

# Differentials in Public Acceptance of Packaged Water Products in Two Nigerian Cities

A. A. Amori<sup>1</sup>, A. A. Makinde<sup>2,\*</sup>

<sup>1</sup>Water Resources Management and Agrometeorology Department, University of Agriculture, Abeokuta, Nigeria

<sup>2</sup>Farming System and Extension Department, National Horticultural Research Institute, Ibadan, Nigeria

**Abstract** In recent years due to increased scarcity of potable water in Nigeria, there has been a rise in the activities of private organizations specializing in the production of packaged water. This paper in the light of this experience examines the extent to which the Nigerian public has accepted these water products. Based on a study conducted in two cities in Nigeria. (Ibadan and Abeokuta), results revealed that there were significant differences in the acceptance of packaged water products based on some socio-demographic variables such as socio-economic background and marital status while there was no significant difference on the basis of gender. The implications of this findings were addressed and recommendations made as to how producers of packaged water can improve on their product quality as a way of commanding more patronage from the Nigerian public.

**Keywords** Packaged Water, Socio- Demographic Factors, Water Resources, Public Water Supply, Evaluation

## 1. Introduction

Nigeria in the last four decades has witnessed a steady decline in the quality of service rendered by most public water agencies. This is due to the problem of increasing population and high demand for water, high cost of water production coupled with the existing poor distribution network. The result has been increasing incidents of water scarcity usually in urban centres, spread of water-borne diseases, poor sanitation all of which have led to the emergence of crises over the allocation and use of available water resources. This scenario has led to an ever-increasing gap in the demand for water in relation to the actual sources of water supply. The gap has been in existence over the years and it appears that existing public agencies responsible for water supply given the current realities cannot adequately cope with the situation. In recent times, there has been the emergence of a group of people who specialize in the production of water packed in nylon, bags or sachet and sold to the public. This initiative can be directly traced to the seasonal changes in the supply of fresh water and the need to consume water as a result of the hot weather that occurs over the year especially in the tropical climates of Nigeria Ajibade, et al, (2006), Sridher (2000), Osibanjo (1991) & Oloruntoba (2006). In spite of the growing popularity of packaged water, and its acceptance as a source of water especially for domestic purposes, there arises the urgency to determine the

extent to which the Nigerian public has accepted or perceived the relevance of available packaged water products.

### 1.1. The Concept of Packaged Water

Packaged water products as mentioned earlier on, came up as an alternative to the conventional public source due to poor water supply and the need to meet up with the increasing demand for water. This situation has led to the emergence of water vendors who specialize in the production of packaged water. Packaged water may simply be regarded as a range of water usually packed into white nylon bags or sachets or containers which are hawked or sold as iced water all over Nigeria. This type of water products are often sold at markets, bus stops, motor parks, shopping malls etc Ajibade, et al (2006) and Ajayi, et al, (2008). In fact they are readily available and sold at affordable prices. These products are registered while some are not. The registered ones are labeled with the production company's name, address, production date, the liquid content (capacity) usually 50 cl and the registration number with the official agency responsible for such and which is National Agency for Food and Drug Administration and Control (NAFDAC). The unregistered ones do not have such details.

Ajayi, et al, (2008) have identified three types of packaged water products sold in Nigeria namely:

(i) Bottled Water which are ranges of water products packaged in plastic containers. These products are manufactured and marketed by reputable companies, both local and multinational and have high quality due to the in-house quality control laboratories they possess that usually checks the water quality and ensure that it is in conformity with acceptable international standards. Needless to say that these

\* Corresponding author:

hakmak4u@yahoo.com (A. A. Makinde)

Published online at <http://journal.sapub.org/scit>

Copyright © 2012 Scientific & Academic Publishing. All Rights Reserved

products are registered with NAFDAC and the necessary details are provided on labels posted on the containers. They are available in 50 cl, 100 cl and 150cl bottles.

(ii) Packaged Water (Type A) which are popularly called 'Pure Water'. They are manufactured by small scale industries located in private residences or special buildings. Most of these products have a registered name and are presumed to have been prepared under government stipulated hygienic quality regulations. They are packed in 25cl or 50cl nylon plastic film sachets and labelled at production sites. They are put in larger sacks in dozens. Sometimes the quality of the product may be poor due to the setting and questionable quality control measures.

(iii) Packaged Water (B Type). This is also known as iced water and is prepared by individuals who provide any poor any available water in nylon sachets and sold to the public. The quality is highly questionable.

### 1.2. Statement of Problem

This study investigated whether there were significant differences in the way Nigerian public perceive and accept packaged water products offered for sale in two Nigerian cities: Ibadan and Abeokuta. This was in response to the increasing popularity of packaged water products as an alternative source to the conventional public water supply. The failure of public water supply in Nigeria in the last two decades has created an avenue for the proliferation and operation of packaged water producers. In view of this scenario, it becomes crucial to examine whether the Nigerian public readily accept the products and how are they perceived based on some already identified socio-demographic factors such as marital status, socio-economic background, gender and geographical location.

### 1.3. Research Question

Do respondents differ in their perception of packaged water products based on gender, marital status, socio-economic background and geographical location?

## 2. Methodology

### 2.1. Sample and Sampling Procedure

The study involved 400 respondents /consisting of (148 females and 252 selected males) spread over the two cities. The respondents were selected using stratified random sampling on the basis of local governments and wards in the two cities.

### 2.2. Instrument

The major instrument used in the study for the purpose of obtaining information from respondents was a questionnaire titled "Questionnaire on the Quality Evaluation and Public Perception of Packaged Water Products in Ibadan and Abeokuta". It consists of three sections. Section a covered issues on personal background information of respondents

such as age, sex, occupation, marital status, socio-economic, background and family size. Section B covers the evaluation of the quality of packaged water by respondents and Section c covers the perception of respondents on the quality of packaged water. Before administration of respondents, the instrument was initially tested for reliability and it yielded a Cronbach alpha value of 0.709.

### 2.3. Procedure

The data collection exercise was undertaken by the researcher with the assistance of four trained research assistants. Questionnaires were administered on the respondents and were retrieved immediately after they had been filled. It lasted a month.

### 2.4. Data Analysis

Analysis of the collected data involved the comparison of the means of responses from the respondents using the t-test statistic for independent samples. The significance level was set at 0.05. Analyses were computed with the Statistical Packages for the Social Sciences (SPSS) software version 15.0 for Windows.

## 3. Results

The t-test static was used in analyzing the data since the variables under study, that is, gender, socio-economic background, marital status and geographical location exists in two groups. The results are presented in tables 1 to 4.

**Table 1.** T-test Comparison of the Mean Perception of Respondents on the Basis of Gender

Gender	Sample (N)	Mean	Standard Deviation	T <sub>cal</sub>	T <sub>cri</sub>	P
Male	147	27.94	7.551	0.283	1.96	0.515 NS
Female	208	28.16	6.969			

Not significant at 0.05 as  $p > 0.05$

**Table 2.** T-Test Comparison of the Mean. Perception of Respondents on the basis of Marital Status

Marital Status	Sample (N)	Mean	Standard Deviation	T <sub>cal</sub>	T <sub>cri</sub>	P
Married	129	25.92	9.125	4.360	1.96	0.015 Significant
Single	225	29.31	5.499			

Significant as  $P < 0.05$

From table 1, it is evident that respondents do not differ in their perception of packaged water products because the t value obtained (0.283) is less than the t value observed from the statistical table, that is 1.96. Further more, the p value of 0.515 obtained is greater than the significance level set at 0.05. In otherwords, it can be said that respondents both male and female do not differ in their perception or view about packaged water products as they tend to see them the same way on the basis of gender.

Table 2 shows that respondents vary and indeed are different in their perception of packaged water products based

on marital status because the  $t$  value obtained (4.360) is greater than the  $t$  value observed from the statistical table, that is 1.96. Furthermore, the  $p$  value of 0.015 obtained is less than 0.05 and is therefore significant at 5% confidence level. Hence, it can be safely concluded that there exist differences in the perception of packaged water by respondents on the basis of marital status as married respondents do not perceive packaged water as the single ones.

**Table 3.** T-test Comparison of the Mean Perception of Respondents on the basis of Socio-Economic Background

Socio-Economic Background	Sample (N)	Mean	Standard Deviation	$T_{cal}$	$T_{cri/obs}$	P
High	79	26.11	8.752	2.264	1.96	1.018
Low	217	28.35	6.920			

**Table 4.** T-test Comparison of the Mean Perception of Respondents on the basis of Geographical Location

Location/Study Areas	Sample (N)	Mean	Standard Deviation	$T_{cal}$	$T_{cri}$	P
Abeokuta	150	26.42	9.225	5.240	1.96	0.021
Ibadan	250	30.31	5.699			

Significant as  $P < 0.05$

Table 3 reveals that there is a significant difference in respondents' perception of packaged water products on the basis of socio-economic background. This is so, because the  $t$  value calculated (2.264) is greater than the  $t$  value observed from the statistical table, that is 1.96. In addition, the test is significant at 5% confidence level (0.05 level) since the value calculated which is 0.18 is less than 0.05. Hence, it is clear that respondents differ in their perception of packaged water products on the basis of socio-economic background. In simple terms, the rich and the poor do not see packaged water products the same way.

Table 4 shows that there is a significant difference in respondents perception of packaged water products on the basis of geographical location or study areas, that is Ibadan and Abeokuta. From the table, the calculated  $t$  value is 5.240 which is greater than the critical or observed  $t$  value obtained from the statistical table which is 1.96. Furthermore, the  $t$  test is significant at 5% confidence level (0.05) since the  $p$ -value calculated, which is 0.021 is less than 0.05. In all, it can be concluded that respondents differ in their perception of packaged water products on the basis of geographical location as respondents in Ibadan differ in their perception from that of respondents in Abeokuta.

## 4. Discussion

In recent past, there has been an increasing demand for packaged water as a result of the sudden awareness among people on the relative availability of these products especially for drinking purposes. This situation is not peculiar to Nigeria alone as it has been reported elsewhere such as Saudi Arabia, Canada etc (Warburton, et al, (1986). In spite of this, this study has confirmed that respondents are different in their perception of packaged water on the basis of marital

status, geographical location and socio-economic background but do not differ on the basis of gender. The implication of this result is that respondents do not have different views about packaged on the basis of gender whether male or female. This means to say that males and females do not see the products the same way. However, females may tend to value it more since as home makers, and managers of water products they see it as a viable source of water supply for domestic purposes thereby limiting the strain and stress they undergo in the process of searching for water. Males tend to be indifferent in the sense that they see it as a normal source and hence accept it as a means of meeting their demand for water particularly for drinking purposes.

That respondents do differ in their perception of packaged water on the basis of marital status, social-economic background and geographical location is rather surprising given the fact that it contradicts the previous result. On the other hand, this result might not be unexpected granted the fact that since all consume water, there could still be some preferences for the sources. Rich people may not want to consume packaged water especially satchet water in view of the fact that they have access to regular water supply through bore-holes which the poor may not be able to afford. On the basis of location, one may not expect differences in view of the fact that water scarcity in developing countries, especially Nigeria is a universal problem hence people ought to see it as such. However this study has proved that it is not so. In addition, it is surprising to see married and singles viewing packaged water differently. Perhaps, this may be attributed to the cost of acquiring them in relation to the number of people that will consume it.

## 5. Conclusions

The results presented here have stressed the fact that people are aware of the increasing popularity of packaged water as a source of water supply even though they differ in their perception on the basis of marital status, socio-economic background and location. Hence, efforts must be made to ensure that the qualities of the products are improved upon in order to sustain the patronage made so far.

## REFERENCES

- [1] Adekunle, L.V., Sridhar, M.R.C., Ajayi, A.A., Oluwande, P.A. & Olawuyi, J.F. (2004). An Assessment of the Health and Socio-Economic Implications of Satchet Water in Ibadan, Nigeria: A Public Health Challenge. *African Journal of Biomedical Research*. 7, 5-8
- [2] Ajibade, L.T. Awoeyo & O.F. Sanusi (2006) Quality Evaluation of Packaged Water for Human Consumption In Saliu, H.A., Ogunsanya A.A., Oniyide O.O. & J.O. Olaniyi (eds) *Democracy and Development in Nigeria*. Economic & Environmental, Lagos: Concept Publications, 340-349

- [3] Aramas, A.B. & Sutherland, J.P. (1999). A survey of Microbiological Quality of Bottled Water Sold in the UK and changes occurring during storage International Journal of food Microbiology 48 91), 59 -65
- [4] Ashaye, O.A. Couple A.A. , Afolabi O.O. & Fasoyiro, S.B. (2001) Physiochemical Properties of Pure Water Samples in South Western Nigeria. Journal of Food Technology. 6(4), 119 – 121
- [5] Chaideze, r., Naranjo, P., J.,Gerba C.O. (1999) Microbiological Quality of Water Vending Machines. International Journal of Environmental Health Research. 9(3), 197 – 206
- [6] Itama, E., Olaseha, I.O. & Sridhar, M.K.C (2006) Springs As Supplementary Water Supplies for Urban City Populations: A Study Ibadan, Nigeria Urban Water Journal, 1-9
- [7] Olayeni, F.O. (1999) Water Analysis of Selected Sealed Polythene Water. African Journal of Science 1(1), 22 -28
- [8] Oloruntoba, E.O., Agbede, O.A. & Sridhar, M.K. (2006). Seasonal Variation in Physiochemical Quality of Household Drinking Water in Ibadan, Nigeria. ASSET: An International Journal. Series B. 5(1)
- [9] Olayemi, A.B. (1999), Microbial Portability of Bottled and Packaged Drinking Water Hawked in Ilorin Metropolis. International Journal of Environmental Health Research. 9(3), 245 – 248
- [10] Oloruntoba, E.O. & Sridhar, M.K.C. (2007). Bacteriological Quality of Drinking Water from source to Household in Ibadan, Nigeria, African Journal of Medicine & Medical Sciences, 36, 169 – 175
- [11] Osibanjo, O. (1991) Present Water Quality Monitoring and Environmental Status in Nigeria In Aina, E.O. & Adedipe, N.O. (eds) The Nigerian Environment. FEPA: Monograph No. 6, 35 – 59
- [12] Sridhar, M.K.C. (2000). Groundwater in Nigeria Urban Centres: Problems and Options in Water, Sanitation and Health – Resolving Conflicts Between Water Drinking Demands and Pressures from Society's Wastes (ed) by I. Chrous, U. Ringelad, g.Schlag, & O. Schmoll, London: IWA Publishing, 393 - 397
- [13] Sridhar, M.K.C. (1999). You, Your Health and the Environment in J.O. Abiodun, M.O. Filani, M.K.C. Sridhar & A.O. Olomola (eds), Nigeria's Endangered Environment: Agenda for a Millenium Lagos: African Press Limited, 185 – 203
- [14] Warbuton, D.W., Peterkin, P.I., Weiss, K.F. & Johnson, M.A. (1986) Microbiological Quality of Bottle Water Sold in Canada. Canadian Journal of Microbiology, 32(11) 891 -893