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EFFICIENCY OF WATER PROVIDING FIRMS IN KENYA: A CASE OF NAIROBI WATER AND SEWERAGE COMPANY LIMITED

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ABSTRACT

Water distribution is often a monopoly of governments or city and municipal authorities. There is no competition with other firms and therefore running such utilities on strictly commercial terms may not apply. This study was conducted between 2010 and 2014 with two objectives: one was to find out the challenges that were facing Nairobi Water and Sewerage Company Limited (NWSC) in providing constant flow of water; and two, to determine how these challenges have been addressed commercially by NWSC. Research methodology adopted was a case study and the data collected was of qualitative in nature, and therefore data was processed through content analysis. The conclusions of the study indicated that water consumers behave in the same manner as any other consumers of other goods or services: they respond positively to good quality of services and timely and constant supply of goods, services or provision of utilities. Water consumers in Nairobi were no exception: they needed good quality clean drinkable water, fair price, good and courteous treatment by debt collectors, and reliable and constant flow of water. It is posited that the principles of marketing and marketing strategies are applicable even in utility companies because the behaviour of consumers is the same in all aspects.

Key words: *utilities, illegal connections, courteous treatment, fast-moving consumer goods, debt collectors, water pilferages, corruption in debt collection.*

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Introduction

Water is an important resource to all living things and all activities of human beings. Groups of people and any form of organized life need water for various uses. Many cities of the world try hard to provide this important resource to their citizens. Major cities of the world including London, New York, Tokyo, Cairo, Mumbai, Lagos and Nairobi do not have adequate supply of clean water due to increasing population and industrial activities. The importance of water from River Nile to life in Cairo is huge and it a question of maintaining a continuous flow of River Nile that Cairo may continue to function. Nairobi, with a population of 4 million inhabitants, is a younger city historically than Cairo with 17 million or Rome with 2.8 million people. Table 1 indicates 10 biggest populated cities of the world in 2015.

Table 1: Most Populated Cities of the world in 2015

City and Country	Population estimates in 2015 in millions
Tokyo in Japan	37,000,000
New Delhi in India	24,100,000
Mumbai in India	21,800,000
Sao Paulo in Brazil	21,300,000
Mexico City in Mexico	20,100,000
New York in USA	20,000,000
Shanghai in China	17,800,000
Kolkata in India	16,900,000
Dhaka in Bangladesh	16,600,000
Karachi in Pakistan	14,800,000
……..	……..
Nairobi in Kenya	6,547,547 Day
	3,375,000 Night

Source: http://www.puretravel.com-10-bigest-cities-in-the-world-2015

Each of these biggest cities in the world has its own water problems in differing degrees and some of them have developed better ways of resolving water problems. Older cities have a history and experience of finding solutions to water problems than the relatively young city of Nairobi. Nairobi City has its own unique problems that are contextual to it locations and the specifics of Kenya as a country. Solutions to water problems in Nairobi City should be found within the context of its location and historical background of this particular city and Kenyan conditions in general.

As we look into problems affecting water supply in Nairobi, there are other Kenyan cities and towns that may be having better approaches to solving water and distribution problems that can be borrowed by Nairobi in tackling its challenges. The biggest cities and towns in Kenya have different experiences in tackling water supply emanating from their historical experiences and recent developments by different County Governments. Table 2 show the major towns in Kenya and their County locations as classified according to the population residing in those cities and towns.

Table 2: Major cities and towns in Kenya classified according to population size.

S/N	CITY/TOWN	STATUS	POPULATION Estimates 2015	COUNTY
1	Nairobi-Greater	Metropolitan	6,547,547	Nairobi, Kajiado, Machakos, Kiambu
2	Nairobi	City	3,375,000	Nairobi
3	Mombasa	City	1,200,000	Mombasa
4	Kisumu	City	409,928	Kisumu
5	Nakuru	Municipality	309,990	Nakuru
6	Eldoret	Municipality	289,380	Uasin Gishu

Source: World Population Review, 2015. *worldpopulationreview.com/Kenya-population*

As far as demand for water and other sewerage services required by a population, the figures in table 2 may be underestimated during the day. These figures are true during the night when all those who work in the towns during the day have gone home into the outskirts of the towns. The demand for water and sewerage is biggest when all offices, business premises and eateries use a lot of water to serve an expanded population of people who have come to do business in towns. There are also visitors from other towns and other countries that place a lot of demand on water and sewerage services. There is no one city or town that can be said to experience almost constant population between day and night due to high mobility of people as provided by modern easy methods of transportation. Commuter trains in Nairobi between the outskirt's town and trading centres within greater Nairobi has made it easier for daily visitors to converge in Nairobi looking for business opportunities or even visiting experience the sky scrapers that Nairobi has been known of late.

Research Objectives

At the time of conducting this study between 2010 and 2014, many cities and municipalities in Kenya were experiencing different problems associated with constant supply of water and managing the provision of sewerages. Nairobi City Council by then was experiencing acute problems with illegal connections and non-payment of consumed water. According to NWSC records of 2010 up to 56% of estimated water supply for Nairobi City was lost in illegal connections and loses in

dilapidated old pipes and outright theft of water. This study was conducted to contribute towards resolving problems associated with the supply of water to Nairobi city and even the Greater Nairobi Metropolis.

This study had two objectives: one was to find out the challenges that were facing Nairobi Water and Sewerage Company Limited (NWSC) in providing constant flow of water; and two, to determine how these challenges have been addressed commercially by NWSC. While conducting fieldwork and collecting data, objective one was narrowed down to four sub-objectives, since it was realized that NWSC had myriad of challenges that the study can only address a few of them. Sub-objective one was to establish problems associated with the supply of water from dams to treating reservoirs and the challenges facing treatment plants to guarantee future constant flow of water. The second specific objective was to establish how NWSC can monitor and find out ways to reduce pilferages and what NWSC calls "Non-Revenue Water", which to laymen means stolen or illegal connection of water. This third sub-objective was to determine the contribution of NWSC workers in resolving these problems and how management can rely more on the contribution of employees in better managing NWSC. The last fourth sub-objective was to consider what management can do in order to provide overall leadership and formulate long term strategies to properly manage available resources for the betterment of Nairobi residents now and in the near future.

Literature Review

Provision of water is an expensive undertaking and most cities of the world have differing experiences in managing their water supply. A bigger population of a city demands more water and sewerage services. All cities should be constantly increasing their capacities to provide this important resource. Every city, including Nairobi experiences influx of upcountry immigrants looking for wage employment opportunities and good life provided by town life. Some rural folk have no running piped water but may be used to river water or water wells. Because of this better town life, there is constant inflow of young population moving to Nairobi and its environs for employment opportunities. Although the current devolution government structure of having the Central National Government and the 47 Countries throughout Kenya may reverse this influx to Nairobi, their capital centres of counties will experience the same inflow attracted by opportunities given by new towns and cities.

What other cities in the world have experienced can be borrowed by Nairobi. Many writers have proposed that water should be treated as a national resource that the National Government should handle. Others have proposed that County Governments should up their game in establishing proper organizational structures to manage this important water resource. There are many factors that influence the management of supply of water to a city or municipality. Those cities are geographically located in areas where there is adequate rainfall or constant springs or sources of water have less problems than cities located in deserts or in hilly salty water bodies. Nairobi is located in the highlands of Kenya with fresh mountain water and therefore Nairobi should be experiencing less severe problems associated with supply of water. The prevailing problems facing NWSC are of management nature of the available water resources. Israel is known to be a country that recycles up to 60% of water waste yet the country do not have many sources of fresh water and the little they must be used effectively. It is in Israel where the technology of recycling waste water and the overall technology of

treating sewerage water has been developed to advanced stages.

There has been an increase in the spread of water-borne diseases, more frequent declaration of drought disasters and increase in the water rationing period of various water supply providers throughout the country. T

Methodology

The focus of the study was on NWSC and the appropriate methodology was considered to be a case study. By focusing on NWSC it was possible to analyse in detail the problems associated with the supply of water and to find out how the organization tackles these challenges. In order to address issues raised by objective one and two, an interview guide was drawn with questions directed at senior managers in NWSC dealing directly or indirectly with supply of water and those who handle accounts and overall administration of water and sewerage services

The interview guide used in collecting data was divided in to sections according to the main objective and sub-objectives. Managers and section heads in every headquarters of the five NWSC regions were interviewed and their opinions were obtained. The results were tabulated in Likert type of scale on how they rated the performance of various policy decisions on how to tackle challenges facing the company. Respondents were willing to share their opinions freely and were willing to be part of the solutions being proposed. There were some challenges in meeting the managers in the southern and Western Regions but on a second visit it was possible to get their input. The response rate was 75%.

NWSC receives much of its water from seven main reservoirs in Kikuyu springs, Ndakaini Dam, Ngethu Dam, Ruiru Dam, Sasumua Dam and Thika Dam. These sources are managed by NWSC and is responsible for their maintenance and management. NWSC has also divided Nairobi City and the surrounding neighbourhoods into five regional zones. This was meant to ease administration and to enable quick response to problems arising from these regions and their neighbourhoods.

Data Collection

Table 3: NWSC Administrative Regions and number of clients.

REGIONS	APPR NUMBER OF CLIENTS	REVENUE PER YEAR(in mln shs)	NON REVENUE WATER (in mln shs)
Northern Region	660,000	450	200
Eastern Region	765,000	700	300
Central Region	545,000	550	250
Southern Region	575,000	450	200

Western Region	650,000	600	400
Unconnected	550,000		850
Total connected and unconnected	3,745,000	2,750	2,200

Source: NWSC Website www.nwsc.ac.ke

Table 3 shows that NWSC could potentially collect 4.95 billion shillings but collects only 2.75 billion (55%) and are losing up to 2.2 billion shillings (45%). The non-revenue water is represented by loses on the way through spillage and bust pipes and illegal connection as well as individual residents having their own boreholes or any other source other than NWSC. The companies will continuously strife to bring these outside the pool of potential clients into its net, but the challenge will be to provide better services and supply of clean and reliable water than they currently enjoy.

Results of the study

After analysing the data obtained from the fieldwork, and taking into consideration opinions of the regional managers of NWSC, it became clear that on objective one, there were several challenges associated with provision of reliable clean water in Nairobi City. While conducting fieldwork and collecting data, it was observed that the Nairobi's water storage per capital had significantly reduced to an estimated level of $3m^3$/capita in 2013. The low level of storage is due to poor investment level in water management infrastructure which has been going on for quite a long time. With the low level of investment in water infrastructure, the water utility company is unable buffer against shocks of small drought periods and the ability to serve an ever increasing demand for water for domestic and for industrial uses. Also due to recurrent drought in the last three consecutive years, rivers and rivulets have dried up leading to dams holding dwindling reserves.

A more acute problem was the rusting of pipes that were installed way back in the colonial period. This has led to constant busting of pipes that cannot withstand the pressure of high demand for water. There was also the problem of construction of buildings on top of sewer lines and clean water pipes, and illegal connections or non-revenue water. Other challenges included poor operations and maintenance of water treatment plants, thus reducing their quality, siltation in dams, poor sanitation services in slum areas or as architects call it unplanned settlements, and blockage of sewer lines. It was found out that political interference was more pronounced in Nairobi that in other municipalities. Politics influenced very much the functioning of the board and the duties of the CEO. At one time, the board of NWSC was removed due to what was called un-procedural appointment of the board members. It was later resolved politically. Other problems were associated with poor management, poor industrial relations, and poor morale for workers. Stakeholders outside the company were found to influence internal decisions of the company. Suppliers and important clients of specialized services were found to wield a lot of powers and could influence decisions at Kampala Road NWSC headquarters.

In addressing objective two, the study looked at possible alternative ways of addressing these challenges by NWSC. From the results of the study it was clear that solutions to these myriad problems lie in the division of these problems into internal and external challenges. Internal challenges were problems that the

company could address with assistance from the shareholders, which is the Government of Nairobi County. The company must develop internal mechanisms and increase internal capacities to tackle issues. They must establish capacities and capabilities to identify individuals and corporations to assist in resolving these problems. NWSC should establish capacity building for managers and all workers to participate fully in company activities. Although the company has held several retreats for team building sessions, there is need to involve all staff in every cadre. It should also formulate long term strategies of waste water treatment and improve on the current methods of disposing waste water. There should be plans to recycle waste water and such a technology can be borrowed from Israeli cities and other successful cities of the world. Existing water sources should be augmented by bringing on board other sources such as harnessing if subterranean water through bore holes and harvesting waste water.

There is need for collaboration between NWSC together with all stakeholders is seeking for solutions to problems emanating from the external environment of the company. There are also problems that need the intervention of national government and needed collaboration the government of Nairobi Country to resolve. There are problems of water management nationally that influence decisions at NWSC. The general degradation of water sources and water towers directly affects the NWSC dams in Kikuyu springs, Ndakaini Dam, Ngethu Dam, Ruiru Dam, Sasumua Dam and Thika Dam. Siltation of dams and sometimes heavy rains and floods can destroy NWSC infrastructure, and thus affect constant flow of clean water. There problems need common approach between all stakeholders.

Conclusions

The study concluded that NWSC had a lot of challenges both administrative and technical. The identification of problems was easy and they were well documented by the company. There were a few employees, especially the junior cadres, who were not worried by the problems being experienced by the firm, only interested in keeping their jobs. Managers and technical staff appreciated the seriousness of the problems bedevilling the organization for many years. It was clear from the study that NWSC must establish and build capacities to be able to tackle problems as they arise. The influx of urban population to towns for job opportunities as well as for better life will continue to put pressure on the NWSC to provide water and sanitation facilities. There are also daily visitors not only to Nairobi City but also to all municipalities in Kenya that come to town during day time and retreat at night to suburbs or neighbourhoods. During day time there is big pressure on the water and sanitation facilities. It is posited that consumers of water and sanitation in major cities of the world need to be treated like any other consumer of any fast-moving goods: good quality products, fair price and reliable supply. The approach so far used by NWSC needs to be relooked from different perspectives and apply modern technology and modern management systems in solving problems at every level. There is also a need to train people and provide them with commensurate skills to be able to respond to changing needs of people on water and sanitation in all towns and cities, including the Nairobi city.

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