



PROFITABILITY ANALYSIS OF SACHET TABLE WATER PRODUCTION IN GOMBE CENTRAL SENATORIAL ZONE, GOMBE STATE, NIGERIA

¹Hamidu, K., ²Mohammed, I. and ²Danwanka, H. A.

¹Department of Agricultural Economics and Extension,
Faculty of Agriculture, Federal University of Kashere, P.M.B 0182, Gombe State, Nigeria.

²Department of Agricultural Economics,
Faculty of Agriculture and Agricultural Technology,
Abubakar Tafawa Balewa University Bauchi, P.M.B. 0248, Bauchi State, Nigeria.

Corresponding Author's E-mail: ammeiees@gmail.com **Tel.:** 08039122692

ABSTRACT

The study examined the profitability analysis of sachet table water production in Gombe Central senatorial zone, Gombe State, Nigeria. Multi-stage sampling procedure was used. Gombe Central senatorial zone sachet table water production enterprises were purposively selected. In the study area, 45 production enterprises were selected. Data were analyzed using enterprise budget model to analyses 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 ₦2,882,510,640, profit of ₦2,794,072,980, gross ratio of 0.0343, operating ratio of 0.0034, fixed ratio of 0.0305, ratio of gross margin to variable cost of 290.09, ratio of gross margin to fixed cost of 32.59 and return per capital invested of 29.40 was released. It was concluded that table water production in Gombe Central senatorial zone, Gombe State is profitable. The study recommended the citizens of Gombe central senatorial zone should engage in sachet table water production because it is a profitable venture.

Keywords: Analysis, Central, Production, Profitability, Sachet, Table, Water.

INTRODUCTION

Water has an economic value in all its competing uses, the most abundant substance in nature and occupies about 70% of the earth's crust, should be recognized as "an economic good" as how private water firms, international institutions, states, and other actors have increasingly framed water in these economic terms, rather than as a public good or an entitlement (United Nations, 1992; and Anyamene and Ojiagu, 2014). Defenders of public water argue that such an approach provides a justification for commodifying public goods. The status of water is "irrevocably ambiguous," neither public good nor private good and along with other scholars (Bakker, 2010; Kurland and Zell, 2011). Water is viewed as a common-pool or common-property resource, on the other hand municipal water supplies as a clear example of a public good which like other public services, "first originated as private goods before being absorbed into the public domain after hard-fought political and social campaigns and concerted state action. Both these positions have salience; whereas tap water does not meet economists' technical definition of a public good, universal and affordable access to clean tap



water is clearly a common good with great societal benefit (Vail, 2010). The role of water as a public or merit good in relation to health is often taken for granted because of the water-borne disease vectors noted above. Even the World Bank has found that if States can integrate health issues into water planning, a more holistic conception of costs and benefits can have a dramatic impact on the economic viability of an infrastructure project (Ruitenbeek, 1994). 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). It is a biological medium which exists 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. 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).

MATERIALS AND METHODS

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 20,265km².

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 Central was the senatorial zones selected for the study based on the density of the production enterprises in the Gombe State. The list of the 45 sachet table water production enterprises in Gombe Central senatorial zone was generated and used as a sampling frame. The sample size was estimated using the Yamane's (1967) formula:

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

where;

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

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

e^2 = error term (0.05²)



Method of Data Collection

Two (2) main sources were used in obtaining data for the study which involves primary and secondary data. Structured questionnaires were used, with both open and close ended questions

Analytical Techniques

Gross margin analysis involves the evaluation of efficiency of an individual enterprise in order to have bases for comparism between different enterprises. According to Olukosi and Erhabor (1988) and Ukoha (2007), gross margin analysis involves evaluating the efficiency of an individual enterprise (business plan) so that comparison can be made between enterprises 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:

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

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:

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

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:

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

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:

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

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:

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



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:

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

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:

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

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:

$$\text{R/N} = \text{TR} / \text{TC} \quad \dots(9)$$

where;

R/N = Returns per naira invested.

TR = Total Revenue

TC = Total Cost

RESULTS AND DISCUSSION

Annual Cost and Returns Analysis of Sachet Table Water Production

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 Central senatorial zone (GC).

Table 1 shows the cost and returns analysis of Gombe Central senatorial zone where ₦8,8437,660.00 was realized as the total fixed cost (TFC) and ₦429,441.00 as average total cost (TAFC) and the relative percentage was 99.95. It also shows the total variable cost (TVC) of ₦9,936,360.00, total average variable cost of ₦ 220,804.00 and the relative percentage was 99.95. ₦ 2,892,447,000.00 was the total returns or gross income or total revenue while ₦ 64,276,600.00 was the total average revenue and the relative percentage was 100, gross margin (GM) of ₦ 2,882,510,640.00, profit of ₦2,794,072,980.00.

The gross ratio (GR) of 0.0343 was realized, the implication was that sachet table water production was profitable in Gombe central and the total revenue that gives to pay for total cost



was 3.43% which indicated that 96.57% goes to net profit. This is in line with Daneji *et al.* (2006) who opined that gross ratio 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 0.0034 was also realized, meaning that 0.34% of the total revenue generated in sachet table water enterprises in Gombe central senatorial zone was used to pay for the variable cost and 99.66% of the total revenue was the profit. A lower ratio indicates an operational efficiency compared to other competing enterprises. This is in line with Saleh *et al.* (2015) who reported that 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.

In Table 1, fixed ratio (FR) of 0.0305 was realized; the higher the ratio the less risk the enterprise would be to invest and the lower the fixed ratio the more inability of the enterprise would be in paying of its durable liabilities from the total revenue. This implies that 3.05% of the total revenue goes to pay for the fixed cost of sachet table water enterprises in Gombe central 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 also 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 290.09 was also realized. This implies that the share of gross margin (GM) that covered operating expenses of sachet table water enterprises in Gombe Central senatorial zone was 29009%. 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 32.59 was realized. This implies that the share of gross margin (GM) that settled the fixed cost of Gombe Central senatorial zone enterprises was 3259%. The indication of this finding was that Gombe central sachet table water enterprises had a strong ability of settling its fixed cost.

Return per capital invested of 29.40 was realized in sachet table water production enterprises. The implication of this finding was that sachet table water production was profitable in Gombe Central senatorial zone and this means that in every ₦1 invested ₦28.40 was realized as profit. This is in line with Omoniyi 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 in sachet table water enterprise the total revenue (TR) generated was ₦18, 200,000; total variable cost (TVC) was ₦9, 880,000 while the net profit was ₦8, 320,000.



Table 1: Annual Cost and Returns Analysis of Sachet Table Water

Items	Quantity/unit	Cost (₦)	Average Cost (₦)	Relative Percentage
Fixed cost items				
building structure	2	82,570,000	4,036,714	93.36
tank vehicle	4	555,000	7,928	0.62
Overhead tank	104	505,000	5,000	0.57
Generating Set	45	540,000	12,000	0.61
Dangling packing machine	97	3,395,000	35,000	3.83
Others		872,660	197774	0.96
Total fixed cost		884,376, 60	42,94416	99.95
Variable cost item				
Cost of labour		3,971,660	88,259	39.97
Cost of electricity		2,550,000	56,666	25.66
Cost of transportation		990,000	22,000	9.96
Cost of administration		150,000	3,333	1.50
Cost of buying water		1,550,000	34,444	15.59
Cost of empty sachet leather		550,600	12,235	5.54
Cost of empty packing bag		125,000	2,777	1.25
Cost of chlorine		22,600	502	0.22
Cost of stationeries		6,000	133	0.06
Cost of sanitizers		20,500	455	0.20
Total variable cost		9,936,360	220,804	99.95
Total returns		2,892,447,000	64,276,600	100
Total variable cost		9,936,360		
Total fixed cost		88,437,660		
Total cost		98,374,020		
Gross margin		2,882,510,640		
Profit		2,794,072,980		
Gross ratio		0.0343		
Operating ratio		0.0034		
Fixed Ratio		0.0305		
Ratio of gross margin to variable cost		290.09		
Ratio of gross margin to fixed cost		32.59		
Return per Naira invested		29.40		

Source: Field survey (2015)

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 Central senatorial zone the study area.



The citizens of Gombe Central senatorial zone should engage in sachet table water production because it is a profitable venture.

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