

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

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**Abstract:** The study examined the profitability analysis of sachet table water production in Gombe North senatorial zone, Gombe state, Nigeria. Multistage sampling technique was used. Gombe North sachet table water production enterprises were purposively selected. In the study area 45 production enterprises were selected. The data were analyzed using enterprise budget model to analyze the 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. Gross margin of ₦288,263,926.00, profit of ₦ 286,642,401.00, gross ratio of 0.0111, operating ratio of 0.0056, fixed ratio of 0.0056, ratio of gross margin to variable cost of 178.69, ratio of gross margin to fixed cost of 177.77 and return per capital invested of 89.63 were released. Sachet table water production was a profitable venture. The citizens of Gombe North senatorial zone should engage in sachet table water production in order to increase their standard of living.

**Keywords:** Analysis, Production, Profitability, Sachet and Water

## I. INTRODUCTION

Water is economic good, rapid urbanization in human settlements in developing countries leads to experiences like lack of available fresh water supplies. Interdependence between water availability and development is exemplified by the link between water and poverty. Poverty is a leading factor to inadequate access to water and sanitation is Africa. Inadequate access to safe water and sanitation resulted to high incidence of communicable diseases that reduce vitality and economic productivity on the continent (Coster and Otufal, 2014).

Water is a necessity, a resource and at the same time a major contributory factor in the contamination or pollution problems. Its importance to life, therefore, can never be overemphasized, as it encircles life all round. 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).

In Nigeria, 60% of the population has access to safe drinking water and in rural areas less than 50% of the households have access to good portable water (Coster and Otufal, 2014). Access to piped water is regarded as a means of access to safe water. Access to piped water among Nigerians has decreased extensively from 14% in 1990 to 6% in 2008. People in the rural areas depend very much on rivers, streams, ponds, and shallow wells for their water needs. Some of these sources dry up during the dry season and households have to invest a substantial amount of their resources to getwater of doubtful quality (Agbelemoge and Odubanjo, 2001). There are very serious implications for the economic development, social welfare ofthe people and the country as a whole. Firstly, people will spendso much time and effort in search of water leading to tremendous economic waste. Secondly, lack of personal hygiene due inadequate water supply often means relatively low levels of personal hygiene and environmental sanitation. Lastly, water is needed for most productive activities; inadequate access to water limits the livelihood options of the people, particularly those in rural areas (International Development Research Council, 2002; Gbadegesin and Olorunfemi, 2007).

### Objective

The objective of the study is to determine the profitability or other wise of sachet table water production enterprise in the study area.

## II. METHODOLOGY

### The Study Area

Gombe state is located between latitude 9°12' and 12° 30'N; longitudes 8°45' and 11°45'E of the Greenwich Meridian. It lies within the Northeast region of Nigeria and occupies a

total land area of about 20,265km<sup>2</sup>. Open and close ended structured questionnaires were used for the study.

*Sampling Techniques*

The sample size was determined by Taro Yamane’s formula, for a finite population. This model was adopted from Titus *et al.* (2008) due to the nature of the population which is definite. Gombe North was the senatorial zones selected for the study based on the density of the production enterprises in the Gombe state. The list of the 10 sachet table water production enterprises in Gombe North 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 North senatorial zone.

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

$e^2$  = error term (0.05<sup>2</sup>)

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 differences 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 the ratio that 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 the ratio that 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 the ratio that 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 is equal to 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 North Senatorial Zone (GN)

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 North (GN) senatorial zone.

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

Items	Quantity/ unit	Cost(₦)	Average Cost(₦)	Relative Percentag e
Fixed Cost Items				
Building Structure	3	215,000	71,666	13.25
Tank Vehicle	0	0	0	0
Over Head Tank	19	95,000	5,000	5.85
Generating Set	10	120,000	12,000	7.40
Dangling Packing Machine	29	1,087,500	37,500	67.06
Others		126166	9559	6.39
Total Fixed Cost		16,215,250	135,725	99.92
Variable Cost Items				
Cost of labour		658,640	43909	40.84
Cost of electricity		394,210	26280	24.44
Cost of transportation		195,560	13037	12.12
Cost of administration		21,000	1400	1.30
Cost of buying water		189,940	12662	11.77
Cost of empty sachet leather		80,000	5333	4.96
Cost of empty packing bag		60,000	4000	3.72
Cost of chlorine		7,478	498	0.46
Cost of stationeries		1,102	73	0.06
Cost of sanitizers		4,684	312	0.29
Total Variable Cost		1,612,614	74842	100
Total Returns		289,876,540	28,987,654	
Total Variable Cost		1,613,182		
Total Fixed Cost		16,215,25		
Total Cost		3,234,139		

Gross Margin	288,263,926
Profit	
Gross Ratio	286,642,401
Operating Ratio	0.0111
Fixed Ratio	0.0056
Ratio of Gross Margin to Variable cost	0.0056
Ratio of Gross Margin to Fixed cost	178.69
	177.77
Return per Naira Invested	89.63

Source: Field survey, 2015.

Table 1 presented the result of cost and returns analysis of sachet table water production enterprises in Gombe North senatorial zone which revealed that ₦1,621,525.00 was realized as the total fixed cost (TFC) and ₦135,725.00 as total average fixed cost (TAFC) and the relative percentage was 99.95. It also shows the total variable cost (TVC) of ₦1,612,614.00, the total average variable cost of ₦74,842.00 and the relative percentage was 100. The total returns or gross income or total revenue of ₦289,876,540.00 was realized while ₦28,987,654.00 was the total average revenue and the relative percentage was 100. Gross margin (GM) of ₦288,263,926.00 and profit of ₦286,642,401.00 was also realized.

The result in Table 1 also shows that gross ratio (GR) of 0.0111 was realized which indicated that sachet table water production was profitable in Gombe North senatorial zone and the total revenue that covered the expenses for total cost was 1.11% which indicated that 98.94% goes to net profit. According Danejiet *et al.* (2006) gross ratio is the ratio that shows the relationship between the total revenue and the average total cost. It also evaluate the performance of the business, such that lower ration of less than 1 (<1) is considered desirable.

Operating ratio (OR) of 0.0056 was also realized which implies that 0.56% of the total revenue generated in sachet table water enterprises in Gombe North senatorial zone was used to cover the expenses the variable cost and 99.44% 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 guaranty debt repayment or expansion of the enterprise.

The Table (1) also presented that fixed ratio (FR) of 0.0056 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. The implication was that 0.56% of the total revenue goes to pay for the fixed cost of sachet table water enterprises in Gombe North senatorial zone. This is in conformity with Saleh *et al.* (2015) who opinion that fixed ratio measures an enterprise ability to pay for all its

fixed charges/expenses with its total revenue. The fixed ratio is viewed as a solvency ratio as it shows how easily an enterprise can pay its bills when they are due.

Ratio of gross margin to variable cost of 178.69 was also realized. This indicated that the share of gross margin (GM) that goes to cover the operating expenses of sachet table water enterprises in Gombe North senatorial zone was 17869%. 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 177.77 was realized. This implies that the share of gross margin (GM) that settled the fixed cost of sachet table water enterprises in Gombe North senatorial zone was 17777%. This also indicated that sachet table water enterprises in Gombe North senatorial zone had a strong ability to cover their fixed cost.

As indicated in Table 1 the return per capital invested of 89.63 was realized in sachet table water production enterprises in Gombe North senatorial zone. The implication of the findings was that sachet table water production was profitable in Gombe North senatorial zone and the result revealed that in every ₦1 invested ₦88.63 was realized as profit. This also agrees with Omoniyi and Abu (2012) who viewed 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 in Gombe North was profitable. The citizens of Gombe State should engage in sachet table water production because it is a profitable venture. Therefore, the study recommended that 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 and the nation at large.

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