Factors Influencing Sachet Table Water Marketing in Gombe State, Nigeria

Hamidu, K., Panwal, E. F., Saleh, A., Joseph, M. and Tarki, S. K.

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

***Abstract*: The study examined the factors influencing sachet table water marketing in Gombe state, Nigeria. Multistage sampling technique was used. Gombe state 70 sachet table water marketing enterprises were purposively selected. The data were analyzed using multiple regression analysis with X_1= Cost of holding stock, X_2= Cost of obtaining stock, X_3= Cost of stock, X_4= Physical stock, X_5= Replenishment, X_6= Safety stock, X_7= Maximum stock, X_8= Reorder level, X_9= Unfulfilled request, X_{10}= Lead time as parameters used. Where the result reveals that cost of holding stock (X_1) and cost of stock (X_3) were statistically significant at p<0.01; replenishment order (X_5) was significant at 1%; R^2 was 0.974 and F-value 202.509***. The citizens of Gombe were recommended to engage in sachet table water marketing as it could be a profitable venture.**

***Keywords*: Factors, Influencing, Marketing, Sachet, Table and Water.**

I. INTRODUCTION

The history of ancient civilizations indicated that humans established themselves around water sources (Anyamene & Ojiagu, 2014). 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; Anyamene & 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 & Zell, 2010). 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 (Bleisch, 2006). 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 contains about 80% water and most biochemical reactions which occur in the metabolism and growth of livings cells involves water medium it is considered a universal solvent (Jacson, 2011). 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 & 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 & Abu, 2012).

II. METHODOLOGY

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^2.

Two 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.

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. 70 marketing enterprises were selected in Gombe state and used as a sampling frame. The sample size was estimated using the Yamane's formula:

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

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 (0.05^2)

Regression analysis is the amount of change in the value of one variable associated with unit change in the value of another variable (Koutsiannis, 1987; Olayemi, 2004; Eboh, 2009). It is essentially a statistical instrument which deals with prediction that is a statistical instrument which deals with processes of estimations of values of a variable on the bases of values of another variable (Ogunwale *et al.*, 2002). It can also be defined as a body of statistical method which is dealing with formulation of mathematical model that predict the relationships between dependent and independent variables; and the use of these modeled relationship for the purpose of prediction and other inferences. It is widely used in the estimation of the value of the dependent variables from the value of the independent variable (Bhattacharya & Johnson, 1977). There are two types of regression analysis namely simple regression and multiple regression analysis. Simple regression analysis deals with one expectant that is dependent on one explanatory variable. Multiple regression analysis is an extension of simple regression analysis to cover cases in a situation where the dependent variable is hypothesized to depend on more than one independent variable (Bose, 2015). Ogunwale *et al.* (2002) pointed out that regression analysis is calculated using an equation:

$$Y = a + bx \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

where;

Y = dependent variable

x = independent variable

a = intercept of correspondence line on Y axis

b = regression coefficient

III. RESULTS AND DISCUSSION

Factors Influencing Sachet Table Water Marketing in Gombe State

Multiple regression analysis was used to analyze the factors affecting sachet table water marketing enterprises in the Gombe state as shown in Table 1.

Table 1: Factors Influencing Sachet Table Water Marketing in Gombe State

Variables	Standardized Coef.	t-Value	Sig. Level
Constant	-757.146	-3.272	0.002^{***}
X_1	1.302	3.823	0.000^{***}
X_2	0.164	1.343	0.184^{NS}
X_3	0.863	10.671	0.000^{***}
X_4	0.184	1..546	0.127^{NS}
X_5	-1.596	-3.318	0.002^{**}
X_6	0.037	0.625	0.534^{NS}
X_7	0.165	0.724	0.472^{NS}
X_8	-0.172	-1.245	0.218^{NS}
X_9	0.35	0.385	0.702^{NS}
X_{10}	0.030	1.176	0.244^{NS}
F–value 202.509***	R= 0.986	R^2=0.972	Adj R^2=0.967

*** = Significant at 1%, ** = Significant at 5%, NS = Not Significant

Note: X_1= Cost of holding stock, X_2= Cost of obtaining stock, X_3= Cost of stock, X_4= Physical stock, X_5= Replenishment, X_6= Safety stock, X_7= Maximum stock, X_8= Reorder level, X_9= Unfulfilled request, X_{10}= Lead time.

Table 1 reveals that X_1 and X_3 had positive coefficients and were statistically significant at $p<0.01$. The implication of this is that an increase in cost of holding stock and cost of stock would significantly increase the revenue generation because of increase in the demand of the sachet table water which would affect the order quantity. This is in conformity with Stockton & Liam (1993) who found that there are some products that have higher variability that is unexpected demand which will affect the order quantity. The coefficient X_5 was significant at 1% with a negative coefficient which implies that an increase in replenishment order would reduce the revenue generation because of the cost that will be incurred in the process of ordering and in turn increases costs. This is in line with Chou (2009) who found that replenishment order is order that is placed considering the lead time which is the number of days it takes to receive the product when an order is placed.

Also, the R^2 value indicates that 97% of the revenue generated in the marketing enterprise was as a result of factors that were conceded in the mode while 3% was as a result of other unexplained variables called random variables and F-value 202.509^{***} was realized. Cost of obtaining stock (X_2), physical stock (X_4), safety stock (X_6), maximum stock (X_7), reorder level (X_8), unfulfilled request (X_9) and lead time (X_{10}) were not significant in influencing the revenue generation in sachet table water marketing. This implies that there was proximity of resources needed for marketing of sachet table water marketing enterprises. This in line with Everline & Samson, (2019) who viewed that in a complex and dynamic market a firm should be able to come up with varies techniques of having efficient inventory levels that would be economical to firm if they were to hold stock.

IV. CONCLUSION

It was concluded that proximity of resources to sachet table water marketing enterprise was paramount for optimization.

V. RECOMMENDATION

It was recommended sachet table water marketing enterprises should integrate vertically (forward and backward). Therefore, further studies should be carried out in area of market integration.

REFERENCES

[1] Anyamene, N. C. & Ojiagu, D. K. (2014). Bacteriological Analysis of Sachet Water Sold in Akwa Metropolis, Akwa-Ibom State, Nigeria. International Journal of Agriculture and Biosciences, Vol.3. pp20-122

[2] Bakker, K. (2010). Governance Failure and the World's Urban Water Crisis. Ithaca and London: Cornell University Press. ISBN: 978-8014-7464-4,320 pages, US$24.95.

[3] Bhattacharya, G.K. & Johnson, R. A. (1977). Statistical Concepts and Methods. John Wiley and Sons Publishers, NewYork, USA. pp639

[4] Bleisch, B. (2006). The Human Right to Water – Normative Foundations and Ethical Implications. Ethique et economique. Vol.4, No.2 pp1-23.

[5] Bose, A. A. (2015). Analysis of Cross-Border Cattle Trade between Nigeria and Niger Republic. Ph.D.Unpublished Thesis. Abubakar Tafawa Balewa University Bauchi, Nigeria. pp21-46

[6] Chou, C.C. (2009). Fuzzy Economic Order Quantity Inventory Model. International Journal of Innovative Computing Information and Control. Vol.5, No.9 pp2585-2592

[7] Eboh, E. C. (2009). **Social and Economic Research: Principles and Methods**, African Institute for Applied Economics, Enugu, Nigeria. Nigeria. pp262.

[8] Everline, C. & Samson, K. (2019). Effect of Inventory Management System on Firm Performance- An Empirical Study. International Journal of Innovative Science and Reseach Technology. Vol.4, No.9 pp91-100 ISSN No.:- 2456-2165

[9] Jackson, S. (2011). Aboriginal access to water in Australia: opportunities and constraints. In Water Resources Planning and Management, edited by R. Quentin Grafton, and Karen

[10] Hussey. Cambridge: Cambridge University Press.

[11] Koutsiannis, A. (1987). **Theory of Econometrics**. Second edition . ELBS Macmillian Press Ltd., 31-139 pp.

[12] Kurland, N. B. & Zell, D. (2010).Water and Business: A Taxonomy and Review of the Research. Organization and Environment. Vol.23, No.3 pp316-353.

[13] Ogunwale, A. B., Ayinde, A. T., Abdulazzez, A. & Adedayo, R. O. (2002). Agricultural Economics and Statistics for Undergraduate Student. Published and Printed: Flash Printer, 110 New Court Road Gyadi-Gyadi, Kano, Kano state. ISBN: 984-056-583-3. pp112

[14] Olayemi, J. K. (2004). **Principles of Microeconomics for Applied Economics Analysis**. Siko Publishers, Ibadan, Nigeria. pp 67-123

[15] Omoniyi, B.B . & 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. Vol.3, No.34 . pp2229-5313.

[16] Thliza, L. A., Khan, A.U., Dangora, D. B. & 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. Vol.14 pp19-97

[17] Titus, O. G., Olise, M. C. & Eze, G. A. (2008). **Research Methods in Business MangementSciences**. Iyke Ventures Production Enugu, Nigeria, pp 258.

[18] Stockton, D.J. & Liam, Q. (1993). Identifying Economic Order Quantity Using Genetic Algorithms. International Journal of Operational and Production Management. Vol.13, No.92 pp149

[19] UN (1992). United Nation. "International Conference on Water and the Environment: Development Issues of the 21th Century" 26-31 January 1992, Dublin, Ireland.