



Munich Personal RePEc Archive

Relating Staff perceptions on the Management of the Akwa Ibom Water Company Limited with tripartite Households in Akwa Ibom State

Bassey, Ettah and Ubi-Abai, Itoro

University of Uyo, Akwa Ibom State University

1 December 2024

Online at <https://mpra.ub.uni-muenchen.de/122915/>
MPRA Paper No. 122915, posted 12 Dec 2024 07:49 UTC

Relating Staff Perceptions on the Management of the Akwa Ibom Water Company Limited with tripartite Households in Akwa Ibom State

Ettah B. Essien

Department of Economics
University of Uyo

Ito P. Ubi-Abai

Department of Economics
Akwa-Ibom State University

Abstract

This study is the third and last of the research series on the management of the Akwa Ibom Water Company Limited. It focused on Staff perceptions on key management functions and the severity of the challenges faced by the water company. Thereafter, the study examined the relationship between Staff perceptions and three categories of households. Using the combination of the survey and quasi-experimental research designs, a sample size of 400 that comprised 200 Staff of the water company and 200 households was selected through the two-stage cluster probability sampling and the purposive non-probability sampling techniques. Data were obtained using structured questionnaires. The validity and reliability tests showed that questions in the questionnaires were valid and reliable. The descriptive analysis revealed that majority of the Staff rated the key management activities ineffective. Majority of the Staff viewed inadequate power supply, inadequate water distribution capacity, poor coordination of daily operations, and corruption in management of water infrastructure among others as very major challenges. The ordinal probit regression analysis revealed that staff experience, planning and controlling management activities have positive and significant relationship with households' access to water services, whereas the directing management activity and government interference have negative and significant relationship with households' access to water services. It was concluded that key management activities are ineffective. This was attributed to the severity of the challenges they face, thereby adversely affecting water supply to households. It was recommended among others that the water company needs to improve its output. The State Government should make adequate water management laws and give the water company the mandate to enforce such laws. Adequate funding should be provided to aid the water company replace damaged water pipelines. Adequate power supply should be provided to ensure the water company operates efficiently.

1. Introduction

The perception of Staff on key issues is paramount to the effective functioning of any organization. An organization such as the Akwa Ibom Water Company Limited, charged with the responsibility of providing portable water to the urban and semi-urban communities of the state in an efficient manner, has over 300 Staff which plays different roles in ensuring that the mission of the water company is achieved. This study presents the third part in the research series on the water company.

The first part examined the supply side by assessing the technical efficiency and total productivity using the Data Envelopment Analysis (DEA) on 20 locations of the Akwa Ibom

Water Company Limited. Using the data such as Staff Strength, the Capacity of the Production System and the Actual Collected Revenue; and the output, Volume of Water Distributed, sourced from the Monitoring and Evaluation Unit Monthly Analysis spanning 2020 to 2023, the constant return to scale model revealed that the 20 water facilities were inefficient and the malmquist summary revealed that their total productivities were not optimal (Ubi-Abai, 2024).

The second part examined the demand side by assessing households' willingness to pay and payments for water services supplied by the water company using the Heckman two-step analysis. Using the survey research design, a sample of 200 households was selected using the purposive non-probability sampling technique. Data were obtained using a structured questionnaires. The cluster analysis revealed that 38 households used water efficiently. Furthermore, the Heckman two-step analysis revealed that factors such as water use efficiency, water quality, income and family size influenced households' willingness to pay and monthly water payment levels (Ubi-Abai, 2024).

The third part examines the perception of Staff on key management functions and challenges faced by the water company and how it relates with different categories of households in Akwa Ibom State. The perception of Staff is very important since they are in the best position to provide responses on the effectiveness of key management functions and the severity of the challenges the water company encounter. Notably, Staff perceptions of organizational issues are widely considered to be a key factor in explaining the success or failure of plans within an organisation (Kennedy and Widener, 2019; Lopez-Valeiras *et al.*, 2022).

With respect to households, the study adopts a holistic approach. The study captures households that live in the coverage areas of the water company. The households comprise households that have access to water services from the water company and pay their water bills regularly; households that have access to water services from the water company and often face disconnections due to irregular payments of water bills; and households that do not have access to water services from the water company.

Studies have been carried out on consumer's perception on municipal water supply (Odegba *et al.*, (2015) and others have examined the importance of the management of municipal water supply on households' access (George *et al.*, (2010), Ishaku *et al.*, (2011), Ohwo and Abotutu (2014), Mohammed and Sahabo (2015), Kosoe and Osumanu (2015). This study seeks to examine the perceptions of Staff on the effectiveness of key management functions and the severity of challenges faced by a municipal water organization, Akwa Ibom Water Company

Limited; and how these perceptions relate to households that live close to the water distribution pipelines.

Following the introduction, section two presents the literature review. Thereafter, section three presents the methodology. Section four gives details on data analysis and discussion of findings and section five concludes the study.

2. Literature Review

The review is guided by the social information processing theory. This model offers a valuable theoretical framework for integrating, as well as intellectualizing deliberate and automatic processes in the organizations (Wyer Jr, 2012). The model asserts that people tend to be motivated to communicate with each other to develop the unambiguous and unwavering interpretations of their meanings and events. The theory further posits that individuals use information obtained from others within their social setting to form their attitudes, perceptions, and behaviors. The social information processing theory postulates that social setting influences the employees' perception of in any organization setting (Gonçalo and Jorge, 2019)

Some scholar have examined the management of water supply and households' access. George *et al.*, (2010) examined the level people have access to privatized water services in Kisumu Municipality in Kenya using a cross-sectional survey and purposive sampling of 367 households. The study showed that the percentage of households with access to water supply within a 200-metre distance was 77.1%. However, 25% of the households had access to the minimum recommended 50 litres. 65.6% of the basic water requirements of the residents were met. The study concluded that people's accesses to water services were reduced due to inadequate investment in water infrastructure and the low level of households' income.

Ishaku *et al.*, (2011) examined how effective water supply contributed to health, social, and cultural development of rural communities in Nigeria. They were of the opinion that over 70% of households in rural communities cannot access improved water supply. They relied on self-water supply such as rivers, perennial streams, water ponds and unprotected wells which can cause water borne diseases. They were of the opinion that governments' interventions towards rural water supply have been through the provision of hand-operated boreholes and wells. These were not encouraging because these sources provided little or no water during the dry season; and were prone to malfunction, leading to water crisis. This scenario led households, especially the women and children, to walk longer distances to access water for domestic use.

Amori *et al.*, (2012) assessed the major problems that affected residents in Iju-Ishaga southwest, Nigeria on the distribution of public water supply. Data were collected from 240 respondents (133 males and 107 females) in eight wards of the local government using questionnaires. The study employed the frequency counts and t-test statistic to analyse the problems that affected the distribution of public water. The study revealed that the respondents strongly believed that the distribution network is faulty which caused inadequate water supply and water scarcity.

Ohwo and Abotutu (2014) sought to determine households' access to potable water supply in Yenegoa, in terms of quality and quantity. They sampled 15 boreholes and randomly administered questionnaires to 375 respondents from 15 different neighbourhoods using the systematic random sampling technique. Their findings revealed that both the quality and quantity of water supply in Yenegoa were inadequate. In spite of the proliferations of wells and boreholes, and the short distances to sources of major water supply, 29.28% of sampled respondents used below 20 liters of water per capita per day. This was attributed to high cost of water supply in relation to the monthly minimum national wage of 18000 naira.

Ben and Ogunyemi (2015) examined water supply situation in Owo, Ondo State, Nigeria. Data were obtained from both primary and secondary sources through physical survey, observation, interview and questionnaires administered to targeted residents. Data were analysed using descriptive and pictorial analyses. The study revealed that out of the 300 respondents, only 27, representing 9% of the entire population derive and enjoy their water supply from the public pipe borne water. The study also revealed other sources of water supply in Owo to include stream/river which accounted for 6.7% of the populace, borehole accounted for 25.7%, well 56.3% and others accounted for 2.3% of the sampled population. 69.3% of the sampled population travelled more than one kilometre, 18.7% of the sampled population travelled less than one kilometre, while the remaining 11.7% of the population have their water source within their compound. The study revealed that the problems of water supply are lack of attention to maintenance and sustainability, erosion, inadequate supply and irregular supply, inadequate coverage of pipe borne water distribution network, poor quality and increased time cost in the process of getting water for their daily needs, and inadequate funding.

Odegba *et al.*, (2015) assessed the perception of residents towards the supply of potable water to Abeokuta with the aid of questionnaire. Using the stratified random sampling method with the aid of a network distribution map obtained from the Ogun state water corporation as guide, it was discovered that 66% of the respondents attested that the quality of the water supplied was unsatisfactory while 36% agreed that they had contracted water related diseases as a result of the

consumption of drinking water obtained from public taps. 65% of the respondents use less than 120 liters of water daily, while 77% attested that the water supplied did not meet their daily demand. Only 39% of the respondents who relied on water from alternative sources subjected the water to treatment before usage.

Kosoe and Osumanu (2015) explored the situation of household's access to potable water supply in the WA municipality, a low-income urban area in North-West Ghana using a questionnaire survey and key informant interviews. The study analysed important issues on access to water supply focusing on availability, accessibility and cost. Using the clustered sampling of residential areas of the municipality, the study examined spatial disparities in access to water supply. The results indicated that access to potable water supply in the municipality is generally high as only 13% of households depend on open wells as their main source. Also, the private sector (individuals and non-governmental organisation) are major players in public water supply in the municipality. Distance and cost of water remain serious challenges confronting households, in spite of the progress made in access to potable water supply.

Wami and Fisher (2015) examined the effect of poor performance of the Rivers State Water Board (RSWB) on the residents of Port Harcourt, Rivers State, Nigeria. 450 respondents provided answers to the questionnaire. Using descriptive and pictorial analyses, the study observed that 60% of the respondents were provided with water services. Meanwhile, 31% of the population that were served in the past but no longer enjoyed the was due to lack of proper maintenance of utility's assets. The study revealed that services were available to only 9% of respondents while 91% were never provided. The study also revealed that 60% of respondents do not have access due to the absence of water board's pipeline in the area. 78% of the respondents obtained water from boreholes either within their own compounds or from neighbours which they purchased; 13% of the respondents obtained water from informal water vendors responsible for delivering water on hand-pushed carts; 4.5% of the respondents who had access to the services of the State water board still had boreholes in their premises; and only 4.5% of respondents relied solely on the water board for their water needs

Lukman *et al.*, (2016) evaluated the effects of selected factors on water supply and access to safe water. The study revealed that the national average of access to piped water supply, protected wells; borehole and water vendors were 17.5%; 12.8%; 11.6% and 4.0% respectively while the national average of access to safe water supply was 45.9%. The study also revealed that Taraba and Ebonyi States had the least access to piped water supply of 0.8% and 0.9% respectively. Kwara and Lagos States had the highest access to piped water supply of 59.5% and 51.1%

respectively. Taraba (12.7%) and Zamfara (21.7%) States were the lowest contributors to access safe water supply. The study concluded that States like Zamfara, Taraba, Akwa Ibom and Ebonyi needed to intensify their efforts to meet Millennium Development Goals and Vision 20: 2020.

Okon and Njoku (2017) evaluated domestic access to pipe-borne water in Calabar Metropolis. A total of 614 questionnaires were administered to residents of Calabar Metropolis using the systematic sampling technique. The study analyzed data using descriptive statistics and spatial techniques. The study revealed that 48.5 percent were connected to the Cross River State Water Board Limited service while 51.5 percent were either disconnected or have never been connected to the pipe-borne water network. 33.9 percent of respondents also have alternatives to the Cross River State Water Board Limited service because of doubts in the availability and quality of the water. Only 1.3 percent of the respondents had pipe-borne water as frequent as every hour of the day, 4.9 percent had water on daily basis, 44.3 percent had water at least once every week and 34.7 percent barely had pipe-borne water and thus resort to other sources of water. Less than one percent of households in the metropolis used less than 20 litres, 9.8 percent used 20 to 40 litres on average daily, 18.8 percent used between 40 – 80 litres and 71.5 percent used more than 80 litres. Moreover, 31.6 percent of households spent between 1000 Naira to 2000 Naira on pipe-borne water monthly. 6.7 percent spent as much as 3000 Naira and just a little above 10 percent spent less than 1000 Naira on the service. Sadly, 50.2 percent did not patronize the service which reduced the revenue accruable by the Cross River State Water Board Limited.

The results also revealed that no significant statistical relationship existed between the number of persons in households sampled and average volume of water used daily. The results revealed that a significant statistical relationship exist between the average volume of water used daily by respondents in the Metropolis and their income. The results also revealed that a significant statistical relationship exist between the average monthly expenditure of pipe-borne water by respondents in the metropolis and their income. The multinomial logistic regression analyses revealed that a combined effect of the model of availability, geographic, financial and acceptability significantly contributed to measuring access to pipe-borne water in the Metropolis.

Ubughu *et al.*, (2017) examined the empirics of people and water in Calabar municipality, Cross River State, Nigeria. A total of 384 questionnaires were distributed randomly within the Municipality. The study adopted the descriptive, chi square and multinomial regression analyses. The descriptive analysis revealed that 63.5 percent of the residents cover the permissible distance of less than 200 meters while the other 36.5 are deprived. 21.6 percent cover a distance between 201m to 400 meters, while a distance of 401 to 600 meters and above 600 meters is covered by

9.9 percent and 4.9 percent, respectively. The study revealed that 49 percent of residents rely on privately operated boreholes for water, 42 percent get their water from the Cross River State Water Board Limited pipe borne water service, 4 percent get water from hand dug wells while 5 percent of the residents get their water from stream/river. While 36.2 percent of households do not spend above 2000 naira, 28.4 percent spend between 2100 to 3000 naira, 26.0 percent spend between 3100 to 4000 naira and 9.4 percent spend more than 4000 naira. It revealed that 26.3 percent of the households consume between 151 to 200 litres of water per day, 24.7 percent use between 101 to 150 litres, 20.6 percent uses between 51 to 100 litres per day. Households that do not use more than 50 litres are 16.7 percent while 11.7 percent of the households use above 200 litres. The multinomial regression analysis showed that household size was significant which means that a larger house consumes more water than a household with a fewer members. On the other hand, education was not significant which implies that literacy level of an individual or household does not influence water use in Calabar Municipality. Income was significant which implied that rich people use more water than poor and the cost of water was also significant.

Richard *et al.*, (2018) examined the drinking water quality, water access and management practices at the household level within an informal community in Rio das Pedras, Rio de Janeiro. They conducted surveys on households, indoor tap, piped water and the other samples for analysis. They reported that 91% of the respondents stored water and 78% of the respondents have near-daily access to piped water. They also discovered that the quality and safety of these sources were not necessarily superior to indoor tap water, especially under conditions of appropriate water storage tank cleaning. Moreover, household characteristics such as home ownership, residence type and residence time established a positive association with improved tank cleaning.

Having analysed the studies, this study seeks to contribute to knowledge by examining Staff perceptions on key management functions and severity of challenges of the Akwa Ibom Water Company, and relating it with three categories of households.

3 Research Methodology

The study adopted the combination of the survey research design, because information were gathered from the sample of the study through the use of two structured questionnaires; and the quasi experimental research design was adopted because cause and effect relationships were examined using some statistical and econometrics techniques.

The research area is Akwa Ibom state. Akwa Ibom state is one of the states in the niger delta region of Nigeria. The state lies between latitudes 4o32” and 5o33” North and longitudes 7o 35” and 8o 25” East. Akwa Ibom state currently covers a total land area of 7,249 square kilometres. With annual growth rate of projected population at 3.4%, the 2016 projected population is estimated at 5,451,277 people (Female 2,680,687; Male 2,770,590).The state is an oil and gas producing state in the country. The state’s capital is Uyo with over 500,000 inhabitants. The major cities in Akwa Ibom states are Uyo, Eket, Ikot Ekpene, Oron, Abak, Ikot Abasi, Ikono and Etinan (www.nigerdeltabudget.org). The indigenes of Akwa Ibom state are predominantly of the Christian faith. The main ethnic groups of the state are Ibibio, Annang, Oron, Eket and Obolo (http://Akwa Ibomstate.gov.ng).



Figure 1: Map of Akwa Ibom State showing locations of the Akwa Ibom Water Company.
Source: <http://Akwa Ibomstate.gov.ng>.

The study adopted both the two-stage cluster probability sampling technique and the purposive non-probability sampling technique to select a sample size that is a good representation of the population of interest. The two-stage cluster probability sampling required that the population is divided into clusters; the clusters were selected randomly using the simple random sampling; the selected participants from each cluster were visited; and all the elements within the selected

clusters were investigated (Alvis, 2016). The purposive non-probability sampling targeted the sample on purpose with a prior knowledge in mind.

The sample of the study comprised 200 Staff of the different locations of the Akwa Ibom Water Company Limited; and the households that resides close to the water network distribution pipelines of the Akwa Ibom Water Company Limited in selected local government areas.

The study obtained data using two structured questionnaires. The first questionnaire was administered to Staff of the Akwa Ibom Water Company Limited. Their responses provided sufficient information on the effectiveness of key management functions and the severity of the challenges faced by the water company. The second questionnaire was administered to households that live close to the water pipelines of the water company. Their responses gave information on households in three categories: households that have access to water services from the water company and pay their water bills regularly; households that have access to water services from the water company and often face disconnections due to irregular payments of water bills; and households that do not have access to water services from the water company.

The study used the expert validity test to ascertain the validity of the questionnaire for what it was designed to measure and the reliability test to ascertain the reliability of the questions in the questionnaire. The results showed that the questions in the questionnaires were both valid and reliable. The data collated from the questionnaire were coded and subjected to descriptive and qualitative response regression analysis.

Qualitative Response Regression Analysis

The qualitative response regression analysis was adopted because the data were measured in nominal-scale, ordered-scale and ratio-scale. Specifically, the polychotomous variable regression model was used because the dependent variable involved choosing among several alternatives, that is, households in three categories. Of the polychotomous regression model, the ordinal regression model was adopted because the dependent variable is ranked or ordered; and it captures the ordinal properties of the dependent variables. The study adopted the ordered probit regression model because the error term is assumed to follow the normal distribution.

Using the grounded theoretical approach to get information about the perception of the level of effectiveness of key management functions of the Akwa Ibom Water Company Limited, the perception of government interference on daily operations and the level of households' access to water supply, the ordered probit model is specified thus:

$$Y_i^* = \beta_1 \text{EXPR}_i + \beta_2 \text{PMF}_i + \beta_3 \text{OMF}_i + \beta_4 \text{DMF}_i + \beta_5 \text{CMF}_i + \beta_6 \text{GOV}_i + U_i. \quad \text{Equation 1}$$

where, Y_i^* = a continuous real-valued index variable for observation i that is unobservable or latent, AGE = age of respondents, EXPR = work experience of respondents, PMF_i = perception of the level of effectiveness of the planning management function of the various branches i of the Akwa Ibom Water Company Limited, OMF_i = perception of the level of effectiveness of the organizing management function of the various branches i of the Akwa Ibom Water Company Limited, DMF_i = perception of the level of Effectiveness of the directing management function of the various branches i of the Akwa Ibom Water Company Limited, CMF_i = perception of the level effectiveness of the controlling management function of the various branches i of the Akwa Ibom Water Company Limited, GOV_i = perception of the level of interference of government construction activities, and U_i = disturbance term that has a standard normal distribution, $U_i \sim N(0, \sigma)$

It is important to know that Y_i^* is unobserved. In order to observe Y_i^* , the probabilities of each of the households (Y_i) in the different categories must be observed. In other words, the observable outcomes of the multiple category choice are represented by a multiple category indicator variable. Considering the probabilities of each ordinal outcome, the categories are stated thus:

Category One

In order to examine the relationship between the levels of effectiveness of key management functions on households with full access to municipal water supply, the probability of such ordinal outcome is specified thus:

$$P [Y_i = 1], \text{ if } P [Y_i^* \leq a_1] \quad \text{Equation 2}$$

where Y_i denotes households that have full access to water supply from the Akwa Ibom Water company limited; Y_i^* is the latent variable; and a_1 is the threshold parameter or cut-off. Substituting the value of Y_i^* in Equation 2, and making the error term the subject of the Equation, the probability of households having full access to water supply as a result of the level of effectiveness of key management activities of the Akwa Ibom Water Company Limited gives the probit outcome

$$\phi [a_1 - \beta_i X_i] \quad \text{Equation 3}$$

where β_i denotes the vector of coefficients and X_i denotes the vector of independent variables, AGE, EXPR, PMF_i , OMF_i , DMF_i , CMF_i and GOV_i in Equation 1.

Category Two

In other to examine the relationship between the levels of effectiveness of key management functions on households with partial access to municipal water supply, the probability of such ordinal outcome is specified thus:

$$P [Y_i = 2], \text{ if } P [a_1 < Y_i^* \leq a_2] \quad \text{Equation 4}$$

where Y_i denotes households that have partial access to water supply from the Akwa Ibom Water company limited; Y_i^* is the latent variable; and a_1 and a_2 are the threshold parameters or cut-offs where $a_1 < a_2$. Substituting the value of Y_i^* in Equation 4, and making the error term the subject of the Equation, the probability of households having partial access to water supply as a result of the level of effectiveness of key management functions of the Akwa Ibom Water Company Limited gives the probit outcome

$$\phi[a_2 - \beta_i X_i] - \phi [a_1 - \beta_i X_i] \quad \text{Equation 5}$$

where β_i denotes the vector of coefficients and X_i denotes the vector of independent variables, AGE, EXPR, PMF_{*i*}, OMF_{*i*}, DMF_{*i*}, CMF_{*i*} and GOV_{*i*} in Equation 1.

Category Three

In other to examine the influence of the levels of effectiveness of key management functions and households with no access to municipal water supply, the probability of such ordinal outcome is specified thus:

$$P [Y_i = 3], \text{ if } P [Y_i^* > a_2] \quad \text{Equation 6}$$

where Y_i denotes households that have partial access to water supply from the Akwa Ibom Water company limited; Y_i^* is the latent variable; and a_2 is the threshold parameter or cut-off. Substituting the value of Y_i^* in Equation 6, and making the error term the subject of the Equation, the probability of households having no access to water supply as a result of the level of effectiveness of key management functions of the Akwa Ibom Water Company Limited gives the probit outcome.

$$1 - \phi [a_2 - \beta_i X_i] \quad \text{Equation 7}$$

where β_i denotes the vector of coefficients and X_i denotes the vector of independent variables, AGE, EXPR, PMF_{*i*}, OMF_{*i*}, DMF_{*i*}, CMF_{*i*} and GOV_{*i*} in Equation 1.

The Marginal Effect

The study also analysed the marginal effects of level of effectiveness of the key management functions of Akwa Ibom Water Company Limited on households' access to water supply. The

marginal effect is important because it estimated the magnitude of the influence of the level of effectiveness on the key management functions of Akwa Ibom Water Company Limited on households' access to water supply. Moreover, the Average Marginal Effect (AME) was adopted because it calculates the marginal effect of each variable for each observation, taking into consideration any independent variable, and thereafter, calculates the average. This suggests that the Average Marginal Effect (AME) interacted with the data in the model, not just the mean, which led to superior estimates.

4 Data Analysis

Socio-Economic Characteristics of Respondents

Socio-Economic Characteristics of Selected Staff of the Akwa Ibom Water Company Limited

Table 1 presents the socio-economic characteristics of the selected Staff of the Akwa Ibom Water Company Limited which comprise the gender status, the range of their ages, their marital status, their highest level of educational attainment, their years of work experiences and their present employment positions.

Table 1: Socio-economic characteristics of selected staff of AKWCL

Socio-Economic Characteristics	Frequency	% of Frequency	Male	Female
Age Range				
20 and Younger	18	9	9	9
21 – 24	53	26.5	28	25
25 – 29	50	25	30	20
30 – 34	40	20	23	17
35 – 39	31	15.5	21	10
40 or Older	8	4	3	5
Marital Status				
Single	99	49.5	52	47
Married	81	40.5	52	29
Separated	11	5.5	9	2
Divorced	7	3.5	2	5
Widow/Widower	2	1	0	2
Educational Attainment				
FSLC	8	4	7	1
SSCE	23	11.5	7	16
NCE	20	10	9	11
OND	61	30.5	41	20
BSc/HND	78	39	45	33
MSc/MA	5	2.5	4	1
PhD	5	2.5	3	2
Work Experience				
5 or Less	81	40.5	40	41
6 – 10	45	22.5	29	16
11 – 15	49	24.5	33	16
16 – 20	9	4.5	6	3
21 or More	16	8	8	8
Employment Position				
Officer I	25	12.5	7	18
Officer II	37	18.5	20	17
Officer III	29	14.5	27	2
Assistant I	19	9.5	10	9
Assistant II	18	9	12	6
Assistant III	43	21.5	23	20
Assistant Manager	5	2.5	4	1
Principal Manager	3	1.5	1	2
Cleaner	2	1	0	2
Manager	15	7.5	8	7
Commercial Officer/Store assistant	1	0.5	1	0
Assistant Secretary	1	0.5	0	1
Driver	1	0.5	1	0
Secretary to GM	1	0.5	1	0

Source: Researcher's Field work, (2024).

The age range of 18 Staff ranges from ages below 20 years to 20 years of age, of which 9 were males and 9 were females. The largest number of the selected Staff ranges from 21 years of age to 24 years of age, of which 28 were males and 25 were females. The age range of a quarter of the selected Staff was from 25 years of age to 29 years of age of which 30 were males and 20

were females. The age of 40 of the selected Staff ranges from 30 years of age to 34 years of age. 23 were males while 17 were females. 31 of the selected Staff ranges from 35 years of age to 39 years of age, of which 21 were males and 10 were females. Lastly, 8 of the selected Staff were 40 years and above.

With respect to marital status, almost half (99) of the selected Staff were single. 52 of the Staff that were single were males while 47 were females. 81 of the selected Staff were married, of which 52 of them were males and 29 were females. 11 were separated with their spouses. 9 of them were males while 2 of them were females. 7 of the selected Staff were divorced, of which 2 were males and 5 were females. Lastly, 2 of the selected Staff were widows.

The highest levels of educational attainment of 8 of the selected Staff were FSLC while 23 obtained SSCE. Those with NCE were 20 while 61 were OND holders. B.Sc/HND holders were the highest the largest that numbered 78, of which 45 were males and 33 were females. 5 of the selected Staff were M.Sc/MA holders and 5 were PhD holders. On work experience, 81 of the selected Staff had 5 years of work experience and below 5 years of work experience. 49 of the selected Staff had 11 years to 15 years of work experience. 45 of the selected Staff had work experiences from 6 years to 10 years. 9 of the selected Staff had work experiences from 16 years to 20 years. 16 of the selected Staff had work experiences from 21 years and above 21 years.

Table 1 presents the employment positions of the selected Staff of the Akwa Ibom Water Company Limited. 25 occupied the Officer I position, 37 occupied the Officer II position and 29 occupied the Officer III position. 19 of the selected Staff occupied the Assistant I position, while 18 of the selected Staff occupied the Assistant II position. 43 of the selected Staff occupied the Assistant III position. 5 of the selected Staff were Assistant Managers. 3 of the selected Staff were Principal Managers. 2 of the selected Staff were Cleaners. 15 were Managers, 1 was a driver and 1 was a Secretary.

In summary, the socio-economic characteristics of the selected Staff of the Akwa Ibom Water Company Limited imply that the respondents have responsibilities that enable them provide appropriate answers on their perceptions of the level of the effectiveness of the Akwa Ibom Water Company Limited.

Socio-Economic Characteristics of Selected Households

Table 2 presents the socio-economic characteristics of households which comprise the age of the head, gender status of the head, marital status of the head, highest level of educational attainment of the head, the nature of work of the head, family size, income level of the household, and the dimension of the apartment.

Table 2: Socio-economic characteristics of selected households.

Social-Economic Characteristics	Frequency	Percentage	Cumulative Percentage
Age of Head of Household			
30 and below	16	8	8
31 – 40	59	29.5	37.5
41 – 50	79	39.5	77
51 – 60	30	15	92
61 – 70	15	7.5	99.5
71 and above	1	0.5	100
Gender of the Head of Household			
Male	163	81.5	81.5
Female	37	18.5	100
Marital Status			
Single	51	25.5	25.5
Married	141	70.5	96
Divorced	1	0.5	96.5
Widow/Widower	7	3.5	100
Educational Attainment of Head			
FSLC	2	1	1
SSCE	1	0.5	1.5
OND	48	24	25.5
Bsc/HND	108	54	79.5
PGD	21	10.5	90
Msc	18	9	99
Mphil	2	1	100
PHD	0	0	100
Work Type of Head of Household			
Self Employed	39	19.5	19.5
Civil Service	89	44.5	64
Private Organisation	50	25	89
Service	6	3	92
Pensioner	16	8	100
Family Size			
1 – 3	63	31.5	31.5
4 – 6	104	52	83.5
7 – 9	31	15.5	99
10 – 12	2	1	100
Income Level of Household			
20,000 and below	13	6.5	6.5
20,001 - 50,000	45	22.5	29
50,001 - 100,000	61	30.5	59.5
100,001 - 200,000	64	32	91.5
200,001 - 300,000	16	8	99.5
300,000 and above	1	0.5	100
Apartment Dimension			
Single Room	17	8.5	8.5
Self-contain	27	13.5	22
One-bedroom Flat	43	21.5	43.5
Two-bedroom Flat	70	35	78.5
Three-bedroom Flat	26	13	91.5
Four-bedroom Flat	17	8.5	100

Source: Researcher's Field work, (2024).

Table 2 shows that 8% of the households are between ages 30 and below. 29.5% of the households are between ages 31 to 40. 39.5% of the households are between ages 41 to 50. 15% of the households are between ages 51 to 60. 7.5% of the households are between ages 61 to 70. 0.5% of the household are from ages 71 and above.

The gender status of the heads of each household shows that 163 or 81.5% of the heads of each household are males while 37 or 18.5% are females. Accordingly, 51 or 25.5% are married, 141 or 70.5% are single, 1 or 0.5% is divorced and 7 or 3.5% are widows/widowers. With respect to the highest educational attainment, 1% of heads of each household obtained FSLC, 0.5% obtained SSCE, 24% obtained OND, 54% obtained BSC/HND, 10.5% obtained PGD, 9% obtained MSC, and 1% obtained MPhil. The work types of the heads of each household show that 39 of them were self-employed, 89 of them were civil servants, 50 of them worked in the private sector. 6 of them works in the service sectors and 16 of them are pensioners.

With respect to family sizes, 63 households ranged from 1 to 3, 104 households had from 4 to 6 members, 31 households had from 7 to 9 members, and 2 households had from 10 to 12 members. Accordingly, the total income earned differs across households. 13 or 6.5% of households had a total income from 20,000 naira and below, 45 or 22.5% of households had a total income ranging 20,001 naira to 50,000 naira, 61 or 30.5% of households had total income ranging 50,001 naira to 100,000 naira, 64 or 32% of households had total income ranging 100,001 naira to 200,000 naira, 16 or 8% of households had total income ranging 200,001 naira to 300,000 naira, and 1 or 0.5% of households had total income ranging 300,000 and above. Accordingly, households in single room apartment constitute 17 or 8.5% of total households. Households in a self-contained apartment constitute 27 or 13.5% of total households. Households in a one-bedroom flat constitute 43 or 21.5% of total households. Households in two-bedroom apartment constitute 70 or 35% of total households. Households in three-bedroom apartment constituted 26 or 13% of total households. Households in four-bedroom apartment constituted 17 or 8.5% of total households.

Levels of Effectiveness of the Akwa Ibom Water Company Limited

The level of effectiveness is vital for the water company aside their efficiency and productivity. Selected Staff of the Akwa Ibom Water Company Limited were provided with questions to rate the level of effectiveness of key management activities of the Akwa Ibom Water Company Limited. These questions included the level of effectiveness of key management activities such as the planning management process, the organizing management process, the directing

management process and the controlling management process. These ratings are presented in Table 3.

Table 3: Level of effectiveness of key management activities

Key Management Processes	Very Effective	Effective	Ineffective	Very Ineffective	Neither Effective nor Ineffective	Total
Planning	43	32	47	43	35	200
Response (%)	21.5	16	23.5	21.5	17.5	100
Organizing	44	34	61	40	21	200
Response (%)	22	17	30.5	20	10.5	100
Directing	36	44	22	72	26	200
Response (%)	18	22	11	36	13	100
Controlling	44	23	34	59	40	200
Response (%)	22	11.5	17	29.5	20	100

Source: Researcher's Field work, (2024).

Table 3 shows that 43 or 21.5% of the selected Staff rated that the planning process very effective. 32 or 16% of the selected Staff rated the planning process effective. However, 47 or 23.5% of the selected Staff rated the planning process ineffective, and 43 or 21.5% of the selected Staff rated the planning process very ineffective. Lastly, 35 or 17.5% of the selected Staff rated the planning process neither effective nor ineffective.

On the level of effectiveness of the organizing process of the Akwa Ibom Water Company Limited, 44 or 22% of the selected Staff rated the organizing process very effective. 34 or 17% of the selected Staff rated the organizing process effective. However, 61 or 30.5% of the selected Staff rated the organizing process ineffective, and 40 or 20% of the selected Staff rated the organizing process very ineffective. 21 or 10.5% of the selected Staff rated the organizing process neither effective nor ineffective.

Table 3 shows that 36 or 18% of the selected Staff rated the directing process very effective. 44 or 22% of the selected Staff rated the directing process effective. However, 72 or 22% of the selected Staff rated the directing process very ineffective and ineffective respectively. 26 or 13% of the selected Staff rated the directing process neither effective nor ineffective. Accordingly, 44 or 22% of the selected Staff rated the controlling process very effective. 23 or 11.5% of the selected Staff rated the controlling process effective. However, 34 or 17% of the selected Staff rated the controlling process ineffective, and 59 or 29.5% of the selected Staff rated the controlling process very ineffective. 40 or 20% of the selected Staff rated the controlling process neither effective nor ineffective.

Challenges faced by the Akwa Ibom Water Company Limited

Table 4 presents the responses of the selected Staff of the Akwa Ibom Water Company Limited on the severity of the challenges the Company face in providing adequate and safe water supply.

Table 4: The severity of the challenges faced by the AKWCL.

S/N	Challenges	Very Minor	Very Minor (%)	Minor	Minor (%)	Moderate	Moderate (%)	Major	Major (%)	Very Major	Very Major (%)
1	Inadequate Power Supply	33	16.5	26	13	25	12.5	27	13.5	89	44.5
2	Inadequate Water Distribution Capacity	11	5.5	40	20	40	20	35	17.5	74	37
3	Poor Coordination of Daily Operations	29	14.5	32	16	41	20.5	45	22.5	53	26.5
4	Lack of Clearly Defined Water Supply Policy	22	11	42	21	42	21	60	30	34	17
5	Poor Maintenance Culture for Existing Facilities	28	14	42	21	33	16.5	49	24.5	48	24
6	High Operating and Maintenance Cost	13	6.5	51	25.5	46	23	68	34	22	11
7	Inadequate Manpower	23	11.5	56	28	85	42.5	27	13.5	9	4.5
8	Inadequate Funding	29	14.5	46	23	32	16	60	30	33	16.5
9	Poor Revenue Collection	23	11.5	42	21	79	39.5	47	23.5	9	4.5
10	Absence of Private Sector Participation	30	15	48	24	59	29.5	46	23	17	8.5
11	Low Salaries (Low Incentive)	25	12.5	48	24	62	31	39	19.5	26	12.5
12	Extreme Weather Condition due to Climate Change	33	16.5	39	19.5	104	52	16	8	8	4
13	Corruption in Management of Water Infrastructure	15	7.5	50	25	35	17.5	11	5.5	89	44.5
	Delay in Staff Promotion (others)	-	-	-	-	-	-	-	-	2	-
	Staff Training (others)	-	-	-	-	-	-	-	-	4	-
	Job Enlargement (others)	-	-	-	-	-	-	-	-	2	-
	Mean Responses of the first 13 Challenges	24.15		43.23		52.54		40.77		39.31	

Source: Researcher's Field work, (2024).

One of the challenges faced by the Akwa Ibom Water Company Limited is inadequate power supply. On the severity of inadequate power supply, 89 or 44.5% of the selected staff viewed inadequate power supply as a very major challenge; 27 or 13.5% of the selected Staff viewed inadequate power supply as a major challenge; 25 or 12.5% of the selected Staff viewed inadequate power supply as a moderate challenge; and 26 or 13% of the selected Staff viewed inadequate power supply as a minor challenge.

Another challenge facing the Akwa Ibom Water Company Limited is inadequate water distribution capacity. 74 or 37% of the selected Staff viewed inadequate water distribution capacity as a very major challenge; 35 or 17.5% of the selected Staff viewed inadequate water distribution capacity as a major challenge; 40 or 20% of the selected Staff viewed inadequate water distribution capacity as a moderate challenge; 20% or 40 of the selected Staff viewed inadequate water distribution capacity as a minor challenge; and 11 or 5.5% of the selected Staff viewed inadequate water distribution capacity as a very minor challenge.

The third challenge facing the Akwa Ibom Water Company Limited is poor coordination of daily operations. 29 or 14.5% of the selected Staff viewed poor coordination as a very minor challenge; 32 or 16% of the selected Staff viewed poor coordination as a minor challenge; 41 or 21.5% of the selected Staff viewed poor coordination as a moderate challenge; 45 or 22.5% of the selected Staff viewed poor coordination as a major challenge; and 53 or 26.5% of the selected Staff viewed poor coordination as a very major challenge.

The fourth challenge is the lack of clearly defined water policy. The responses of the selected staff indicated that 30% or 60 of the selected Staff viewed the lack of clearly defined water supply policy as a major challenge.84 (42 or 21% respectively for each response) of them viewed the lack of clearly defined water supply policy as both a moderate challenge and a minor challenge; 34 or 17% of the selected Staff viewed the lack of clearly defined water supply policy as a very major challenge; and 22 or 11% of the selected Staff viewed the lack of clearly defined water supply policy as a very major challenge.

The fifth challenge is the poor maintenance culture for existing facilities. 49 or 24.5% of the selected Staff viewed poor maintenance culture for existing facilities as a major challenge; 48 or 24% of the selected Staff viewed poor maintenance culture for existing facilities as a very major challenge; 42

ad 21% of the selected Staff viewed poor maintenance culture for existing facilities as a minor challenge; 33 or 16.5% of the selected Staff viewed poor maintenance culture for existing facilities as a moderate challenge; and 28 or 14% of the selected Staff viewed poor maintenance culture for existing facilities as very minor challenge.

The sixth challenge militating against the operations of the Akwa Ibom Water Company Limited is high operating and maintenance cost. 68 or 34% of the selected Staff viewed high operating and maintenance cost as a major challenge. However, 51 or 25.5% of the selected Staff viewed high operating and maintenance cost as a minor challenge. 46 or 23% of the selected Staff viewed the high operating and maintenance costs as a moderate challenge. 22 or 11% of the selected Staff viewed high operating and maintenance cost as a very major challenge; and 13 or 6.5% of the selected Staff viewed high operating and maintenance cost as a very minor challenge.

The seventh challenge is inadequate manpower. 85 or 42.5% of the selected Staff viewed inadequate manpower as a moderate challenge; 56 or 28% of the selected Staff viewed inadequate manpower as a minor challenge; 27 or 13.5% of the selected Staff viewed inadequate manpower as a major challenge. However, 23 or 11.5% of the selected Staff viewed inadequate manpower as a minor challenge; 9 or 4.5% of the selected Staff viewed inadequate manpower as a very major challenge.

The eighth challenge is inadequate funding. 60 or 30% of the selected Staff viewed inadequate funding as a very major challenge. However, the number of the selected Staff that viewed inadequate fund as a minor challenge was 46, representing 23% of selected Staff. This was followed by 33 or 16.5% of the selected Staff that viewed inadequate funding as a very major challenge. 32 or 16% of the selected Staff viewed inadequate funding as a moderate challenge. 29 or 14.5% of the selected Staff viewed inadequate funding as a very minor.

The ninth challenge facing the Akwa Ibom Water Company Limited face is poor revenue collection. 79 or 39.5% of the selected Staff viewed poor revenue collection as a moderate challenge. 47 or 23.5% of the selected Staff viewed poor revenue collection as a major challenge. However, 42 or 21% of them viewed poor revenue collection as a minor challenge. 23 or 11.5% of them viewed poor revenue collection as a very minor challenge; and 9 or 4.5% of them viewed poor revenue collection as a very major challenge.

The tenth challenge is the absence of private sector participation. 59 or 29.5% of the selected Staff viewed the absence of private sector participation as a moderate challenge; 48 or 24% of them

viewed the absence of private sector participation as a minor challenge. However, 46 or 23% of the selected Staff viewed the absence of private sector participation as a major; and 30 or 15% of them viewed the absence of private sector participation as a very minor challenge. However, 17 or 8.5% of the selected Staff viewed the absence of private sector participation as a very major challenge.

The eleventh challenge facing the Akwa Ibom Water Company Limited is low salaries/low incentive. 62 or 31% of the selected Staff viewed low salaries/low incentives as a moderate challenge. 48 or 24% of them viewed low salary/low incentive as a minor challenge. However, 39 or 19.5% of the selected Staff viewed low salary/low incentive as a major challenge; and 26 or 12.5% of them viewed low salary/low incentive as a very major challenge. However, 25 or 12.5% of the selected Staff viewed low salary/low incentive as a very minor challenge.

The twelfth challenge facing the Akwa Ibom Water Company Limited is extreme weather condition due to climate change. While 104 or 52% of the selected Staff viewed extreme weather condition due to climate change as a moderate challenge; 39 and 33 selected Staff, constituting 19.5% and 16.5% respectively, viewed extreme weather condition due to climate change both as a minor challenge and as a very minor challenge. However, 16 and 8 selected Staff, constituting 8% and 4% respectively, viewed extreme weather condition due to climate change both a major challenge and a very major challenge.

The thirteenth challenge is corruption in the management of water infrastructure. 89 or 44.3% of the selected Staff viewed corruption in management of water infrastructure as a very major challenge. However, 50 or 25% of the selected Staff viewed corruption in management of water infrastructure as a minor. 35 or 17.5% of the selected Staff viewed corruption in management of water infrastructure as a moderate. 15 or 7.5% of them viewed corruption in management of water infrastructure as a very minor challenge. However, 11 or 5.5% of the selected Staff viewed corruption in management of water infrastructure as a major challenge.

Relating Staff Perceptions on Key Management Activities with Tripartite Households

The study examined the relationship between the level of effectiveness of key management activities of the Akwa Ibom Water Company Limited and households' access to their water supply. The summary statistics of the data is presented in Table 5.

Table 5: Summary statistics

Variables	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Household	200	1.75	0.83	1	3
EXPR	200	2.18	1.25	1	5
PMF	200	1.79	0.72	0.33	4
OMF	200	1.97	0.83	0.50	5
DMF	200	1.75	0.80	0.33	5
CMF	200	1.82	0.82	0.33	5
GOV	200	1.75	0.50	1	2

Source: Researcher's computation, (2024).

The summary statistics show that the average work experience of the selected Staff of the Akwa Ibom Water Company Limited is about 2. The average rating of the level of effectiveness of the planning management activity is 1.97. While the average rating of the level of effectiveness of the organizing management activity is 1.75, the average rating of the level of effectiveness of the controlling management activity is 1.82. The average response of the interference of government activities is approximately 1.6. More so, the variation in work experience of the selected Staff is relatively high with 1.25. Also the variations in the ratings of the level of effectiveness of the planning, organizing, directing and controlling activities are approximately, 0.72, 0.83, 0.80, 0.82 and 0.50 respectively.

Table 5 presents the number of households with access to water supply based on categories. The first category comprised households with no access to water supply services from the Akwa Ibom Water Company Limited. The second category comprised households with partial access to water supply services from the Akwa Ibom Water Company Limited. The third category comprised households with full access to water supply services from the Akwa Ibom Water Company Limited.

Table 6: Households' access to water supply by categories

S/N	Households	Frequency	Percentage	Cumulative Percentage
1	No Access	45	22.5	22.5
2	Partial Access	50	25	50
3	Full Access	105	52.5	100
	Total	200	100	

Source: Researcher's computation, (2024).

The 200 samples of households for the study comprise 45 samples representing 22.5% of the household with no access to water supply services; 50 samples representing 25% of the household with partial access to water supply services; and 105 samples representing 52.5% of the household with full access to water supply services. Table 6 presents the ordinal probit estimation output that

shows the relationship between the level of effectiveness of key management activities of the Akwa Ibom Water Company Limited and households' access to their services.

Table 7: Ordinal probit estimation output with household as dependent variable

Variables	Coefficients	Robust Standard Errors	Z-Stat.	P-Value	Effect at the Margins			
					Partial Access	P-Value	No Access	P-Value
EXPR	0.144	0.047	3.05	0.002*	-0.561	0.004*	0.561	0.004*
PMF	0.045	0.016	2.87	0.004*	-0.018	0.006*	0.018	0.006*
OMF	0.301	0.075	0.40	0.686	-0.012	0.687	0.012	0.687
DMF	-0.076	0.034	-2.22	0.027**	0.029	0.032**	-0.029	0.032**
CMF	0.048	0.024	2.00	0.045**	-0.019	0.051**	0.019	0.051**
GOV	-0.175	0.058	-2.98	0.003*	-0.068	0.004*	-0.068	0.004*
/cut1	0.134	0.924	Wald	20.9264	0.000*	Normality	59.721	0.2958
/cut2	0.827	0.729	Log Pseudo Likelihood = -203.96438					

Source: Researcher's computation, (2024).

Note: * and ** denote coefficients significant at 1% and 5% respectively.

cut1 and cut2, are respectively, the intercepts for the second and third category, the intercept for the lowest category being normalized to zero.

The Wald statistic of 20.9264 shows that the model is fit. The Doornik-Hansen non-normality statistic, 59.721, shows that the ordinal probit follows the normal distribution. The log pseudo likelihood value, -203.96438, shows that the ordinal probit model is fit for analysis.

The coefficient of EXPR is 0.144. This shows that a positive relationship exist between work experiences of Staff of the Akwa Ibom Water Company Limited and household with full access to water supply services compared to households with partial access and household with no access to water supply services. Hence, a year increase in work experiences of Staff leads to an increase in the z-score (3.05) in favour of households with full access to water supply services by 0.144. The relationship was significant at the 5% ($P > |z| = 0.002$) level of significance. Moreover, the effects at the margins shows that a negative and significant relationship ($\beta = -0.561$; $P > |z| = 0.004$) exist between work experiences of Staff and household with partial access to water supply services; while a positive and significant relationship ($\beta = 0.561$; $P > |z| = 0.004$) exists between work experiences of Staff and household with no access to water supply services.

The coefficient of PMF is 0.045. This shows that a positive relationship exists between the level of effectiveness of the planning management activity of the Akwa Ibom Water Company Limited and household with full access to water supply services compared to households with partial access and household with no access to water supply services. Hence, an increase in the level of effectiveness of the planning management activity leads to an increase in the z-score (2.87) in favour of

households with full access to water supply services by 0.045. The relationship was significant at the 5% ($P > |z| = 0.004$) level of significance. However, a negative and significant relationship ($\beta = -0.018$; $P > |z| = 0.006$) exists between the level of effectiveness of the planning management activity and household with partial access to water supply services; while a positive and significant relationship ($\beta = 0.018$; $P > |z| = 0.006$) exists between the level of effectiveness of the planning management activity and household with no access to water supply services.

The coefficient of DMF is -0.076. This shows that a negative relationship exists between the level of effectiveness of the directing management activity of the Akwa Ibom Water Company Limited and household with full access to water supply services compared to households with partial access and household with no access to water supply services. Hence, an increase in the level of effectiveness of the directing management activity leads to a decrease in the z-score (-2.22) in favour of households with full access to water supply services by -0.076. The relationship was significant at the 5% ($P > |z| = 0.027$) level of significance. However, a positive and significant relationship ($\beta = -0.029$; $P > |z| = 0.032$) exists between the level of effectiveness of the directing management activity and households with partial access to water supply services; while a positive and significant relationship ($\beta = 0.029$; $P > |z| = 0.032$) exists between the level of effectiveness of the directing management activity and household with no access to water supply services.

Unlike the negative and significant relationship between the effectiveness of directing management activity and households' access, the relationship between the level of effectiveness of the controlling management activity and household with full access to water supply services is positive compared to households with partial or no access to water supply services. Hence, an increase in the level of effectiveness of the controlling management leads to an increase in the z-score (2.00) in favour of households with full access to water supply services by 0.048. The relationship was significant at the 5% ($P > |z| = 0.045$) level of significance. The effect at the margins shows that a negative and significant relationship ($\beta = -0.019$; $P > |z| = 0.051$) exists between the level of effectiveness of the controlling management activity and household with partial access; while a positive and significant relationship ($\beta = 0.019$; $P > |z| = 0.051$) exists between the level of effectiveness of the controlling management activity and households with no access to water supply services.

The coefficient of GOV is -0.175. This shows that a negative relationship exists between government interference and household with full access to water supply services compared to households with partial and no access to water supply services. Hence, an increase in the

government's activities leads to a decrease in the z-score ($\beta = -2.98$) in favour of households with full access to water supply services by -0.175 . The relationship was significant at the 5% ($P > |z| = 0.003$) level of significance. Moreover, the effects at the margins shows that a negative and significant relationship ($\beta = -0.068$; $P > |z| = 0.004$) exists between government's interference and household with partial access to water supply services. Similarly, a negative and significant relationship (-0.068 ; $P > |z| = 0.004$) exists between government's interference and household with no access to water supply services.

The findings show the relationship between the efficiency and effectiveness of the Akwa Ibom Water Company and Households' access to their water services. A positive and significant relationship between work experience of Staff and household with full access to water supply services compared to households with partial access and no access to water supply services. However, there is a negative and significant relationship between experiences of Staff and household with partial access to water supply services. This implies that over the years, the Staff have regularly conducted disconnection exercises for households that defaulted in the payment of water bills. Hence, the households are deprived of water supply services until they get reconnected after the payment of water bills. This is not so with the households with no access to water supply services. A positive and significant relationship existed between the experiences of Staff and households with no access to water supply services. This implies that the Staff create awareness exercises over the years to enlighten households with no access to water supply to apply to get connected to their water distribution pipelines in a bid to increase water coverage rates.

The positive and significant relationship between the level of effectiveness of the planning process and households with full access to water supply services compared to households with partial access and no access to water supply services. This implies that the Akwa Ibom Water Company Limited has planned some activities to enable them continue to supply water to households that pay water bills regularly. This involves planning to give incentives to households that pay their water bills regularly especially for those that pay their water bills in advance. This supports the assertion by the Commercial Manager that incentives are often given to households that pay their water bills regularly. However, there is a negative and significant relationship between the level of effectiveness of the planning process and household with partial access to water supply services. This implies that the Akwa Ibom Water Company Limited also plans some activities for households with partial access to water supply services such as restricting water supply due to irregular payment of water

bills, the non-execution of plans to repairs water supply pipelines connected to these households, other plans inclusive. The positive and significant relationship between the level of effectiveness of the planning process and households with no access to water supply services implies that awareness exercises are organized to enlighten these households to apply to get water supply services.

Definitely, the next management activity is to organize those activities so as to be directed to appropriate units for control and implementation. However, such activities are bound not to be implemented if the organizing management activity is very ineffective. This is the case with the insignificant relationship between the organizing management activity of the Akwa Ibom Water Company Limited and the three categories of households.

Subsequently, a negative relationship exist between the level of effectiveness of the directing process and households with full access to water supply services compared to households with partial access and no access to water supply services. Initially, the planning process has been effective. However, the organizing process has not been significant, hence its ineffectiveness in the management of water supply. This ineffectiveness has therefore affected the directing process which impacts on households with full access to water supply. This is possible in cases of irregular water supply where households that pay water bills regularly cannot have access to water supply. In cases where diesel generators are used to supply water, the organization runs the risk of high operating costs.

Moreover, the use of generators for water supply services cannot be sustained due to high costs of maintenance and operations. Households with no access to water supply are also affected by the negative and significant effect of the directing process. This implies that households with no access to water supply have not availed themselves to be connected. This might be as a result that the households with no access to water supply are aware that water supply by the Akwa Ibom Water Company Limited is not effective despite series of awareness exercises conducted. Hence they source for alternative reliable source of water supply. However, households with partial access to water supply are affected in a positive and significant manner. This is possible as the Akwa Ibom Water Company Limited, in some cases, directed the repairs of some pipelines and reconnected the households that defaulted in water bill payment.

Certainly some of the activities that were directed must have gone through the appropriate units for control and implementation. The level of effectiveness of the controlling process is positively and

significantly related to both households with full access and no access to water supply services. The creation of awareness for connection of water supply to households with no access to water supply and the establishment of the public water kiosks are evidences that the Akwa Ibom Water Company Limited have some level of control. This level of control is manifested in activities to ensure the households with full access to water supply enjoy their services. However, the control extends to households with partial access to water supply as they engage in disconnections for non-payments of water bills.

The last finding shows that negative and significant relationships exist between government interference and each household. This implies that the activities of the government have increased to the detriment of the welfare of households with respect to water needs. The findings supports the fact that the government has no water laws and that successive governments have vandalized many water pipelines through road constructions. Despite repeated calls to restore access to water supply, the governments have not responded. These activities have limited access to water supply services by the three household categories. This is the reason places like Abak and Eket do not have any functioning water supply distribution pipeline which affected the people in dire need of adequate and safe water supply.

5 Conclusion and Recommendations

The study concludes that the key management activities of planning, organizing, directing and controlling of the Akwa Ibom Water Company Limited are ineffective. Definitely, the severity of the challenges contributes to the ineffectiveness of these key management activities. Side-by-side the level of involvement of the Staff, the key management activities have adverse effect on water supply service delivery to households. The following points are recommended:

- i. The Akwa Ibom Water Company Limited should ensure that planning, organizing, directing and controlling of activities are highly effective. This cannot be possible without the aid of the state government. First, there is no law guiding the management of water in Akwa Ibom state. Hence, it is recommended that the Akwa Ibom state government should make adequate water management laws, and the Akwa Ibom Water Company Limited should be given the mandate to enforce such laws. This will give the Akwa Ibom Water Company the regulatory responsibilities to plan for effective implementation. Definitely, the most challenging factor for the implementation of plans is funding. Hence, funds should be adequately provided for the smooth operations of the water company. And if funds are indeed provided, as asserted by a staff in one

of the branches, these funds should be used for the purpose they were disbursed. More so, cases of funds mismanagement should be avoided and if such cases occur, the perpetrators should be punished. This will ensure improved efficiency and increased productivity of the Akwa Ibom Water Company Limited.

- ii. There is no organisation that does not face challenges. But the ability to surmount these challenges and discharge duties effectively lies on a resilient water management company. Apart from funding, inadequate power supply has, to a great extent, affected the daily operations of the Akwa Ibom Water Company Limited. It is recommended that the power supply situation in the state should be improved so that all branches of the Akwa Ibom Water Company Limited can benefit. Alternatively, if the power supply situation in the state cannot be improved, then all branches of the Akwa Ibom Water Company Limited should be connected to a power grid that produces steady power supply. This will enable the Akwa Ibom Water Company Limited perform its duties effectively thereby reducing to the barest minimum the severity of other challenges.
- iii. It was established that experience, planning, directing, and controlling activities, and government interference were significant for the 3 categories of households. It is recommended that experienced staff should be given critical management roles to handle, especially roles that involve dealings with households with access to water. The planning activities of the Akwa Ibom Water Company Limited should involve effective delivery of services and probably, giveaways for households that pay water tariffs regularly to encourage them, and effective awareness to households that have no access to enjoy their various services. Just as they provide rewards for households, penalties should be given to households that fail to pay for their water bills. The Akwa Ibom state government should provide funds to the Akwa Ibom Water Company Limited to aid the replacements of water pipelines that have been damaged due to the various road construction projects. This will ensure households in the affected areas have access to water supply in Akwa Ibom state.

References

- Alvi, M. (2016). A Manual for Selecting Sampling Techniques in Research. *Munich Personal Repec Archive Paper* No. 70218, 57p. Available at <https://mpra.ub.uni-muenchen.de/70218/>.
- Amori, A. A., Eruola, A. O., Makinde, A. A. and Ufoegbune, G. C. (2012). Assessment of Problems Affecting Public Water Distribution in a Humid Tropical Zone. *International Journal of Hydraulic Engineering*, 1(3): 21-24.
- Ben and Ogunyemi (2015). Assessment of Water Supply Situation in Owo, Ondo State, Nigeria: Implications for the Attainment of the Millennium Development Goals. *International Journal of Scientific Research Publications*, 5(9): 1-6.
- George, G. W., George, M. O. and Jacob, K. K. (2010). Accessibility of water services in Kisumu municipality, Kenya. *Journal of Geography and Regional Planning*, 3(4): 114-125.
- Gonçalo Pombo and Jorge Gomes (2019). Employees' perceptions and the relationship between human resource management and organizational performance: a conceptual view. *Knowledge and Performance Management*, 3(1), 46-63. doi:10.21511/kpm.03(1).2019.05
- Ishaku, H. T., Rafee, M. M., Ajayi, A. P. and Haruna, A. (2011). Water supply dilemma in Nigerian rural communities: Looking towards the sky for an Answer. *Journal of Water Resource and Protection*, 3: 598-606.
- Kennedy, F. A., and Widener, S. K. (2019). Socialization mechanisms and goal congruence. *Accounting, Organizations and Society*, 4: 32-49. <https://doi.org/10.1016/j.aos.2019.01.004>.
- Kosoe, E. A. and Osumanu, I. K. (2015). Water is life: Situation analysis of access to household water supply in the WA municipality, Ghana. *International Journal of Environmental Protection and Policy*, 3(1): 1-13.
- Lopez-Valeiras, E., Gomez-Conde, J., Naranjo-Gil, D., and Malagueño, R. (2022). Employees' perception of management control systems as a threat: effects on deliberate ignorance and workplace deviance. *Accounting Forum*, 48(2), 251-278. <https://doi.org/10.1080/01559982.2022.2140500>
- Lukman, S., Ismail, A., Asani, M. A., Bolorunduro, K. A., Foghi, P. U. and Oke, I. A. (2016). Effect of selected factors on water supply and access to safe water in Nigeria. *Ife Journal of Science*, 18(3): 623-639.
- Odegba E. E., Idowu, O. A., Ikenweiwe, N. B., Martins, O. and Sadeeq, A. Y. (2015). Public perception of potable water supply in Abeokuta South West, Nigeria. *Journal of Applied Sciences and Environmental Management*, 19(1): 5-9.
- Ohwo, O. and Abotutu, A. (2014). Access to potable water supply in Nigerian cities: Evidence from Yenagoa Metropolis. *American Journal of Water Resources*, 2(2): 31-36.

- Okon, I. and Njoku, C. G. (2017). Evaluation of domestic access to pipe-borne water in Calabar Metropolis, Southern Nigeria. *Open Access Library Journal*, 4(12): 1-22.
- Richard, V. R., Renata, S. R., Garazi, Z., Marilia, S. C. Paulo, R. G. and Gina S. L. (2018). Household-level drinking water quality, access and management practices within an informal community: A case study at Rio das Pedras, Rio de Janeiro. *Journal of Water, Sanitation and Hygiene for Development*, 9(1): 80 – 89.
- Ubi-Abai, I. (2024). Assessing the Technical Efficiency and Total Productivity of the Akwa Ibom Water Company Limited, Akwa Ibom State, Nigeria. MPRA Paper 121691, pp. 1-26.
- Ubi-Abai, I. (2024). Households' Willingness to Pay and Payments for Water Services by the Akwa Ibom Water Company Limited, Akwa Ibom State, Nigeria. MPRA Paper 122521, pp. 1-22.
- Ubugha, P. O. Okpiliya, F., Njoku, C. G., Itu, P. C. O., Ojoko, T. I., and Erhabor, F. O. (2017). People and water: Empirics of Calabar municipality, Cross River State, Nigeria. *International Journal of Research in Environmental Science*, 3(2): 8-18.
- Wami, M. and Fisher, J. (2015). Effect of poor performance of water utilities in Port Harourt city, Nigeria. In water, sanitation and hygiene beyond 2015: Improving access and sustainability. *38th WEDC International Conference, Loughborough University, UK*, 6p.