower than of dry maize business. This signifies that, a business of roasted green maize provides higher profit with small capital invested. For this case, starting roasted green maize business is easier than starting dry maize business because of capital start-up and returns generated in terms of profits.

**Table 2. Determinants of profit margin in small maize business**

Explanatory variables	Expected Sign	Coefficient	t-statistics	P> t
Constant	(+/-)	3.983***	2.855	0.000
Capital invested	(+)	0.470*	1.866	0.067
Operation cost	(-)	-0.603**	-2.361	0.021
Experience	(+)	0.066	0.507	0.614
Location of a business	(+/-)	0.052	-0.411	0.683
Employment	(+/-)	-0.091	-0.746	0.459
Number of observation	= 69			
Adjusted R <sup>2</sup>	= 0.38			
F-value	= 12.98			
Prob > F	= 0.041			

\*Significant at the 0.1; \*\* Significant at the 0.05 and \*\*\* Significant at the 0.01 levels

Further, regression analysis was done in order to examine factors that determine profit margin of these two

businesses. Results (Table 2) show that each business profit margin is affected by different factors including capital invested and operation cost. The model had an adjusted  $R^2$  value of 0.38, suggesting that 38% of the variation in the profit margin of small maize business in the sample was accounted by the variation in the independent variables and the rest could be explained by other factors not included in the functional relationship. All five variables had the expected signs and two variables had a significant effect on variation of profit margin. Results in Table 2 show that an increase of capital invested in a business by 1% would increase the profit margin by 47% while a 1% increase of operation cost would reduce the profit margin by 6.03%. Other variables such as: the sales person experience, whether a business is located in urban or peri-urban, if a sales person was the owner of a business or employed had positive coefficients but had no significant influence on profit margin variation between businesses. Moreover, if a sales person was the owner of a business or employed (-0.746) had negative coefficients, but it was not significant. A sales person who was an employee was likely to reduce profit margin by 0.74% probably due to salary cost for a worker.

**Table 3. Customers' attitude toward roasted green maize**

Customers' response	Frequency	Percentage
If they are interested with the roasted maize	74	98.7
If they are not interested with the roasted maize	1	1.3
If they are satisfied with roasting procedures	69	92.0
If they are not satisfied with roasting procedures	6	8.0
If they perceive that roasted procedures are hygienic	60	81.1
If the roasting procedures are not hygienic	14	18.9

Survey findings on roasted green maize customer's attitude in Table 3 show that 98.7% of respondents were interested with roasted green maize and 92% of respondents were satisfied with roasting procedures of green maize. Furthermore, 81.1% of respondents perceived that the roasted green maize is in hygienic condition. These results suggest that most of customers are satisfied with services provided by small roasted green maize business dealers.

**Table 4. Registration and Tax Payment Status**

Types of Business	Registered Business		Unregistered Business		Paying Tax		Not paying Tax	
	No	%	No	%	No	%	No	%
Dry maize	9	69.2	4	9.5	12	66.7	3	8.1
Roast green maize	4	30.8	38	90.5	6	33.3	34	91.9
<b>Total</b>	<b>13</b>	<b>100</b>	<b>42</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>37</b>	<b>100</b>

Registration and tax payment status between dry maize small business and roasted green maize is diverged as reflected in Table 4. About 69.2% of registered small maize businesses are dry maize meanwhile a large number of unregistered maize business is represented by roasted green maize (90.5%). This suggests that, a large number of roasted green maize businesses in a study area are not in the government records. As a result, 91.9% of respondents of roasted green maize were not paying tax. This number is closer to unregistered businesses who were not paying tax.

#### 4. Conclusion and Recommendation

Survey findings indicate potentials of small roasted green maize in profit generation for the livelihoods of street maize vendors. Present findings show that roasted green maize business generates more profit at ( $P < 0.01$ ) level than dry maize business contrary to the startup capital invested in roasted green maize being lower than of dry maize business. Results show that dry maize generates small profit margin than roasted green maize business. High profit margin reaped in green roasted maize business could be attributed to the fact that street green maize vendors (91.9%) were not paying tax as well as low operation cost opposed to dry maize business dealers. Probably, the government is not aware of the profit margin differences between these businesses towards tax contribution as green roasted maize street vendors are taking an advantage of tax holiday to optimize their livelihoods. Furthermore, customers of green roasted maize reported that they were satisfied with the products. Also, customers were satisfied with hygienic condition of processing procedures, contrary to the arguments made by the Government.

It is therefore recommended that the government should not restrict the green roasted maize business. The decisions should be left to the producers and business dealers since by restricting it could cause loss or reduce profit margin which could be generated by producers and business dealers to sustain their livelihoods. Further, it is also recommended that the government should register all street vendor dealers and find a good way of taxing roasted green maize business equally to dry maize businesses in regard to the profit generated not to the startup capital.

## REFERENCES

- Abdulrahaman, A. A. and Kolawole, O. M, (2006), Traditional Preparations and Uses of Maize in Nigeria. *Ethnobotanical Leaflets* 10: 219-227. [Online] Available: [www.ethnoleaflets.com/leaflets/kolawole](http://www.ethnoleaflets.com/leaflets/kolawole) (May 6, 2015).
- Achike, A. I and Anzaku ,T.A.K. (2010). Economic Analysis of the Marketing Margin of Benniseed in Nasarawa State, Nigeria. *Journal of Tropical Agriculture, Food, Environment and Extension* , 9(1): 47 – 55.
- Dongsae C. (1999).The impact of a Price Cut on Net Income and Profit Margin. *Journal of Financial and Strategic Decisions*, 12(2):83- 94.
- Graff L. L. (2006). Declining Profit Margin: When Volunteers Cost more than they return the *International Journal of Volunteer Administration*, 24(1): 24-32.
- Gwartz, J. A. and Maria N. G. (2013). Processing maize flour and corn meal food products. *Ann. N.Y. Acad. Sci.* 1312 (2014) 66-75. [Online] Available:[onlinelibrary.wiley.com/doi/10.1111/nyas.12299/pdf](http://onlinelibrary.wiley.com/doi/10.1111/nyas.12299/pdf) (May 1,2015)
- International Institute of Agriculture - IITA (2009). Maize. [Online] Available: [www.iita.org/maize](http://www.iita.org/maize) (May 5, 2015).
- James M. (2001). Maize and Grace: History, Corn, and africa’s new Landscapes, 1500 – 1999. Society for Comparative Study of Society and History 0010-4175/01/246–272. [ruafrika.rutgers.edu/events/media/0405\\_media/maize\\_and\\_grace\\_jamesmccann](http://ruafrika.rutgers.edu/events/media/0405_media/maize_and_grace_jamesmccann)
- Kaliba, A.R.M., H. Verkuil, W. Mwangi, A.J.T. Mwilawa, P. Anandajayasekeram, and Moshi, A.J. (1998). *Adoption of Maize Production Technologies in Central Tanzania*. Mexico, D.F.: International Maize and Wheat Improvement Center (CIMMYT), the United Republic of Tanzania, and the Southern Africa Centre for Cooperation in Agricultural Research(SACCAR). [Online] Available:[repository.cimmyt.org/xmlui/bitstream/handle/10883/966/66548.pdf](http://repository.cimmyt.org/xmlui/bitstream/handle/10883/966/66548.pdf) (May 5, 2015)
- Katinila, N., H. Verkuil, W. Mwangi, P. Anandajayasekeram and Moshi, A.J. (1998). *Adoption of Maize Production Technologies in Southern Tanzania*. Mexico, D.F.: International Maize and Wheat Improvement Center (CIMMYT), the United Republic of Tanzania, and the Southern Africa Centre for Cooperation in Agricultural Research (SACCAR). [Online] Available:<http://repository.cimmyt.org/xmlui/bitstream/handle/10883/967/66636.pdf>
- Mboya l.R, Tongoona. P, Derera J, Mudhara. M and Langyintuo. A (2011), The dietary importance of maize in Katumba ward, Rungwe district, Tanzania, and its contribution to household food security. *African Journal of Agricultural Research* Vol. 6(11), pp. 2617- 2626. [http://www.academicjournals.org/article/article1380887646\\_Mboya et al.](http://www.academicjournals.org/article/article1380887646_Mboya%20et%20al) (May 9, 2015).
- Mjasiri J. (2012). Tanzania: Roasted Green maize Curb Hunger in Dar es salaam. *Tanzania Daily news* [Online] Available: [allafrica.com/stories/2012050269](http://allafrica.com/stories/2012050269) (May 9, 2015).
- Olokoyo, F. O. (2012). Determinants of Commercial Banks’ Lending Behavior in Nigeria, *International Journal of Financial Research*, 2(2).
- Ranum. P J, Pablo P. R and Maria N. G (2014), Global maize production, utilization, and consumption. *Annals of The New York Academy of Sciences. Technical Considerations for Maize Flour and Corn Meal Fortification in Public Health* (1312) 105 – 112. [Online] Available: <http://onlinelibrary.wiley.com/doi/10.1111/nyas.12434/pdf>
- Singh, A., Yadav, N. and Sharma, S. (2012). Effect of fermentation on physicochemical properties & *in vitro* starch and protein digestibility of selected cereals. *International Journal of Agriculture and Food Science*, 2(3): 66-70.
- Smallstarter T.T (2014). Maize production – An interesting small business opportunity you should consider this year [Online] Available: [www.smallstarter.com/browse-idea/agribusiness-and-food-/how-to-start-a-maize-farming-and-production-business-in-africa](http://www.smallstarter.com/browse-idea/agribusiness-and-food-/how-to-start-a-maize-farming-and-production-business-in-africa) (May 8, 2015).
- Wiens. M (2011). Roasted maize – African style [Online] Available: [migrationology.com/2011/01/roasted-maize-africa](http://migrationology.com/2011/01/roasted-maize-africa) (May 6, 2015).
- Xinhua (2013). Price of green maize rises sharply with new planting season [Online] Available: [www.nationa.co.ke/News/Price-of-green-maize-rises-sharply-with-new-planting-season](http://www.nationa.co.ke/News/Price-of-green-maize-rises-sharply-with-new-planting-season) (May 8, 2015).

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

### CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

### MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

### IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

