

Profitability Analysis of Sachet Table Water Production in Gombe South Senatorial Zone, Gombe State, Nigeria

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Abstract: This study examined the profitability analysis of sachet table water production in Gombe South senatorial zone, Gombe state, Nigeria. Multistage sampling technique was used. Gombe South sachet table water production enterprises were purposively selected. In the study area 15 production enterprises were selected. The data were analyzed using enterprise budget model to analyze the gross margin, profit, gross ratio, operating ratio, fixed ratio, return per naira invested, the ratio of gross margin to fixed cost and ratio of gross margin to variable cost. Gross margin of ₦519,151,357, profit of ₦ 516,398,522, gross ratio of 0.0106, operating ratio of 0.0053, fixed ratio of 0.0052, return per capital invested of 94.04, ratio of gross margin to fixed cost of 188.58 and ratio of gross margin to variable cost of 185.58 was released. The citizens of Gombe South senatorial zone should engage in sachet table water production because it is a profitable venture.

Keywords: Production, Profitability, Sachet, South, Table and Water

I. INTRODUCTION

The natural most abundant substance on the earth's crust is water and it occupies about 70% of it (Anyamene and Ojiagu, 2014; Thliza, *et al.*, 2015). Due to its natural abundance and because the protoplasm of many living cells contain about 80% water and most biochemical reactions which occur in the metabolism and growth of living cells involves water medium it is considered a universal solvent. Water is food, because food is any substance which when ingested through the mouth will nourish the body to sustain life (SPDC, 2017). Biologically water is a medium that exists in three forms either as solid, liquid and gas. Importance of ample water quantity for drinking and other purposes was apparent to our ancestors while an understanding of drinking water quality was not well known or documented. (Thliza *et al.*, 2015).

Water is a necessity, a resource and at the same time a major contributory factor in the contamination or pollution problems. Water is very importance to life as it encircles life all round the life of every living thing. To maintain good health, water must be kept safe and free of contamination of any type. Good drinking water supply to Nigeria's teeming

populace is a perennial problem that has defied solution (Omoniyi and Abu, 2012). As such, it has often attracted rhetorical commentaries with little or no practical solutions. Therefore, great concern must be given to the quality of drinking water as it is very critical for the overall socio-economic development of any society and, should engage the attention of individuals, groups, government and non-governmental organizations (Omoniyi and Abu, 2012).

II. METHODOLOGY

Gombe state lies within the Northeast region of Nigeria and occupies a total land area of about 20,265km² and is located between latitude 9°12' and 12° 30'N; longitudes 8°45' and 11°45'E of the Greenwich Meridian.

The sources that were used to obtain the data were two main sources for the study which involves primary and secondary data. Structured questionnaires were used, with both open and close ended questions.

Finite population sample size was determined by using Taro Yamane's formula. This model was adopted due to the nature of the population which is definite (Titus *et al.*, 2008). Gombe South senatorial zones was selected for the study based on the density of the production enterprises. The list of the 15 sachet table water production enterprises in Gombe South senatorial zone was generated and used as a sampling frame. The sample size was estimated using the Yamane's (1967) formula:

$$n_{mgt} = \frac{N}{1+N(e)^2} \dots\dots\dots(1)$$

Where,

n_{mgt} = sample size of the production enterprise in Gombe South senatorial zone.

N = total number of the functional sachet table water production enterprise in the list generated.

e^2 = error term (0.05²)

Gross margin analysis involves the evaluation of efficiency of an individual enterprise in order to have bases for comparison between different enterprises. According to Olukosi and

Erhabor (1988); Ukoha (2007), Gross margin analysis involves evaluating the efficiency of an individual enterprise (business plan) so that comparison can be made between enterprise of different farm plan using IBM SPSS Statistics version 20.

Gross margin is the difference between the gross farm income (GI) or total revenue (TR) and total variable cost (TVC). It is mathematically represented as:

$$GM = GI - TVC \dots\dots\dots(2)$$

Where,

GM= Gross Margin

GI= Gross Income (total returns for sachet table water producers)

TVC= Total variable cost (for sachet table water producers)

The estimated gross margin gives an indication of the profitability or otherwise of the individual sachet table water production enterprises.

Profit is the difference between the total revenue (TR) and the total cost (TC). It is mathematically represented as:

$$\text{Profit} = TR - TC \dots\dots\dots(3)$$

Where,

TR = Total Revenue

TC = Total Cost

Gross ratio is the ratio that shows the relationship between the total revenue (TR) and the total cost (TC). It is mathematically represented as:

$$GR = TC/TR \dots\dots\dots(4)$$

Where,

GR = Gross Ratio

TC = Total Cost

TR = Total Revenue

Operating ratio is that ratio which shows the relationship between total revenue (TR) and total cost (TC). It is mathematically represented as:

$$OR = VC/TR \dots\dots\dots(5)$$

Where,

OR = Operating Ratio

VC = Variable Cost

TR = Total Cost

Fixed ratio is that ratio which shows the relationship between total revenue (TR) and variable cost (VC). It is mathematically represented as:

$$FR = FC/TR \dots\dots\dots(6)$$

Where,

FR = Fixed Ratio

FC = Fixed Cost

TR = Total Cost

Ratio of gross margin to variable cost is the ratio that shows the relationship between the gross margin (GM) and the variable cost (VC). It is mathematically represented as:

$$\text{Ratio of GM: VC} = GM/VC \dots\dots\dots(7)$$

Where,

Ratio of GM: VC = Ratio of gross margin to variable cost

GM = Gross Margin

VC = Variable Cost

Ratio of gross margin to fixed cost is that ratio which shows the relationship between the gross margin and the fixed cost. It is mathematically represented as:

$$\text{Ratio of GM: FC} = GM/FC \dots\dots\dots(8)$$

Where,

Ratio of GM: FC = Ratio of gross margin to fixed cost

GM = Gross Margin

FC = Fixed Cost

Return per naira invested calculated as total revenue (TR) divided by total cost (TC). It is mathematically represented as:

$$R/N = TR / TC \dots\dots\dots(9)$$

Where,

R/N = Returns per naira invested.

TR = Total Revenue

TC = Total Cost

III. RESULTS AND DISCUSSION

Annual Cost and Returns Analysis of Sachet Table Water Production in Gombe South Senatorial Zone (GS)

Annual cost and returns analysis was used in analyzing sachet table water production in the study area. Table 1 shows the costs, returns, gross margin, profit, gross ratio, operating ratio, fixed ratio, ratio of gross margin to variable cost, ratio of gross margin to fixed cost and return per naira invested of sachet table water in Gombe south senatorial zone(GS).

Table 1: Annual Cost and Returns Analysis of Sachet Table Water in Gombe South Senatorial Zone

Items	Quantity/unit	Cost(₦)	Average Cost(₦)	Relative Percentage
Fixed Cost Items				
Building Structure	2	165,000	825,000	5.99
Tank Vehicle	-	-	-	-
Over Head Tank	30	150,000	5,000	5.44
Generating Set	15	180,000	12,000	6.53
Dangling Packing Machine	56	2,100,000	37,500	76.28
Others		157835	9564	5.72
Total Fixed Cost		2,752,835	146,564	99.96
Variable Cost Items				
Cost of labour		985,640	21,903	35.23
Cost of electricity		642,460	14,276	22.96
Cost of transportation		421,213	9,360	15.05
Cost of administration		60,000	1,333	2.14
Cost of buying water		420,000	9,333	15.01
Cost of empty sachet leather		150,000	3,333	5.36
Cost of empty packing bag		98,000	2,177	3.50
Cost of chlorine		10,000	222	0.35
Cost of stationeries		2,000	44	0.07
Cost of sanitizers		8,000	177	0.28
Total Variable Cost		2,797,313	62158	99.99
Total Returns		521,948,670	34,796,578	100
Total Variable Cost		27,973,313		
Total Fixed Cost		2,752,835		
Total Cost		5,550,148		
Gross Margin		519,151,357		
Profit		516,398,522		
Gross Ratio		0.0106		
Operating Ratio		0.0053		
Fixed Ratio		0.0052		
Ratio of Gross Margin to Variable cost		185.58		
Ratio of Gross Margin to Fixed cost		188.58		
Return per Naira Invested		94.40		

Source: Field survey, 2015.

As presented in Table the cost and returns analysis of Gombe south senatorial zone revealed that ₦2,752,835.00 was realized as the total fixed cost (TFC) and ₦146,564.00 as average total average fixed cost (TAFC) and the relative percentage was 99.96. It also shows the total variable cost (TVC) of ₦ 2,797,313.00, total average variable cost of ₦ 62158.00 and the relative percentage was 99. The total returns or gross income or total revenue of ₦521,948,670.00 was realized while ₦ 34,796,578.00 was the total average revenue

and the relative percentage was 100. Gross margin (GM) of ₦ 519,151,357.00 and profit of ₦ 516,398,522.00 was realized.

The result in Table 1 also shows that gross ratio (GR) of 0.0106 was realized; the implication was that sachet table water production was profitable in Gombe south senatorial zone and the total revenue that gives to pay for total cost was 1.06% which indicated that 98.94% goes to net profit. According to Danejiet *et al.* (2006) gross ratio is the ratio that shows the relationship between the total revenue and the average total cost. It also evaluates the performance of the business, such that lower ratio of less than 1 (<1) is considered desirable.

Operating ratio (OR) of 0.0053 was also realized which implies that 0.53% of the total revenue generated in sachet table water enterprises in Gombe south senatorial zone was used to pay for the variable cost and 99.47% of the total revenue was the profit. A lower ratio indicates an operational efficiency compared to other competing enterprises. According to Saleh *et al.* (2015) operating ratio is a ratio of an enterprise variable cost to its total revenue. A positive and lower ratio of <1 is desirable as this indicates that in the event of decline in sales or revenue, the firm will maintain its profitability status. The operating ratio does not guarantee debt repayment or expansion of the enterprise.

Fixed ratio (FR) of 0.0052 was realized, the higher the ratio the lower the risk an enterprise would be to invest and the lower the fixed ratio the more inability the enterprise would be in paying of its durable liabilities from the total revenue. This implies that 0.52% of the total revenue goes to pay for the fixed cost of sachet table water enterprises in Gombe south senatorial zone. This agrees with Saleh *et al.* (2015) who viewed that fixed ratio measures enterprise ability to pay for all its fixed charges/expenses with its total revenue. The fixed ratio is viewed as a solvency ratio it shows how easily an enterprise can pay its bills when they are due.

Ratio of gross margin to variable cost of 185.58 was also realized. This implies that the share of gross margin (GM) that goes to cover the operating expenses of sachet table water enterprises in Gombe south senatorial zone was 18558%. The result revealed a very strong ability of the gross margin to cover the operating expenses in the enterprises.

Ratio of gross margin to fixed cost of 188.58 was realized. This implies that the share of gross margin (GM) that settled the fixed cost of sachet table water enterprises in Gombe south senatorial zone was 18858%. The indication of this finding was that sachet table water enterprises in Gombe south senatorial zone had a strong ability of settling their fixed cost.

The return per capital invested of 94.04 was realized in sachet table water production enterprises in Gombe south senatorial zone. The implication of this finding was that sachet table water production in Gombe south was profitable and the result revealed that in every ₦1 invested ₦93.04 was realized as profit. This is in line with Omoniye and Abu (2012) who

opined that the profit of an entrepreneur or firm was the difference between its total revenue (TR) and total variable cost (TVC) and also found that sachet table water production was a profitable venture.

IV. CONCLUSION AND RECOMMENDATIONS

The viability of sachet table water production was revealed and evaluated in this study. Sachet table water production was profitable in Gombe South senatorial zone in the study area.

The citizens of Gombe South senatorial zone should engage in sachet table water production because it is a profitable venture. The viability of sachet table water production was revealed and evaluated in this study. Sachet table water production in Gombe Central was profitable. There were more experienced managers in Gombe Central. The citizens of Gombe State should engage in sachet table water production because it is a profitable venture. Therefore, the study recommended that the consumers and or people of Gombe State should engage in sachet table water production because it is a profitable venture, it will improve the productivity of the citizens

REFERENCES

- [1] Anyamene, N. C. and Ojiagu, D. K. (2014). Bacteriological Analysis of Sachet Water Sold in Akwa Metropolis, Akwa-Ibom State, Nigeria. *International Journal of Agriculture and Biosciences*, 3:120-122
- [2] Daneji, M. J., Malumfashi, A.I and Muhammed, S. G. (2006). Profitability Analysis of Groundnut Production in Bauchi Local Government Area, Bauchi State, Nigeria. *Savana Journal of Agriculture*, 1(2):165-170
- [3] Olukosi, J. O. and Erhabor, P. O. (1988). Introduction to Management Economics: Principles and Application. Agitab Publishers Zaria, Nigeria, 114 pp.
- [4] Omoniyi, B.B .and Abu, Z. (2012). The Economic Analysis of the Profitability of Small Scale Pure Water Production in Nigeria: a Case Study of JABU Packaged Water Factory. *Afro Asian Journal of Social Science*.3 (34):2229-5313.
- [5] Saleh, A., Kolo, A., Sale, I., Sani, M.H. and Ochi, J. E. (2015). Profitability and Marketing Efficiency of Small Scale Groundnut Oil Processing in Gombe Metropolis Gombe State, Nigeria. In: U. Haruna, A. U. Izge, A. Abdulhamid, Y. Iliyasu, S. L. Abdulrahman and N. Katanga (editors). Proceedings of the 29th Farm Management Association of Nigeria (FAMAN) Annual National Conference, held at Dutse on the 23rd-24th November, 2015. Pp 237-248
- [6] Thliza, L. A., Khan, A.U., Dangora, D. B. and Yahaya, A. (2015). Study of Some Bacterial Load of Some Brands of Sachet Water Sold in Ahmadu Bello University (Main Campus) Zaria, Nigeria. *International Journal of Current Science*, 14:19-97
- [7] Titus, O. G., Olise, M. C. and Eze, G. A. (2008). Research Methods in Business Management Sciences. Iyke Ventures Production Enugu, Nigeria, pp 258.
- [8] Ukoha, O. O. (2007). Farm Management Training: Needs of Farmers and Field Operators in the South-eastern and South-south Agro-ecological Zone of Nigeria. A Training Manual, Paper Presented at Inception Workshop of Stakeholders under Strengthening Farm Management Survey and Data Analysis in Support of Agricultural Policy Formulation and Advisory Services. P. C. V. Conference Hall Mabushi Abuja, 2-3 July, 30 pp.