

The use of traditional microfinance method as an innovative approach to the development of Obizi regional water supply scheme in Aguata, Nigeria

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Abstract: The aim of this study was to assess the use of traditional microfinance method as an innovative approach to the development of Obizi Regional Water Supply Scheme in Aguata, Nigeria. Towards achieving the aim, data were generated through the use of questionnaire between January and April 2013 and others from secondary sources. Some of the variables employed are amount of money contributed monthly through microfinance approach for the development and extension of the scheme, the population of water consumers in the area, government assistance, daily water consumption amount, cost of developing water infrastructure etc. Data were analysed by the use of factor scores from the Principal Component Analysis to establish the performance of this innovation in all the component communities that benefited from the water scheme. Principal Component Analysis (PCA) output revealed that the innovation is performing well in some communities but not in some others. Suggestions recommended include persistent mobilization of community members, better method of loan distribution and involvement of women in the microfinance processes etc.

Keywords: Innovative, Microfinance, Factorscore, Scheme, Mobilization

1. Introduction

In Nigeria as in many developing countries especially in sub-Saharan Africa and South-East Asia, rural dwellers constitute the highest population of those in need of potable water supply and adequate sanitation facilities. As a result of this, rural dwellers usually pay the highest cost to obtain water which is mostly quantified in terms of physical labour to collect water from distant sources. This is usually the case with obtaining water from unimproved water sources (because the rural people usually live in areas not served by water supply schemes) and pay more in term of health costs because of their high vulnerability to health hazards to water related diseases (Ezenwaji and Ezenwaji, 2010). Establishing a small water scheme for the improvement of water supply in the rural areas is very often associated with costs which the rural communities may not be able to shoulder as a result of its heavy financial investment. Hutton (2012) calculated the financial investment needed globally for water and sanitation between 2010 and 2015 which is the MDGs target year for all countries to satisfy the drinking water and sanitation

requirements to achieve the Goals target to be \$145 billion. There is not enough public sector and charitable investment in the world from governments and NGOs to provide universal access needed. However, some rural areas are lucky to have benefited from the government investment in water supply in their areas where most of the time it collaborates with the support agencies. The people of Aguata in Anambra State are one such area where the State Government has invested huge sums of money estimated by Ezenwaji (2011) to be Three hundred million Naira (₦300m) to the development of the Obizi water supply scheme to serve the water scarce Local Government Area. However, after the development of the scheme by the State Government, the EU- WSSWRP intervention programme facilitated the establishment of the framework for good governance and service delivery aimed at sustaining the water supply from the water scheme. Despite these efforts, some parts of the scheme started breaking down just 2 years after they were commissioned, while reform measures established the Water Consumers Associations (WCAs) in communities, upgraded the water and sanitation units (WASH units) in the Local Government Area into a full department, instituted a model customer charter and the

developed the citizen's report card. Barely two years after the commissioning of the scheme and institution of the reform measures, had the scheme started to experience incessant operational hitches. Faced with this difficulty, the communities that are beneficiaries of the scheme met and decided to generate funds from informal microfinance institution to improve the physical infrastructure of the scheme as well as dispense some as loans to willing communities to improve the water facilities in their areas. This study was, therefore, undertaken to assess the use of traditional microfinance for the development and sustainability of Obizi Regional Water Supply Scheme of Aguata Local Government area of Nigeria.

1.1. Existing Microfinance Methods

Microfinance according to Agbontheri and Fonesca (2005) is the application of innovative methodologies that provide access to lump sums and or for saving small amounts of money by beneficiaries who are excluded from the formal sector financial institutions. This according to Steel and Andah (2003) is because of their low asset level activities and high costs involved in lending. They outlined the key characteristics of such microfinance institutions to include:

- i) Local operations that rely upon social and solidarity economy principles in order to enhance the mobilization of financial resources.
- ii) The operating environments of such microfinance institutions match with low –income economic activities and service providers in the rural or poor urban communities where opportunities for generating high income is minimal.

The use of microfinance for financing water projects arose in Nigeria because of the failure of the public sector to properly manage both water infrastructure and services. Under the weight of improper management of the water services together with rapid increase in population growth rate, declining economic performance, water demand had consistently lagged behind supply. To address this problem, both the State and the Federal Government together with partner Development Agencies such as the EU, USAID etc. began the reform of the operations of the sector in which the involvement of private sector and community management were eminently promoted. The people in most areas of South East Nigeria have since adopted the traditional microfinance approach locally known as “*isusu*” to finance personal projects. Winpenny (2003) suggested the use of locally managed financial systems such as microfinance to finance community projects so as to sustain the required level of water services and infrastructure.

Microfinance has many variants. In Ghana according to Agbontheri and Foresca (2005) the two main models practised in the country are the pooled resources/revolving funds of the Association of Water Boards and the Community Rotating Savings and Credits Association (ROSCAS) which is mostly experienced in northern Ghana where it is locally known as ‘*susu*’.

The *susu* methodology is noted for its outstanding efficiency which go beyond the possibilities of even the most advanced modern banking system (Seibel, 2000). The scheme is being used for maintaining and operating the water hand pumps in the area, which involves about 140 homes with a population of 400 women. The pooled sums are then used as loans to beneficiaries. The beneficiary groups have joint responsibility to pay back the loan with interest at the end of the agreed period. Interest charged on loans are only based on profits earned from the credit scheme which is ploughed back into the *susu* funds. The water levies and other sources of income are used to build the loan fund. This type of fund mobilization has helped communities in the area to keep their water systems running throughout the year.

In Cambodia an international NGO (GRET) has put in place a rural infrastructure fund for communities in a public Development Bank to provide medium term (3-5 years) loans to local commercial Banks who wish to fund investors involved in financing piped water systems. INGO also provide a guarantee of 30% on loans for those commercial banks in case of default of the investor. Due to this guarantee, the commercial bank can ask less collateral and accept lower credit rates to the concerned investor.

In Uganda, the District of Mbarara and Bushenyi in the south western part of country devised an innovative method of financing their water scheme using a user fee payable during the normal local tax collection, where some well-to-do persons are asked to pay above their normal tax. The extra funds tagged ‘water funds’ are deposited on the water account used to maintain the water scheme in the area.

In India, Barenberg (2009) described the application of traditional finance model to water and sanitation sector. The study was carried out in and around the city of Tiruchirappalli where Gramalaya, a water and sanitation NGO implemented the programme in partnership with local water partners. The programme involved the construction of water and sanitation facilities by mobilizing a network of self-help groups (SHGs) to utilize a revolving loan fund. The innovative case study highlights how the development of a water and sanitation loan fund and the mobilization of women's SHGs were able to reduce barriers to access credit and increase investment in water and sanitation facilities. In this method, Gramalaya provided loans directly to SHGs, and SHG members distributed the loans among borrowers who are their members with all members sharing a joint liability.

Ezenwaji and Otti (2013) highlighted the efforts of women Association in Obizi communities of Awka South Local Government Area of Anambra State in mobilizing funds for loans to their members for the expansion of water and sanitation services in the area. In this model, the Women Association in the communities mobilize funds through donations, levies and at time sourcing from the conventional microfinance Banks in the area. Every year, the pooled funds are utilized as loans to the village women Associations who in turn select the women to be given the

loan to construct water kiosks. The individual loan beneficiaries are expected to pay back the loan with a little interest not more than 6% at an agreed period usually within 4 years. This has made access to water and sanitation in the area to improve considerably and helped in the empowerment of more women as they now engage in selling water which is an income generating activity.

Furthermore Davis and Tinsley (2013), discussed water credit as a form of microfinance for WASH improvements at the household level. Water credit an initiative of Water Organisation puts microfinance tools to work in the WASH sector. Through water credit, water organisation aims to channel and redeploy financial resources more efficiently enabling increasing numbers of people to meet their water and sanitation needs through demand driven, market-based services thereby reducing the need for ever ending subsidies.

1.2. Microfinance Operations in Aguata Area

It has already been noted that microfinance method has different variants. In Aguata Local Government Area, the variant which is in operation is close to that of Obizi women in Awka South LGA of Anambra State (Ezenwaji and Otti, 2013). In this particular method, the Water Consumers Associations (WCAs) already established in all the fourteen communities came into existence as a result of the EU-WSSSRP water reform in the area. The WCAs are very important and central for the sustainable management of the water scheme because they are made up of men and women of integrity, selected by the community to operate and manage water schemes or water supply sources in their communities. The community involvement and ownership is considered a key element in the reform. It is a fact that the Igbo people of south eastern Nigeria are known for their self-reliance and had championed numerous self-help projects (Ezenwaji and Ezenwaji, 2010). As a result of this, forming an association such as WCAs to handle water project is not new as they have used such Associations in the past to execute similar development projects. Some of the roles of WCAs include organising financial contributions and controlling the gathered funds, engaging a service provider or appoint staff to monitor or maintain the water scheme and oversee the collection of user payments, discussing with agency staff on how best to rehabilitate or extend water systems to meet the changing needs, managing procurements during the construction of system extension and providing day to day supervision of the construction etc. it is based on the above roles that the WCAs of the 14 communities came together to discuss the best ways to raise funds to maintain the Obizi Regional water supply scheme which was rehabilitated by the State Government to serve the area. The frequent breakdown of this scheme and governments inability to sustain repairs made the coming together of the WCAs even more important.

The WCAs from the fourteen communities started a joint meeting after their formation in 2010 aimed at giving the

Association enough force to execute its mandate. One of the reasons for this joint operation is to raise the necessary and required funds for the operation and maintenance of the water supply scheme. The methods adopted by the WCAs in raising funds include (i) periodic organisation of joint fund raising ceremonies especially during the festive seasons of Christmas, New year, Easter and Iwaji celebrations (ii) water charges from the users (user payments) (iii) fines from defaulters of the set rules governing water collection (iv) occasional fund releases from the State Government. Funds pooled together from these sources are paid into the “water fund” account opened in a conventional commercial bank by the joint WCAs and managed by a 14 member fund management committee known locally as *Otu miri*, drawn from the 14 WCAs with each WCA nominating a member. The signatories to the account are the chairman and secretary of *otu miri*. This body has then the responsibility to loan funds to committees such as the Obizi River Rehabilitation and Repair committee appointed from the members of *otu miri* and various WCAs construction works especially system extension and improvement of the existing water facilities within the communities. The loan is usually without collateral as the required collateral is jointly borne but it attracts interests ranging from 6 – 10%. This traditional finance model which began in 2012 has recorded some success although the period is too short for an informed conclusion on the success of the model in the area.

2. Study Area

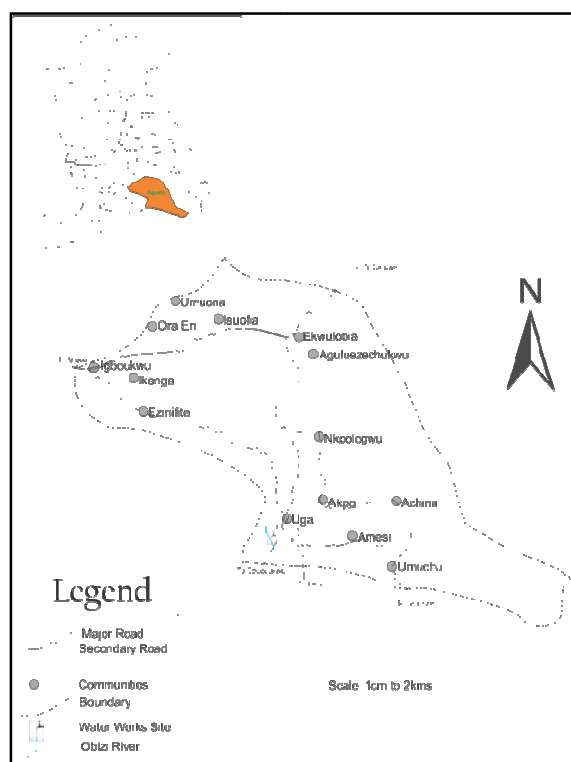


Fig 1. Map showing AGUATA L.G.A., its component communities and the Obizi water works site

Aguata Local Government Area is one of the 21 Local Government Areas of Anambra State. It has a total land area of 202sqkms and made up of 14 communities namely Agulu Ezechukwu, Akpo, Amesi, Achina, Ekwulobia, Ezinifite, Igbo-Ukwu, Ikenga, Isuofia, Nkpologwu, Oleri, Uga, Umuchu and Umuona (Ezenwaji and Ezenwaji, 2010) (Fig.1). It has an estimated 2012 population of 489,200 made up mainly traders and subsistent farmers. The area has a long record of water scarcity which made them to rely on *Umi* water (water from catchment pits) and rainwater collection from roof tops before the construction of Obizi water supply scheme. The reason is that available rivers such as the Obizi river and others are located far away from the community.

2.1. Geology and Hydrology

The major geological formation of the area is Ameki, whose cuesta runs through Awka to Orlu. The formation consists of lower and upper beds of continental deposits while the lithology consists of alternating sequence of sandstones (Orajiaka, 1988).

2.2. Climate and Vegetation

The Local Government area has a mean annual temperature of 32°C with a total annual average rainfall of 2022mm. The dominant vegetation type is the guinea savanna which was derived from high forest vegetation that dominated the area, before it was disturbed by farming and other human activities. Fringing forests are, however, still seen along the river banks.

2.3. Obizi River

Obizi river is located in Uga, one of the communities in the south western part of the Local Government Area. The river is about 10kms to Ekwulobia, the headquarters of the Local Government Area. The Obizi river water supply

scheme was originally built by the Local Government Council and later abandoned but now rehabilitated under the National Water Rehabilitation project and assisted by the State Government as a sensitization action. The project covered the repairs and replacement of plants and equipment, refurbishing of reservoirs, pumps/plant houses, intake and the rising main, laying of 32kms of ductile pipes of various sizes, however the rising main is the only aspect that has been completed. In 2009, the Anambra State Government embarked on a massive rehabilitation and repairs of Obizi water scheme. The works undertaken include:

- a) Complete reclamation/installation of intake structures
- b) Harnessing the springs down streams channels
- c) Rehabilitation of intake sump and pump house
- d) Erosion control works and construction of the access road to intake works
- e) Provision of a new 350KVA generator and transformer at the intake works.

The estimated mean flow of the river is 0.72m³/s which is about 62,803m³/day or 63 million litres a day (MLD). The scheme was designed to serve all the 14 communities in the LGA. With the projected 2013 population of the area of approximately 300,000 and per-capita water consumption of 60 litre par day the, total water requirement of the area is about 18,000 m³/day or 18,000,000MLD. This, therefore, means that the river can release enough water for the requirements of the LGA. Suction tanks had been constructed at Uga and Ekwulobia, from where water will be boosted to the 14 communities. Also a 360m³ reservoir tanks were constructed at Ekwulobia, Igboukwu, Ikenga and Achina.

3. Research Methodology

3.1. Data Collection

*Table 1. Factors Associated with the Use of Microfinance for the Development of Obizi Regional Water Scheme**

S/No	Variable	Label	Variable Description
1	TOTA	X ₁	Total amounts of funds generated from all sources for the year
2	POP	X ₂	Projected population of the communities
3	NUMB	X ₃	Number of WCAs involved
4	USER	X ₄	Amount of funds raised monthly per WCA from user fees
5	DIFA	X ₅	Amount of funds raised monthly per community from defaulting consumers
6	STAT	X ₆	Amount of funds released per month by the State Government for the project
7	AMTS	X ₇	Daily amount of water consumed per community
8	INFR	X ₈	Number of water infrastructure developed from the microfinance fund
9	CONT.	X ₉	Amount of funds contributed by WCAs per month
10	LOAN	X ₁₀	Amount of funds granted as loans to WCAs
11	INTR	X ₁₁	Average interest generated as loan in 2012
12	QUANT	X ₁₂	Quantity of water supplied from the scheme to the communities each month
13	SIZE	X ₁₃	Size of the membership of WCAs
14	EQUIP	X ₁₄	Number of WCAs that have achieved equitable access to water supply among various categories of people in their areas
15	EFFE	X ₁₅	Number of WCAs that have achieved effective use of water facilities
16	OTU	X ₁₆	The number of infrastructure maintained by Otu miri in the obizi water scheme

* The data were for 2012.

Table 2. Field Data of the use of traditional microfinance method to the development of Obizi water supply scheme.

S/ N	Communi ty	VARIABLES															
		TOTA	POP U	NUMB S	USER	DIF A	STAT	AMT S	INF R	CON T	LOAN	INTR A	QUAN T	SIZ E	EQU I	EFF E	OT U
1	Achina	812,000	14,031	1	52,440	10,260	500,000	3	1	58,000	520,000	8	841,860	18	1	1	4
2	Agulu Ezechukwu	640,000	5,234	1	28,680	4,332	350,000	2	1	24,000	350,000	6	314,040	14	0	0	0
3	Akpo	749,000	9,306	1	62,500	6,300	300,000	1	2	20,000	500,000	6	558,360	25	0	0	0
4	Amesi	573,000	6,444	1	18,320	2,500	260,000	1	2	21,000	280,000	8	386,640	20	0	0	0
5	Ekwulobia	888,000	31,435	1	70,000	13,250	620,000	3	1	69,000	650,000	6	1,886,100	15	1	0	2
6	Ezinifite	998,000	11,004	1	84,350	4,000	750,000	3	1	48,000	820,000	7	660,240	16	0	0	1
7	Igboukwu	1,270,000	29,702	1	74,200	13,200	1,000,000	4	2	60,000	1,000,000	8	1,782,120	17	1	1	0
8	Ikenga	549,000	6,346	1	13,404	3,800	350,000	1	1	15,000	344,000	6	380,760	18	1	0	1
9	Isuofia	804,000	14,040	1	42,366	6,600	500,000	2	3	33,000	500,000	6	842,400	21	0	0	3
10	Nkpologwu	1,132,000	13,808	1	46,600	5,820	780,000	2	2	32,000	800,000	8	828,480	18	0	0	0
11	Orieri	784,000	7,498	1	20,000	2,200	400,000	1	1	12,000	380,000	6	449,880	14	0	0	4
12	Uga	1,240,000	27,091	1	94,000	8,020	850,000	4	1	61,000	900,000	6	1,625,460	17	1	1	0
13	Umuchu	2,293,000	22,248	1	101,204	10,400	750,000	4	2	65,000	1,800,000	6	1,334,880	18	1	1	3
14	Umuona	354,000	3,926	1	15,000	2,000	190,000	1	1	20,000	200,000	8	235,560	18	0	0	1

Table 3. Standardized Data Matrix of Traditional microfinance in Aguata Local Government Area

WCA	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄	X ₁₅	X ₁₆
Achina	-1.91	1.14	-1.77	-1.66	1.84	1.73	1.53	0.97	0.82	1.66	1.72	1.44	1.66	1.63	1.77	1.72
Agulu Ezechukwu	-1.12	-1.11	-1.18	1.10	0.91	-1.05	-1.60	0.83	0.99	-1.28	-1.29	-1.60	0.30	0.88	-0.42	-1.33
Akpo	-0.50	-0.91	-0.83	-0.71	-0.26	0.91	0.74	0.66	0.56	-0.71	-0.38	-1.13	-0.96	-0.73	0.43	0.32
Amesi	-0.21	-0.54	-0.15	-1.14	-1.20	0.28	0.69	0.71	0.23	-0.52	-0.76	0.62	0.49	0.44	0.22	0.10
Ekwulobia	1.11	1.61	1.11	1.03	1.04	1.27	1.38	1.64	1.91	1.82	1.52	1.71	1.69	1.09	1.33	1.02
Ezinifite	-0.17	0.77	-0.20	-1.01	-0.60	-0.37	-0.48	-0.82	-0.89	-0.82	-0.10	0.33	0.28	-0.45	-0.32	-0.09
Igboukwu	1.03	1.19	1.32	1.84	1.44	1.32	1.02	0.47	1.73	1.19	1.77	1.43	1.10	1.30	1.20	1.42
Ikenga	1.74	-1.10	1.62	1.02	1.69	1.82	1.72	1.39	1.87	1.20	1.49	1.29	1.36	1.67	1.44	1.66
Isuofia	0.32	0.04	0.44	0.13	0.03	0.71	0.68	0.57	0.23	0.41	0.63	0.44	0.20	0.54	0.30	0.40
Nkpologwu	0.29	0.41	0.39	0.08	0.28	0.66	0.90	0.63	0.64	0.37	0.24	0.38	0.06	0.07	0.04	0.33
Orieri	0.09	0.62	0.48	0.63	1.32	1.04	3.00	0.92	0.87	0.03	0.02	0.62	0.73	0.38	0.63	0.28
Uga	1.20	1.70	1.66	1.29	1.01	1.33	1.63	1.74	1.48	1.56	1.89	1.71	1.48	1.22	1.29	1.09
Umuchu	0.84	0.74	0.30	0.46	0.82	1.11	0.81	0.62	1.23	0.46	0.72	0.61	1.07	0.60	1.40	1.30
Umuona	0.63	0.52	0.01	0.08	0.46	0.66	0.49	0.81	0.06	0.07	0.08	0.26	0.34	0.36	0.72	0.46

To facilitate data collection for this research, questionnaires were designed to ascertain the methods by which the loan funds were generated for the communities to manage and maintain their water services. The population of water consumers in each community, the total population of the communities, government financial

assistance, daily water consumption amounts, cost of developing the infrastructure etc. While some of these data were obtained from water consumers files in the communities, others were obtained from the designed questionnaire. The sampling method employed was the stratified sampling where every community constituted a

strata. One reason for adopting this method is that the strata need not be of uniform sizes to accord with the heterogeneous sizes of our communities. Data were however, collected between January and December 2012.

A total of 16 variables associated with the use of the traditional microfinance method in the development of Obizi Regional water supply scheme were identified, defined, parametrized and recorded as shown in Fig.1. The result of the field data collected is presented in Table 2.

3.2. Data Analysis

In analysing the data Principal Component Analysis (PCA) was performed. The result of the multiple correlation analysis (not shown) reveals serial autocorrelation as many factors showed strong and significant positive correlation with each other. This severe auto correlation that characterized our data at this level left us with no other option than to subject the data to Principal Component Analysis. The first step in our PCA analysis was to transform the raw data matrix into a matrix of standard scores as our variables were not measured on the same scale (Table 3). After this, PCA was then performed with varimax rotation and Kaiser Normalization and the result was the emergence of three components (Table 4), which accounted for 97.2% of microfinance contributions to the development of Obizi Regional water supply scheme in Aguata Local Government Area of Anambra State.

Table 4. Varimax Rotated Component Matrix of factors of Microfinance to the Development of Obizi Regional water supply scheme in Aguata

Variable Label	I	II	III	IV
TOTA	X ₁	0.70	0.02	0.01
POPU	X ₂	0.28	-0.10	-0.09
NUMB	X ₃	-0.20	0.00	-0.05
USER	X ₄	0.73*	-0.01	-0.06
DIFA	X ₅	0.80*	-0.04	-0.02
STAT	X ₆	0.30	-0.02	-0.03
AMTS	X ₇	0.36	-0.08	-0.04
INFR	X ₈	0.14	0.71*	-0.55
CONT.	X ₉	0.81*	-0.07	0.14
LOAN	X ₁₀	0.00	0.11	0.68*
INTR	X ₁₁	0.22	0.04	0.64*
QUANT	X ₁₂	0.28	0.60*	-0.10
SIZE	X ₁₃	0.08	0.04	-0.03
EQUIP	X ₁₄	0.20	0.10	0.10
EFFE	X ₁₅	0.12	0.65*	0.07
OTU	X ₁₆	0.08	0.01	0.11
Eigenvalue		5.06	1.33	1.03
% of variance		66.2	17.5	13.5
CUM PCT		66.2	83.7	97.2

* Significant loading (± 0.60)

4. Results and Discussion

From Table 4 it can be seen that component I has high and significant loadings in X₉ (Amount of funds contributed by the WCAs per month to Otu miri)

X₅(Amount of funds raised monthly by WCAs from defaulting members.) X₄ (Amount of funds raised monthly per WCA from consumer user fees), X₁(Total amounts of funds generated from every source for the year). This component which has an eigenvalue of 5.06 and explains 66.2% of the variation in data is indicative of Funds generation for microfinance which is indirectly related to the total amounts of funds generated from all sources for the microfinance operation because the loading on X₁ is positive (0.70). Component II which accounts for 17.5% of the variation has an eigenvalue of 1.33 and has positive loadings on 3 variables namely X₈ (Number of water infrastructure developed from the microfinance fund) X₁₅ (Number of WCAs that achieved effective use of water facilities) and X₁₂ (Increase in the quantity of water of water supplied from the scheme to the communities each month), This component describes infrastructural improvement and use in the study area and together with component II account for 83.7% of the increased funding of water services in the area. Component III has positive loading on two variables namely X₁₀(Amount of funds granted as loans to WCAs) and X₁₁(Average interest generated on loan by beneficiaries). This component contributes 13.5% with an eigenvalue of 1.03 and together with the first two components account for 97.2% of the observed funding of the water scheme by microfinance method. It is indicative of level of loan disbursement to WCAs typified by the increase in the quantity of water supplied by the scheme as the loans are used by WCAs to improve water infrastructure in their communities.

To explain the performance of microfinancing in each of our 14 communities we employed the component scores which are the individual contribution of the original variables for each community to the variance explained by each component. It is calculated by the formula (Anyadike, 2009).

$$CS_{ik} = \sum_{j=1}^n D_{ij}L_{jk}$$

Where CS_{ik} = The score of observation i on component K .

D_{ij} = The standardised value for variable j on observation i (each community).

L_{jk} = loading of variable j on component k (Anyadike, 2009).

Summation is over all N variables. Based on the formula the complete component scores for the three components are presented in Table 5.

An examination of these component scores from Table 5 reveals that they have both magnitude and direction (i.e. sign). In component I which is the fund generation for the development of the water scheme, it could be seen that the funds are generated least from Agulu Ezechukwu (-7.03) followed by Amesi (-5.11) and Akpo (-3.24). Conversely funds were generated most from Uga (7.68), Ikenga (7.63), Igboukwu (6.20) and Achina (5.82). The reason for this

may be because the State government constructed some water facilities such as suction tanks at Uga and Ekwulobia, while 360m³ reservoir tanks were constructed at Ekwulobia, Igboukwu, Ikenga and Achina.

Component II, (infrastructural improvement and use of the water scheme) exhibits its lowest performance in Amesi (-4.33) followed by Agulu Ezechukwu (-4.29), Akpo (-2.91) and Ezinifite (-0.92). The reason for this poor performance in these communities may be traced to the poor supervision of water systems by the WCAs in these communities. Also some of these WCAs have recently been formed and, therefore, need time to be properly structured to perform the desired roles especially regarding the guiding of the use of the existing water supply infrastructure. The component, however, exhibited the highest presence in Ikenga (6.33), Uga (6.30) and Igboukwu (5.46).

Table 5. Component Scores of Data on the use of Microfinance method to the Development of Obizi Water Supply Scheme in Communities in Aguata Local government Area

Community	SCORES ON COMPONENTS		
	I	II	III
Achina	5.82	4.60	3.50
Agulu Ezechukwu	-7.03	-4.29	-4.10
Akpo	-3.24	-2.91	-2.40
Amesi	-5.11	-4.33	-3.92
Ekwulobia	3.88	2.73	1.44
Ezinifite	-1.40	-0.92	0.70
Igboukwu	6.20	5.46	3.69
Ikenga	7.63	6.33	4.11
Isuofia	2.03	1.88	1.02
Nkpologwu	0.91	0.74	0.53
Oreri	0.89	0.63	0.44
Uga	7.68	6.30	4.71
Umuchu	1.48	1.04	0.90
Umuona	0.87	0.54	0.19

Component III (level of loan disbursement) shows the lowest performance in Agulu Ezechukwu (-4.10), followed by Amesi (-3.92) and Akpo (-2.40). Again the reason for low level of loan disbursement of these communities can be traced to their poor revenue profile which is reflected in the small amount of loans offered to them. This is small to handle major water infrastructural repairs in the community. Conversely, the component performed well in Uga (4.71), Ikenga (4.11) and Achina (3.50). All these communities have established well functional WCAs that are able to mobilize large amounts of funds for contribution to Otu Miri which is reflected in large amounts of funds offered to them as loans.

The spatial disposition of the three factors namely (i) *funds generation for microfinance*, (ii) *infrastructural improvement and use* and (iii) *level of loan disbursement to WCAs*, shows that most communities that performed poorly on these three factors, apart from Uga and Achina are located in the northern parts of the Local Government Area, while those communities that achieved high scores are located in the northern parts of the Local Government Area.

The reason why Uga and Achina are not included among the poor performing communities of southern parts of the LGA may be traced to the fact that the Obizi scheme is located in Uga, while some major infrastructure have been constructed in Achina. The beauty of the microfinance method as an innovative financial approach for the development of Obizi water supply scheme is that each user community (14 in our case) was granted true decision making authority. In other words they were given comprehensive information needed to make informed decisions without being pressured to follow the preferences of Government and or intervention bodies such as the EU, DFID, JIKA etc. Each of these communities obtained loan from the pooled fund which is managed by "Otu miri" and are free to select the most appropriate management system for operation and management (O&M) of water infrastructure in their area. In some of the communities discussed, the operation of WCAs has been badly affected by social and political crisis in the community. This reality is in line with the thinking of Degabriele, (2002) that a group of people should have internal resources, common interest or sense of solidarity to either initiate action or sustain the management of a water facility. This particular point does not, however, vitiate the success of community based water supply systems. This is important because some researchers have noted that community based water supply has failed in sub-saharan Africa because communities find it difficult to manage water supplies in their areas and therefore preferred individual or household managed water supply (Sulton, 2007, Harvey and Reed, 2004). This view is seriously contradicted by the findings in this work.

5. Conclusion

This paper has examined the use of traditional microfinance method as an innovative finance approach to the development of Obizi Regional Water Supply Scheme in Aguata, Nigeria. The findings in this paper have highlighted the adequacy of the model to ensure sustainability of regional water schemes in Nigeria. This model is indeed a departure from the existing one that is characterized by the top-bottom financing approach in which either the government or an intervention or partner organisation finances the construction and maintenance of the project while the local people that benefit from the project only play passive role. The traditional microfinance has inbuilt features that fit into the Parry-Jones et al (2010a) definition of the sustainability of water supply projects. These are that the model encourages minimal external assistance in the long run, financing of regular operation and maintenance costs of users and continued flow of benefits over a long period. The result of our Principal Component Analysis (PCA) which isolated three factors namely funds generation for microfinance, infrastructural improvement and use and level of loan disbursement to WCAs together support the sustainability of Obizi water

supply project. The model which has just started operating in the area is contending with the problem of low performance of the WCAs as could be seen in its good performance in only 4 out of 14 communities served by the scheme. Serious efforts are, therefore, needed to ensure that other communities in the area embrace the finance method.

Recommendations

Following from our findings, we recommend that the following measures be adopted to improve the operation of the traditional microfinance model for sustainable water project in all communities of the Local Government Area. The measures are:

- i) Persistent mobilization of community members (consumers) to support the WCAs through the raising of funds by promptly paying their water user fees and putting appropriate local measures to recover fines imposed on defaulting consumers.
- ii) Better method of loan disbursement should be adopted. The *Otu Miri* should work out clear guidelines for loan disbursement. This will correct the present situation where some WCAs have received loans twice within the period while others are yet to receive.
- iii) Women should be seriously involved in the microfinance processes. In this wise, the Aguata people should learn from the huge successes recorded by Women Associations in Obizi communities of Awka South Local government area of Anambra State where the use of traditional microfinance by women has greatly improved household access to water and sanitation (Ezenwaji and Otti, 2013).

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