

Millet value chain and profit of producers, processors and marketers in Kano state

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Abstract: The study analyzes the value chain of millet on the profits of producers, processors and marketers for the sample of 127 farmers in Kano state, using structures questioners and OLS technique. The estimated outcome of the millet producer's model show that labour, seeds, fertilizer, pesticides, total cost and the level of education increase the profit of producers in Kano state. The result also illustrate that from the model of millet processors, labour, transports, total cost, other cost, age and the level of education enhance their profit level. In addition, the estimated model of marketers reveals a positive linkage among total cost, other cost and profit level. Therefore, it is suggest that policy should be toward enhancing farmer's productivity and profits through the provision of incentives, extensions services and new technologies.

Keywords: Value chain, profit, total cost, OLS, Kano state

I. INTRODUCTION

For the past few decades, the global increase of millet production for food purposes has become a noticeable incidence (Eina & John 2017). It is documents that in 2010 the world average yield of the millet production was over 0.83 tons per hectare (FAO, 2014). Similarly, about 28.4 million tonnes of millet were estimated been produced in the world with the highest of the total production of 36 percent from India (FAO, 2014). For instance, in 2016 India recorded 10.3 million tonnes, Niger 3.9 million tonnes, China 2.0 million tonnes, Mali 1.8 million tonnes, Nigeria 1.5 million tonnes and Burkina Faso 1.1 million tons respectively. Hence, developing nations have accounted for almost 97 percent of the global millet production (Tshilidzi, Sibanda, and Gwelo 2016). In this regard, several studies have argued that increase in the world's millet production has easily translate into the improvement in the level of employment, profit and revenue generation as well as food security. However, in the recent time farmers in developing countries especially African nations have been characterized with the subsistence production, use of the outdated farm implements, uncertified seeds, inadequate capital for investment, family labour and lack of new technologies (Reddy, Raju, Suresh, & Kumar, 2018). In addition, the most persistent issue in the present juncture is that more than 70 percent of millet production surplus for market are sold directly within the community without adding any value. Therefore, it is necessary for governments and all stockholders to uplift farmer's initiatives in to the value added supply chain in line with the

new phase of production, technologies, logistics and organizational linkages for the benefits of value chain. This will further strengthen the ability to stimulate poverty reduction and sustainable economic performance (Jason, Steven, Marcelo, Amos, & Dagmar, 2015).

In Nigeria, Agricultural sector constitutes the second largest sector of the economy that generates 80 percent of its total employment and about 40 percent of the country's revenue (NBS, 2013). Nearly, 34 million hectares were put into use for agriculture from the nation's total land area with almost 37.3 percent of the total area cultivated in 2014 (FAO, 2014). The nation ranked 5th in the global millet production with an average of annual increase of 1.5 million tons in 2016 (NBS, 2016). Nevertheless, at the national level, millet production has been placed 3rd after maize and sorghum among cereal food crops (NBS, 2016). It is important to acknowledge millet production in Nigeria has promotes the youth participation into the venture due its profitability and small time consumption for cultivation, as such it enhance the level employment and poverty reduction. Furthermore, additional essential value of millet is it has high nutritional contents that upgrade the level of energy, proteins, dietary fiber and vitamins that have strong impact of curing diseases like diabetes, cancer, cardiacular and neurodegenerative. Despite this development, farmers in developing nations lack spirit of value chain development with strong emphasis of institutional, market and sustainability initiatives as well as the reduction in the poverty level. Hence, the study examine the value chain of millet along the profit level of producers, marketers and processors in Kano state.

II. LITERATURE REVIEW

In recent time in the literature there is growing concern on the issues relating grains, their alternative uses, value addition and market expansion, particularly with regard to millet crop. For instance, Elamin, Fadelmola, and Abdelhameed (2013) in their survey for North Kordofan state, argued that any barrier to the millet production leads to low level of its productivity, market efficiency, loss of knowledge and information. Akpenpuun (2014) studied the impact of climate variability on the yield of grain crop in Nigeria. The study finds that climate variation has little impact on the increase in the yield of millet and cowpea. Similarly, Olugbenga, Lawal, and Awoyinka (2016) conduct a study on the determinants of millet

production in Kano and Kaduna. The outcome of the study reveals that cost of production, fertilizer and the amount of rainfall accelerates the level of millet supply in the studied areas.

Furthermore, Adam (2016) used 255 respondents to analyze the profit and market efficiency along the pearl millet value chain in Gusau using value chain technique. The study shows that processors obtained higher profit compared to producers and traders. Umar et al. (2017) examine the effect of the cost of inputs in millet production profitability in Nigeria by applying OLS technique on 430 millet farmers. The study reveals that low cost of inputs of millet production yield high level of profit to farmers. Mukhtar, Mohd, and Iiyasu (2018) utilize OLS approach on 256 respondents to evaluate the performance of technical efficiency of millet farmers in Kano state. The study found that technical efficiency improves small farmer’s productivity in Kano. Reddy et al. (2018) explore the link on the market structure, value chain of millet and fodder for India. The analysis shows that there is need to upgrade value addition apparatus in millet production to increase market efficiency and cost reduction.

Based on the reviewed literature it is noticed that several studies have been conducted on cereal grain crops. However, few studies are done on the cereal grain crop especially millet in Nigeria. In addition, value chain analysis has not been studied on millet production, particularly with regards to profit of millet producers, processors and marketers in Kano state. Hence, this study conducts an analysis of millet value chain along the profit of its producers, marketers and processors in Kano state.

III. DATA AND METHODS

The study used primary data obtained from farmers under the list of Kano State Agricultural and rural development Authority (KNARDA) for Garun-malam, Dambatta and Gezawa Local Government Areas of Kano State using structured questioner approach. The survey was based on the total of 175 samples that comprises millet producers, processors and marketers. Hence, the study applies Ordinary least squares (OLS) technique for the model estimation and it is illustrated in equation (1).

The study used a modified model by Danlami (2014) in analyzing the value chain along the profit level of producers, processors and marketers as illustrated bellow

$$PRV_i = \alpha + \beta_1 LAR_i + \beta_2 SED_i + \beta_3 FER_i + \beta_4 PES_i + \beta_5 TOC_i + \beta_6 TRS_i + \beta_7 STR_i + \beta_8 OTC_i + \beta_9 AGE_i + \beta_{10} EDU_i + \varepsilon_i \quad (1)$$

Producer’s model

$$PRV_i = \alpha + \beta_1 LAR_i + \beta_2 SED_i + \beta_3 FER_i + \beta_4 PES_i + \beta_5 TOC_i + \beta_6 AGE_i + \beta_7 EDU_i + \varepsilon_i \quad (2)$$

Processors model

$$PRV_i = \alpha + \beta_1 LAR_i + \beta_2 TOC_i + \beta_3 TRS_i + \beta_4 STR_i + \beta_5 OTC_i + \beta_6 AGE_i + \beta_7 EDU_i + \varepsilon_i \quad (3)$$

Marketer’s model

$$PRV_i = \alpha + \beta_1 LAR_i + \beta_2 TOC_i + \beta_3 TRS_i + \beta_4 STR_i + \beta_5 OTC_i + \beta_6 AGE_i + \beta_7 EDU_i + \varepsilon_i \quad (4)$$

From the equations (1, 2, 3 and 4) PRV, LAR, SED, FER, PES, TOC, TRS, STR, OTC, AGE and EDU refers as profits, labour, seed, fertilizer, pesticides, total cost, transports, storage, other cost, age, the level of education and ε_i indicates the residual error in the model.

IV. RESULT

Table 4 illustrates the estimated outcome of the models. It is indicated that from the producer’s model, labour, seeds, fertilizer and pesticides increased the level of the producer’s profit. This implies that a percent rise in the level of these factors cause profit of producer to increase by 1.014, 0.003, 0.005 and 1.201 percent, respectively. The positive impact of these factors on profits may not be surprise as farmers are currently encourage and given necessary incentives by government to boost their production. The outcome, further reveals that total cost and the level of education also positively improve profit of producers. However, age has not determine the capacity of producer’s profit. Furthermore, the estimate from the processors model reveals that labour, transports, and other cost accelerate the level of processors profit in Kano state. This means that an upsurge of these factors by one percent leads to 0.589, 0.091 and 0.009 percent rise in processors profit. In addition, the total cost, age and the level of education have positive impact on profit of processors. Nevertheless, storage reduces the capacity of processors profit by 0.092 percent.

Moreover, the outcome from the marketer’s model illustrates that labour, transports, storage and other costs are positively associated with profit level of the marketers. It means a percent increase in these factors results to rise in the marketer’s profit by 0.174, 0.152, 1.021 and 0.697 respectively. Similarly, total cost, age and education enhances marketer’s profit. In general, the implication of these outcomes shows that the total and other relevant cost of the producers, processors and marketers positively enhance their profits. Hence, profit outweighs the costs and it is clearly shows an improvement in the level of profit value chain of the producers, processors and marketers in Kano state. Therefore, policies should be in continues of improving the capacity of farmers through given incentives, extension services and the provision of new technologies for cost effective, higher profits and increased value chain in the production, processing and marketing of millet. The outcome is consistence with the earlier studies (Reddy et al., 2018).

Table 4 Profit value chain estimated model

	Producers	Processors	Marketers
Variables	Profit	Profit	Profit
LAR	1.014*** (0.020)	0.589*** (0.025)	0.174* (0.099)
SED	0.003 (0.008)	- -	- -
FER	0.005*** (0.000)	- -	- -
PES	1.201*** (0.002)	- -	- -
TRS	- -	0.091*** (0.020)	0.152** (0.013)
TOC	2.010* (0.067)	0.421*** (0.034)	1.497*** (0.002)
STR	- -	-0.092* (0.081)	1.021 (0.002)
OTC	0.238*** (0.000)	0.009** (0.036)	0.679*** (0.031)
AGE	-1.0696*** (0.332)	0.544** (0.007)	0.557*** (0.131)
EDU	0.141** (0.052)	1.117** (0.091)	1.819*** (0.039)
AdjR ²	0.78	0.72	0.69

Note: ***, ** and * illustrate 1, 5 and 10 percent significance level

Table 5 shows the post estimation check of the model. The outcome reveals that the model has no problems of autocorrelation and residuals are normally distributed. Hence, the estimates are reliable for policy analysis.

Table 5: Post estimation check

Test	F-statistics		Prob.	
Serial correlation	0.391		0.547	
Breusch-Pagan	0.047		1.000	

V. CONCLUSION

The study analyzes the value chain of millet on the profits of producers, processors and marketers for the sample of 127 farmers in Kano state, using structures questioners and OLS technique. The estimated outcome of the millet producer's model show that labour, seeds, fertilizer, pesticides, total cost and the level of education increase the profit of producers in Kano state. The result also illustrate that from the model of

millet processors, labour, transports, total cost, other cost, age and the level of education enhance their profit level. In addition, the estimated model of marketers reveals a positive linkage among total cost, other cost and profit level. Therefore, it is suggest that policy should be toward enhancing farmer's productivity and profits through the provision of incentives, extensions services and new technologies. The study was unable to incorporate other factors that improve the millet value chain like adaptation of new method of production and technology. Thus, the future research should consider such element in order widen the policy analysis.

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