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APPRAISAL OF POTABLE WATER MARKET IN THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE, NIGERIA

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Abstract

There is a thriving consumer products' market within the campuses and around the South Gate of the Federal University of Technology, Akure (FUTA). Table water is one of the many small-priced items being sold in the market. The university is currently contemplating setting up a table water production plant to supply the market and serve as additional source of internally generated revenue. This paper presents the results of an appraisal of the potable water market in the FUTA. The study estimated the size of the market and explored its structure in terms of marketers, size/ packaging and locations; namely, Obanla (main) and Obakekere campuses; and FUTA South Gate. FUTA Gate accounted for 46% of the marketers while Obanla and Obakekere accounted for 30% and 24%; respectively. Most of the marketers (92%) were supplied table water right in their shops by the sales representatives of the table water plants. There is an uneven distribution of table water sales among the marketers. The CR₈ shows that eight marketers out of fifty accounted for about 41% of the sales. The estimated Gini coefficient was 0.3856. The estimated size of table water in the FUTA was N12,758,267 per annum out of which table water in sachets accounted for N12,424,272 or 97 percent. In terms of volume, the projected table water sales for the period July 2008 to June 2009 was 1.8 million litres.

Key words: Potable water, market, structure, size, Nigeria, university

Introduction

The Federal University of Technology, Akure (FUTA) which is situated in Akure, the Capital of Ondo State in Nigeria, is one of the – public and private universities in Nigeria (NBS, 2006). In the year 2000, there were about 368,866 students in all the Nigeria Universities and about 35,675 staff, but presently, there over one million students in Nigerian Universities and about 65, 430 staff (NBS, 2008). In every community in which a university is situated, it provides livelihood directly and indirectly to several thousands of people, depending on the size of the university. The FUTA, has a student population of about 12,000 and a staff population of about 2,500 (FUTA News bulletin, 2009). The majority of the staff and students live within and around the university campus. More especially, these people spend their workdays on the campus and constitute a single noticeable block of economic power in terms effective demand and tastes as well as preferences. Due to this fact there is thriving consumer products' market within the university campus and around the south gate of the university. This is in addition to other services that are also being offered.

Some universities in Nigeria are aware of the economic power of their staff and students population and, as part of their revenue generation strategies, are providing support services and facilities to the people who are marketing consumer products and rendering various services privately within their campuses. The support services being provided include provision of land, shops and offices as well as power and water, albeit for some fees. Some of them have also taken steps to become producers/suppliers of some of the consumer products that are being marketed within and around their campuses in competition with other producers/suppliers. Some of the universities own petrol stations while there are some that have commercial production of gaari, eggs, among others. Recently, investments in bakeries and table water plants have become attractive to some of the universities.

Nigerians are increasingly becoming aware of the effect of the poor and inadequate water supply on health and the spread of water borne diseases in the country. The prevalence of water borne diseases such as typhoid, diarrhoea and guinea worm in Nigeria is much higher than the internationally accepted standards.

About 410 children per day die from diarrhoeal diseases caused by ingesting unsafe water and poor sanitation (GCAP, 2009). Water supply, especially potable water, is grossly inadequate in Nigeria and most university campuses are not exempted from the problem. The tenth Millennium Development Goal is directed at halving, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation (UN, 2006; IDA, 2009). Access to potable water was 49% in 1990 and there has not been any significant improvement since. The 2006 Nigerian Core welfare Indicator Survey by the Nigerian Bureau of Statistics (2006) provides current information on access to water in the country. Potable water source, defined for households using treated piped water, bore hole/hand pump or protected well for the year 2006, was estimated at 51.4% while year round water source defined for households with no seasonal interruptions to their water supply was estimated at 43.4%. The percentage of people who use treated water was estimated at 11.3%. At current rate of investment and activities, Nigeria will achieve the MDG target in respect of access to potable only in 2138 (GCAP, 2009). The increased awareness about the importance of safe water and the grossly inadequate supply has led to a thriving industry in the production and distribution of table water in the urban centres, especially around communities with relatively high literacy levels, the university campuses are some of these communities. The FUTA, aware of this situation, is contemplating setting up a table water production plant to supply marketers of table water within and around the university campus and serve as additional source of internally generated revenue. This paper presents the results of a study that was carried out to appraise the potable water market in the FUTA. The study estimated the size of the potable water market and explores the structure of the market for potable water in the university community. Also, the distribution of the market in terms of size/packaging and locations; Obanla (main) campus, Obaekere campus and FUTA south gate was examined.

Methodology

Type and Sources of Data

Primary data was used for this study. The data collection was carried out with the aid of an interview guide and field form. Visits were made to table water plants in the neighbourhood of the FUTA and to the marketers of table water in the FUTA. The FUTA was defined as Obanla and Obaekere campuses within the university and the commercial location around FUTA south gate. The commercial location around FUTA south gate was included because most of the patrons of the market

around FUTA south gate. The data collection covered $G = 1 - \sum_{i=0}^N (\sigma Y_{i-1} + \sigma Y_i) (\sigma X_{i-1} - \sigma X_i)$ living a tile

The data collected include the brand names, was also collected on how the marketers obtain their table water supplies; i.e. whether they are supplied on location or they go to the market or plant to buy. Also, since most of the marketers sell multiple items and they do not keep records, data were collected for just the month of July 2008. Data collection was undertaken in the first week of August 2008. This was done to minimise the problem of memory recall. However, to provide the basis for estimating the demand for consecutive twelve calendar months, two marketers (restaurants) which kept records of sales were sought out and the record of sales for the period July 2007 to June 2008 were extracted.

Data Analysis

Descriptive statistics were used to analyse the data collected. These are essentially frequency distributions and measures of central tendency. The data collected from marketers that kept records were used to estimate monthly trend for twelve calendar months. The trend was then applied to the July 2008 data to generate estimated monthly sales for twelve consecutive calendar months. The estimated monthly sales for twelve calendar months were then summed together to arrive at an estimated annual sale.

Further more, the market structure was analysed using Concentration Ratios (CR_2, CR_4 and CR_8) and the Gini Coefficient. The Gini Coefficient (G) is based on the Lorenz curve. It is linked to the concept of comparing the Lorenz curve with the line of perfect equality. Gini coefficient measures the degree of concentration (inequality) of a variable in a distribution of its elements. It compares the Lorenz curve of a ranked empirical distribution with the line of perfect equality The Gini coefficient ranges between 0, where there is no concentration (perfect equality), and 1 where there is total concentration (perfect inequality). The Gini Coefficient is calculated as:

Where

δX is cumulative proportions of the quantities of potable water marketed in bags of sachet water ; δY is the number of potable water marketers; and N is the number of potable marketers (Dixon *et al.*, 1987, Oguntade, 2005).

Results and Discussion

Table Water Marketers

The table water marketers within FUTA (FUTA south gate inclusive) were mostly small-scale traders who sell a mix of small items of provisions, patent medicine / pharmacy stores, and restaurants. Those within FUTA campuses were operating within the academic areas and the students' hostels. The hours of operations of those within the academic areas were synchronised with the main hours of academic activities, i.e. 8.00am to 4.00pm. The trade in the other locations, which are not in the academic areas, could extend to as late as 10.00pm. Most of these marketers were women. Table 1 presents the distribution of the marketers by location.

Table 1. Distribution of Marketers by Location

Location	Number of Marketers	Percent
FUTA Gate	23	46
Obanla	15	30
Obakekere	12	24
Total	50	100

Source: Field Survey, 2008

The table shows that 46% of the marketers were clustered in the University's south gate while 30% of the marketers were in Obanla campus. Only 24% of the marketers are in the Obakekere campus. The distribution is a reflection of the population available to patronise the marketers. The marketers around the south gate of the university have a wider range of customers comprising the students of the university living within and outside the campus but in the vicinity of the gate, the university staff and non-staff living not far away from the gate. Also the duration of sales is longer for these marketers than most of those within the campus. There are more potential customers in the Obanla campus than the Obakekere because the bulk of the universities staff and students work of receive their lectures in the Obanla campus.

Method of obtaining Supplies

There are three options for obtaining supplies of table water opened to the marketers. These are to buy from the market, directly from the table water factory and to wait for the representative of the table water factories to bring the consignment to them right in their shops. Table 2 presents the information how the marketers obtain their supplies.

Table 2. Method of Obtaining Supplies

Source of Supply	Frequency	Percent
On location only	33	66.0
Market only	4	8.0
On location and market	13	26.0
Total	50	100.0

Source: Field Survey, 2008

The table shows that 66% of the marketers wait for the representatives of the table water plant to bring the supplies to them right in their shops. About 8% buys only from the market only while 13% of the marketers buy from the market and also receive supplies from the sales representatives of the plants right at their marketing outlets. This implies that about 92% of the marketers receive supplies of table water right in their shops. This is an indication of very keen competition between the table water plants/representatives. It implies that effective distribution is very important for the different table water brands to retain their market shares.

Distribution of Products by Types

The statistics of sales for the month of July 2008 is presented in Table 3. The survey indicates the table water types being marketed as water in sachets (there is no emphasis on brand name), 50cl bottles (these include Primus and Nestle) 75cl bottles (these include Primus, Gossy and Eva) and 150cl (mostly Eva and Gossy). The relative strength of the demand for the different product types is indicated by the statistics of sales for the month of July 2008 in Table 3.

Table 3. Statistics of Sales for July 2008

<i>(Bottles)</i>	<i>Sachet (Bags)</i>		<i>50cl (Bottles) 75cl</i>	
	<i>150cl (Bottles)</i>			
Valid Number of cases	50	14	10	4
Missing cases	0	36	40	46
Mean	258.48	10.64	15.60	29.00
Median	200.00	4.00	12.00	16.00
Mode	280	4	4	8
Std. Deviation	223.14	20.45	13.66	32.23
Range	1120	79	36	68

Source: Field Survey, 2008

Table 3 shows that all the 50 marketers sell table water that is packaged in sachets, 14 of them sell 50cl bottles of table water, 10 of them sell 75cl bottles and only 4 sell 150cl bottles of table water. The table further shows that sales of table water in sachets were highest with a mean sale of 258.48 bags per marketer for the month of July 2008. This is followed by 150cl (29 bottles), 75cl (16 bottles) and 50cl (11 bottles) in that order. Table water packaged in sachets was hence the most sought. Most of the consumers in the university environment seems to be just interested in affordable but potable water. Packaging in sachet made table water affordable and the presence of NAFDAC number provides the “guaranteed” that it is potable.

Distribution of Products by Location

The distribution of the sales of potable water between the three locations is indicated in Table 4. The table shows that FUTA gate accounted for 55% of table water sold in sachets. Obanla campus accounted for 21% while Obakekere campus accounted for 24%. Similarly FUTA gate recorded 71% and 86% of sales in 50cl and 150cl bottles, respectively. No sale of water in 75cl bottle was recorded in FUTA gate for the month of July 2008.

Table 4. Distribution of Table Water Sales by Location July, 2008

Location	Sachets		50cl Bottles		75cl Bottles		150cl Bottles	
	Quantity sold (Bags)	Percent	Number sold	Percent	Number sold	Percent	Number sold	Percent
FUTA Gate	1767	54.69	27	71.05	-	0.00	25	86.21
Obanla	690	21.36	7	18.42	21	53.85	2	6.90
Obakekere	774	23.96	4	10.53	18	46.15	2	6.90
Total per week	3231	100.00	38	100.00	39	100.00	29	100.00
Total per month	12924		152		156		116	

Source: Field Survey, 2008

Structure of the Market

Table 5 present the structure of the market for potable water in the FUTA. The CR_2 revealed that two marketers out of 50 accounted for about 15% of the sales of potable water in the FUTA. The CR_4 and CR_8 are 25% and 41%; respectively. The CR_8 shows that eight marketers out of fifty accounted for about 41% of the sales of potable water in the FUTA. The uneven distribution of the quantities of table water sales is confirmed by the Gini coefficient which is 0.3856.

Table 5. Market Structure

CR_2	14.85608171
CR_4	24.45063448
CR_8	40.8542247

Source: Authors' estimate

Value of Table Water Sales

The estimated value of the table water sold during the month of July 2008 by all the outlets covered is presented in Table 6. A bag of 20 sachets of table water was priced at ₦ 70.00 while the 50cl; 75cl and 150cl bottles were priced at ₦40.00, ₦50.00 and ₦90.00, respectively. The table shows that the total estimated sales was ₦929,000. Table water in sachets alone accounted for ₦904,680.00 or about 93% of total sales.

Table 6. Value of Table Water Sold (July 2008)

	Quantity of Sachets (Bags)	Number of Bottles (50cl)	Number of Bottles (75cl)	Number of Bottles (150cl)	Total
Total/week	3,231	38	39	29	
Total/month	12,924	152	156	116	
Cost Price per Unit (N)	70	40	50	90	
Value of Procurement (N)	904,680	6,080	7,800	10,440	929,000

Source: Field Survey, 2008

The twelve month projected sales of table water is presented in Table 7. The table shows that the total projected sales for the period July 2008 to June 2009 amount to ₦12,758,267 out of which table water in sachets accounts ₦12,424,272 or 97 percent. A conversion of the projected potable water sales into litres shows that the total estimated annual sales is about 1.8 million litres.

The projected one-year sales of table water indicate the amount of trade that is built around the university campus. Table water is just one of the several items that are being sold by the marketers. It is also an indication of the university community's indirect contribution to the livelihood of its host community. The trend of sales in Table 6 shows projected low points relative to July 2008 (1.00) in August 2008 (0.78) and December 2008 (0.67); when the university community was expected to be on break. High points were projected for January (1.43), February 2009 (1.33) and March 2009 (1.89) when the university was expected in full session and there is dry season. Thus university vacations and disruption of academic calendars that force the university to be on break therefore will affect the livelihood of the university's host community.

Table 7. Projected Procurement of Table Water (July 2008 – June 2009)

Month	Trend	Quantity of Sachets (Bags)	Number of Bottled (50cl)	Number of Bottles (75cl)	Number of Bottles (150cl)
July-08	1.00	12,924	152	156	116
August-08	0.78	10,052	118	121	90
September-08	1.00	12,924	152	156	116
October-08	1.11	14,360	169	173	129
September-08	1.02	13,211	155	159	119
December-08	0.67	8,616	101	104	77
January-09	1.43	18,524	218	224	166
February-09	1.33	17,232	203	208	155
March-09	1.89	24,412	287	295	219
April-09	1.11	14,360	169	173	129
May-09	1.17	15,078	177	182	135
June-09	1.22	15,796	186	191	142
Total per Year	177,490	2,087	2,142	1,593	
Cost Price per Unit (N)		70	40	50	90
Value of Annual Procurement (N)	12,424,272	83,499	107,120	143,376	12,758,267

Source: Field Survey, 2008

Summary and Conclusion

Summary

This study examined the FUTA table water market. The study shows that there are three distinct loci within the table water market in the institution; namely FUTA Gate, Obanla and Obakekere. FUTA Gate accounted for 46% of the marketers while Obanla and Obakekere accounted for 30% and 24%; respectively. The estimated size of table water market in the FUTA was N12,758,267 per annum out of which table water in sachets accounted N12,424,272 or 97 percent. The sales of table water in sachet were split between the three loci as 54.69% for FUTA Gate, 21.36% for Obanla campus and 23.96% for Obakekere campus. In terms of volume, the projected table water sales for the period July 2008 to June 2009 amount to about 1.8 million litres. Most of the marketers (92%) were supplied table water right in their shops by the sales representatives of the table water plants. There was an uneven distribution of table water sales among the marketers. CR_s shows that eight marketers out of fifty accounted for about 41% of the sales of potable water in the FUTA. The estimated Gini coefficient was 0.3856.

Conclusion

There is a significant economic power residing in the Nigerian universities in terms effective demand. This is aptly demonstrated by the size of the table water market in the FUTA; table water being one of the many small-priced consumer items that are sold within and around the university. There is hence a good opportunity for the universities to increase their internally generated revenues by participating in the consumer products' markets within and around their campuses as service providers and, more especially, as producers/suppliers.

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