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Community Participation and Sustainability of Rural Deep Underground Water Projects in Uganda: Empirical Findings from Kkingo Sub-County, Lwengo District.

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Abstract

The general aim of this study was to establish the extent of relationship between community participation and sustainability of rural deep underground water Projects in Kkingo Sub County. The study used a singular case, cross section research design which simplified the study to accurately come up with ultimate reality. The study further used a positivism philosophy which posted into epistemological and ontological stance in the attempt to grasp the ultimate reality. The sample size of the article was 349 and we applied Purposive, stratified and simple random sampling techniques to select the community members in the article area. Data was collected using interview guide, questionnaires and focus group discussion. The emerging results were analyzed thematically (qualitative data) and through Pearson correlation and multi regression analysis (for quantitative data).The findings generated a structure equation model which revealed that community participation has a significant influence on sustainability of rural underground water project. Sustainability was achieved to some extent as apart from information sharing; consultation, decision making and initiating are significant contributing factors to the sustainability of rural underground water Projects in article. The article recommends those local authorities' involvement and commitment as well as active water user management committee. It further recommends the use of self-driven demand and encourages beneficiaries in identification of their water sources needs, suggestions of alternative solutions designing, implementation, monitoring and evaluation of water projects.

Key words: Community Participation, Safe water, Underground Water Projects, Sustainability, Kkingo Sub-County

Introduction

Community participation in community development activities is critical and is as old as man itself. Man has worked individually and collectively to make life meaningful and better than ever. Although much attention has been made on public sector service delivery for instance, supply of underground water projects. The inappropriate practices of failure to buy in community participation actually it does not yield to the expectations (Bartram, 2015). The underlying assumption is that water projects have a positive impact on economic growth and development that triggers and stimulates related private sector investments.

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The overall operation and maintenance of rural underground water sources remains a responsibility for underground water project users and community through the established structure and services (Koppen, Smits, Rio, & Thomas, 2014). The global growing concern and quest for improving access of safe drinking water is critical in most of the emerging economies. The mitigation is this environment remains a problem and a paradox in public sector especially in developing countries of East Africa like Uganda. With community based participation approach and model in the management and maintenance of rural underground water Projects, the community gain a sense of ownership develops because the communities look at the projects as theirs (Hacker, 2013). Globally, 50% of water projects constructed by the government in most of the emerging economies fail due to lack of community involvement (Morris, Sandford, Bigas, Adeel, & Staff, 2012).

In Uganda, only 45% of the rural population to a less extent do participate in underground water projects (Uganda National Household Survey Findings 2010 UBOS, 2014) and in Lwengo District purse only 20% of population do participate and contribute to governance of rural underground water Projects and only 68% of the people have access to safe, clean water. This low involvement of local community is responsible for low functionality of underground water user committees and unwillingness of the community to pay user fees as required (DDP, 2012).

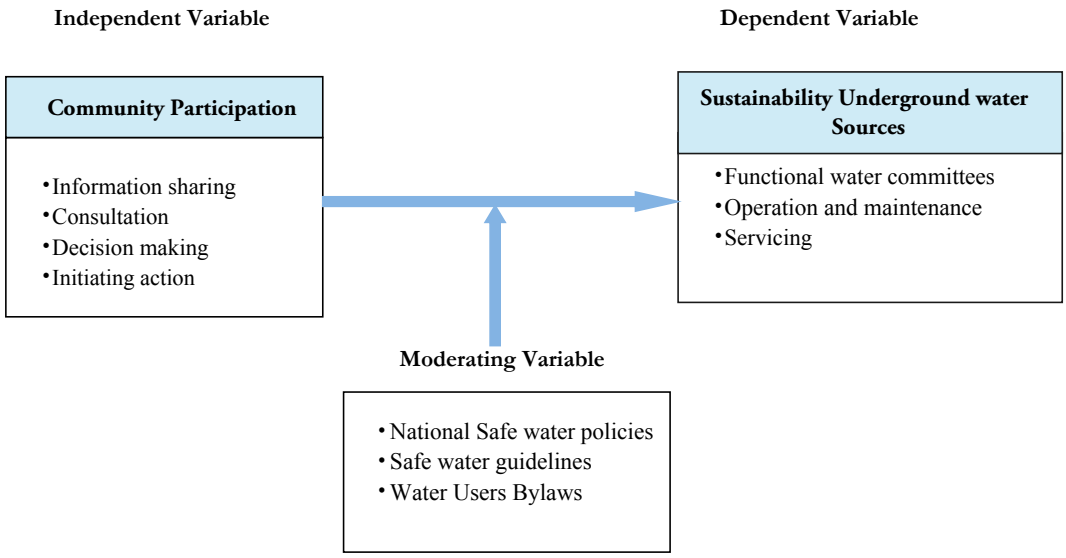
Although community participation is said to enhance sustainability of community water projects (Manfre & Rubin, 2012) , less information sharing is not available and it disempowers the community in decision making and planning enable rural water Projects in Kkingo Sub County to hence they are short lived and sustainability is not eminent.

Theoretical and Conceptual Frameworks

Theoretically, the study was grounded on social cognitive systems theory and stakeholders theories which presupposes and allows community participatory and good governance approaches of rural underground water sources. These two theories were seen to be helpful provided successful and effective participation of stakeholders as significantly envisaged in article. The buy-in informed and knowledgeable stakeholders' participation is a significant driving factor and led to increased sustainability of water sources in the 1980s. The same idea of social cognitive theory and stakeholders human capacity presuppose active community participation and enhanced level of operation and maintenance system which post into sustainability of initiated water projects (Ochola, Sanginga, & Bekalo, 2010). The approach of high community involvement empowered Users communities to have responsibility over the management system of their water sources and they were held accountable of their own resources. In addition, theoretical approach the article used conceptual framework to ensure that clarity of the relation between the article variables. The article also used a conceptual framework and developed a structural equation model of the analysis of the variables.

The analysis is composed from two theoretical concepts that guided the study of this article. The reason for choosing these theories concepts was to increase firm ground and clarity in the linkage of active and community participation in the analysis between article variables. So the original approach of Community Participation and sustainability of water projects calls for involvement of the beneficiaries eventually evolved and transformed into Community Management and control of their ownership of water Projects(Ackermann, 2012). Despite the stated interventions of community participation and appropriate governance of water sources as a common good, there is social inclusion and inadequate commitment towards sustainability and functionality of water sources which has led to increasing challenges in rural areas. However, Kkingo Sub-County dramatic historical water project developments and governance dynamics depends on the holistic nature of community participation and sustainability.

Figure 1: Conceptual Framework



Source, adopted and modified from (Filho, Mifsud, Shiel, & Pretorius, 2017)

The conceptualization of framework enables successful explanation of how the study variables interact in order to enhance operationalization of the underground water source in rural community. The conceptual framework clearly illustrates that active community participation through information sharing, consultations, decision making and initiating posts in wisdom action support of the effective governance and maintenance of underground water sources posts into sustainability. The reflection of four pillars in predictor variables is moderated and reinforce by national safe water policies and bylaws bring harmony among the variables. Community participation as a predictor variable presupposes emanate outcomes leading to sustainability of rural deep underground safe water Projects. The article further demonstrates that if at all the community uphold the national policies on safe water, initiates action and sets up relevant bylaws would enforce regulatory measures on the governance and sustainability of the rural underground water sources as cited by (Richard, 2015). It is a known assertion that effective community participation of members will forester community based management as part of shared visions , decision making and in initiating actions promoting functionality of rural underground water Projects, it will lead to sustainability such projects.

It is widely argued that community based participation contributes to better projects, better development and collaborative governance (Ojha, Hall, & V, 2013). Participation involves provision of adequate information, consultation, offering some options, listening to feedback, deciding together, acting together and, supporting independent community interests (Ritchie, Lewis, Lewis, Nicholls, & Ormston, 2013). The potential benefits of community participation in development projects are multi-fold and have been well documented. For example, the World (WESS,2013) indicates that community participation can bring important new information to the table, facilitate development of innovative approaches and solutions, and may enhance public acceptability of government decisions, if well implemented.

Statement of the problem

The Kkingo Sub-County local governments and entire community are mandated to plan, oversee implementation of development projects and are expected to prepare plans and budgets incorporating operation and maintenance aspects(Engineers) & Meyer, 2016:79). Despite the efforts by the Kkingo local government leaders, central government and non-governmental organizations and local water users committee who that invested huge sums of funds in underground safe water sources to provide safe water drinking in Kkingo Sub County there is sacristy of water in the community.

The satiation is warring in the rural communities; the low levels of community participation, knowledge gap on technology of underground water sources, inadequate servicing, and maintenance affect the functionality and operation systems of water sources. The identified knowledge gap jeopardies the opportunity for effective involvement and community participation hence reducing chances for sustainability of these underground water sources as contended in (Kissinger, 2015). Kawooya (2014) in his study demonstrates low levels of community engagement and stakeholders as a result of inadequate knowledge gaps which was exhibited in community participation and functionality of underground water sources in rural community.

If the trends continues in the same direction there is a likelihood that most of the people rural community mighty have catastrophe as a result of scarcity of safe water mighty occur in Kkingo Sub County. Therefore article is stands out to shade light on the underlying factors and underpin them so as to bridge the knowledge gap of underground water sources technology in order to significantly and practically enhance levels of community participation and sustainability of rural water Projects in Kkingo Sub County.

Objectives of the study

- To find out the level of community participation in sustainability of rural underground water Projects in Kkingo Sub-county, Lwengo District.
- To examine the level of sustainability of rural underground water Projects in Kkingo Sub-county, Lwengo District.
- To establish the relationship between community participation and sustainability of rural underground water Projects in Kkingo Sub-county, Lwengo District.

Literature Review

The literature was reviewed based on the three article objectives and melded on the grounded the governance institutional system theories, stakeholder and human capital theory at all levels in the community. Effective community participation and stakeholders willingness to contribute towards the servicing, operations and maintenance has a positive significant direction towards sustainability of underground water sources. The relationship between Community Participation and Sustainability of Rural Safe Water Projects is paramount and presents supper-burial strategy of water User's willingness to contribute to the governance and continuity of water sources. Community Participation takes many forms, and can mean different things and involvement at all levels to different people (Delgado, 2015).

According to (Lerner, 2014)contends that community involvement can encompass many types of cooperative efforts invested by different people towards effective management and sustainability of water sources among two or more groups of individuals in the community. The global quest for answers to the growing sacristy of safe water and debates and arguments about the increasingly inefficient public sector, continue to shape the trajectory of policies and programmes around water and the environment (Danver, 2010).

The literature review and the conceptual framework provide the foundations for effective governance system and set sounding strategies for sustainability of underground water sources in a real world case article (Rogers, Jalal, & Boyd, 2012). Community participation and decision making initiatives strengthens governance and foster sustainability of water sources in Uganda (Ochola et al., 2010) (Jacobsen, Webster, & Vairavamoorthy, 2012). The participation and involvement of all stakeholders provide a sense of community to take responsibility for oneself and others, and a readiness to share and interact (Donner, 2015). There exists a growing view that local communities and beneficiaries should be involved in the development, implementation, and monitoring of interventions designed to reduce poverty.

Sustainability is defined as the power or capacity of programs to continuously respond to identified community participation issues. (Francese, 2016) defines Sustainability as the ability of a system to bounce back from such shocks and stresses and adopt stable states, while (Escarpe-Ibarra, 2016) defines Sustainability as the ability of a project to maintain its operations, services and benefits during its projected life time. In the article, Sustainability is defined as a balance between the willingness to contribute towards support, human capital, and environmental factors to reinforce continuity. Sustainability of rural community water projects can be achieved through active community based involvement in the management and maintenance. It is about the question of ownership and supporting community members to live according to their values and acting with integrity and responsibility.

According to Michael Hall, Stefan Gössling, Daniel Scottis (2016) one of the winners of sustainability requires in Specialist wisdom and community engagement in the management system of their own resources. Sustainability remains one of the major issues in tourism today. Given the centrality of community participation and sustainability in tourism curricula, policies, research and practices appropriate prepare a state of the art handbook on the relationship between community engagement and sustainability.

However, it is notable that timely community participation and Sustainability is developed from specifically commissioned origin of communities' willingness to contribute towards the wellbeing their resources. The systematic approach to organisation change needs to be ground on a particular model to guide to the current state of knowledge of the water users in study area.

This then provides the context for sections outlining the main theoretical frameworks and constructs that inform sustainability, management tools and approaches, and the approaches used in different tourism and travel industry sectors (Robinson, Fallon, Cameron, & Crotts, 2016).concludes by examining emerging and future concerns in community participation and sustainability.

Hall, Gossling, Prof, & Scott,(2015) contends that sustainability is derived from consorted efforts to involve community members in sustainable development projects which calls for shared vision and has widely accepted concept but essentially contested. Nowadays there is nothing that cannot be described as "sustainable" and this contributes to the complexity of the notion of sustainability and sustainable development goals (Filho et al., 2017).

Sustainability of institutional and financial services are seen as a means to achieve the sustainability of benefits, as Fowler (McKenzie-Mohr, 2013) states different dimensions of sustainability need to be recognized and woven into each other as a comprehensive mutually reinforcing strategy. Therefore, sustainability of rural underground safe water projects can only be realised and evaluated after the donors have withdrawn from the projects(Jha, Bloch, & Lamond, 2012).

The community participation paradigm and engagement of stakeholder at all levels is envisaged to have positive significant on the sustainability of safe water resources. The involvement of community is useful venture and it enhances the effectiveness and efficiency in service delivery of the project benefits, but also in encouraging self-reliance and sustainability. However, community participation is not only useful, it forester ownership and willingness to ably contribute in the trends for the achievement of sustainability. Sustainability is seen to be dependent on the role played by community, stakeholders and water users' committee ability to mobilize resources. The active community participation is important because these people are the owners and the ones who can decide to forester continuity of services created by development of the safe water projects. Thus genuine community involvement, stakeholders' participation has become a critical factor in promoting project sustainability(Clark, Hohl, Picard, & Thomas, 2014).

Engemann & Henderson (2013:117) asserts that people's participation in management of their resources is an essential prerequisite for the continuity of activities. Therefore involvement of local members and utilization of local stakeholders generates a sense of ownership over the interventions to forward in their communities

and they are bound to support them for continuity. This sense of community involvement instils the idea of ownership which is essential for the sustainability of the initiated projects.

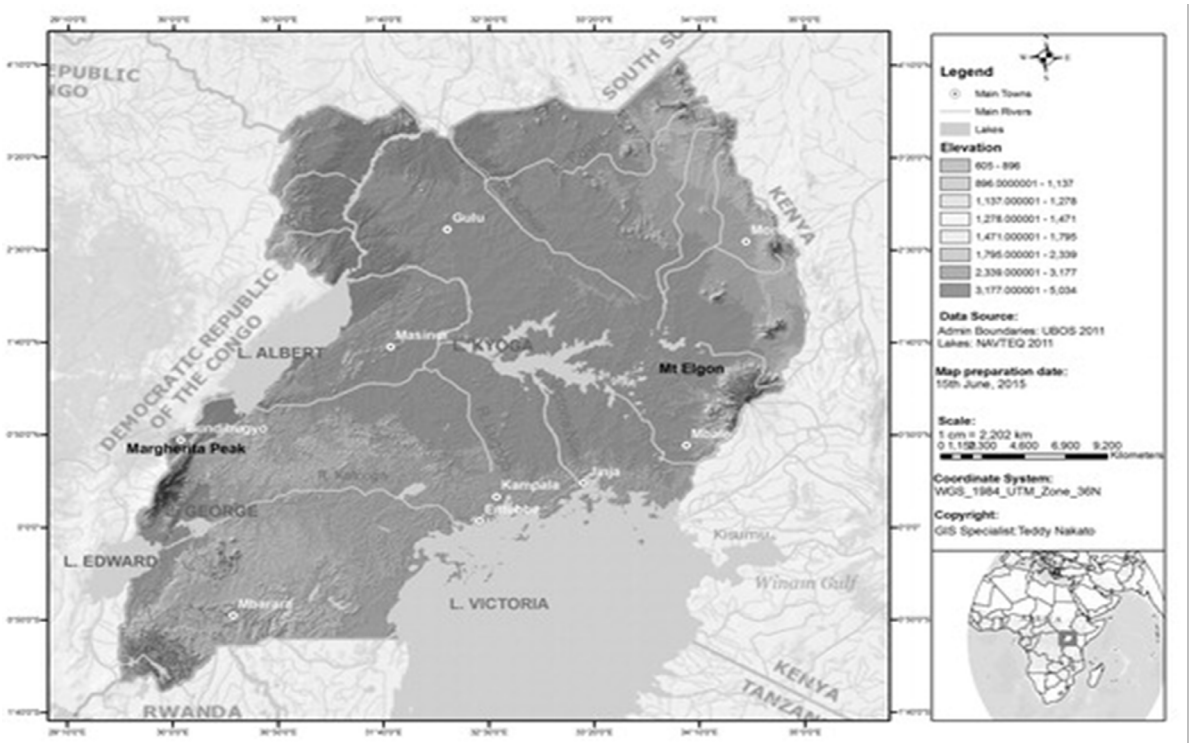
Although a number of authors supported the view of community participation and engagement of stakeholders at all levels to forester sustainability no body cited Kkingo Sub County and one wonders whether the views were universal yet it would be a different case in Kkingo Sub County, hence this called for the study to find out the truth of the matter. In addition, the authors give the levels of community participation and agree to have shared vision on the information sharing, decision making and initiating action to be the best of their knowledge, one wonders whether such views are applicable in Kkingo Sub County.

Methodology

The article adopted a mixed methods approach together with a singular case cross sectional research design for the purpose of clarity and simplifying the unity of analyis. The choice of method was informed by the belief of narrow views of world characterised by positivist orientation and approach of the researcher's inquiry. The positivists believe that using more than one method in undertaking social science research may have particular strengths with respect to the subject matter of inquiry and will provide a clear picture to the variables under study. The positivists also contends that, the combination of methods avoids basis and enhances the validity of empirical materials, researcher can overcome the weakness of intrinsic and problems that come from the single method. This mixed method was seen to be suitable for the study and it enabled collection of both quantitative and qualitative data (Resources, 2015). The article further utilized a survey whereby questionnaires were used predominantly to rural deep underground safe water users; researcher also used interviews to the key informants who comprised of local leaders and water users management committee members and focused group discussion which combined all stakeholders in Kkingo Sub-County. The focused group discussion comprised six to eight members selected from all categories of the targeted unit of inquiry in the study and the members were selected using simple random and by convince approaches. These methods forested and consolidated triangulations of inferences about the levels of population's participations and sustainability of underground water sources. The study sampled 349 representative using simple random, stratified and purposive approaches. The article further it was driven by philosophy of positivism and epistemological stance which successful enabled the study come up with truth from unit of inquiry and ultimate reality. The researcher's interest in the study was to provide accurate and reliable information obtained from reliable underground water sources users a reasonable unit of analysis as well as sizable unit of inquiry. A cross-sectional design choice was envisaged suitable because it could allow accurate investigation in order to get deeper understanding of the concepts under study and the design enabled collection of accurate data to describe, compare, or explain desired aspects (Corno & Anderman, 2015).

Quantitative and qualitative data were triangulated using mixed methodology to ensure that the weaknesses of single method do not spill over in the study to constrain the strengths of the other variables and vice versa (Paulsen, 2016). However, the data presented in the articles largely reflect quantitative data and a few concepts of qualitative is captured in the discussion. The article was carried out in Kkingo Sub-county Lwengo District. The purposive and stratified sampling approaches were used to underpin the bias tendency. A sample of participants who were engaged in the study appropriately derived from Kingo Sub-County population due to the fact that, the populace had a number of cases exposed and experiencing the problem under study. The targeted area of interest is located in Lwengo District which boarders with Masaka, Sembabule, Lyantonde, Bukomansibi and Rakai Districts.

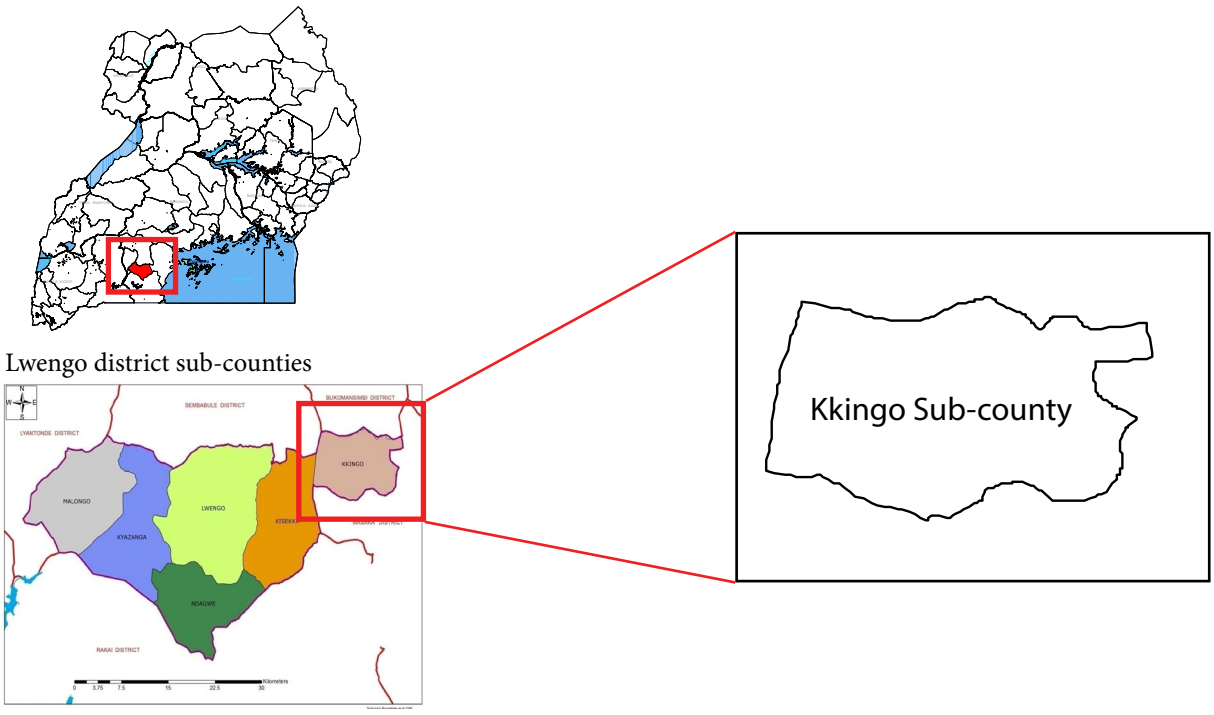
Map of Uganda showing water sources



Source: Google Maps retrieved on [4/05/2016]

The study for this article was conducted in central region of Uganda rural areas, taking Kkingo area from Lwengo district in perticular which is one of the most raveged areas in rural communities that experiences sacrity of safe water despite of the enomius water sources within the district. The area is prodominantly occupied by Buganda as inhabitants, however mixed up with some Banyankole and Bakiga. The people in this rural community commonly use Luganda as a medium of communication and the mojority of the inhabitant depend on substance farming for their livehood

Map of Uganda Showing study site



Source: reliefweb.int/.../ACFA064C7C4EA2138525734400468CE5-ocha_REF_uga061031.pdf

The Uganda is a densely populated area, it has of 36 million people at annual population growth rate of 3.4% (UBOS,2011). The country is among those having faster growing population rate in the world and most of them live in the rural community. The area was selected due to its interesting inhabitant mix and has sacristy accessibility of safe water amidst the enormous underground water sources that exist in central region. Despite all the remarkable recovery of the 1990s in service delivery and presence of underground water sources the area there is still a big challenge of accessing clean and safe water in the rural community. Access to safe water in rural community has been stagnated to around 65% and yet it was projected to be at 72% by 2015. However, it is notable that Kkingo Sub-County of part of large rural community of Lwengo District as reflected on the Map of Uganda by a red sport. Kkingo Sub-County as one of densely populated areas experiences scarcity of safe water; it has the total population of 7829 households who were unity of analysis according to Population profile (Uganda Bureau of Statistics, 2014. The article study sample 349 participants as unity of inquiry that were taken from targeted populace from the households of Kingo Sub-County. It is in this vein the targeted population where the study drew the Key informants and the rest of respondents were engaged as a sample for the article.

Table 1: Household distribution by Parish in Kkingo Sub-County

Sub-County	Parishes	No. of households	Sample size
Kingo	Kagganda	1401	62
	Kasaana	1401	62
	Kiteredde	1305	58
	Kisansala	702	31
	Nkoni	1600	72
	Ssenya	1420	64
Total		7829	349

Source: Uganda Bureau of Statistics, (2014) Using Krejcie and Morgan (1970)

The sample size was calculated on each parish proportion as allocated using a formula as reflected below in order to arrive at unity of inquiry in sampling technique (Kothari, 2004).
Ni = n.NjN

When Ni= Sample size for each Parish
n= Sample size of the entire population calculated using the formulae (Krejcie and Morgan, 1970) Nj= Total number of households in the parish.
N= Total number of households in the six parishes.

1401 /7829 X 349 = 62
1401/7829 X 349= 62
1305/7829 X 349= 58
702 /7829 X 349= 31
1600/7829 X 349= 72
1420 /7829 X 349= 64

Sample size = 349 determined from on each parish proportion in table as allocated using sampling technique(Flowerdew & Martin, 2013). Data was collected using appropriate above identified research methods and reliable instruments of data collection which were checked and verified by domain experts before use in order to avoid mistakes and distortion of results and then sorted. Coding of all data collection instruments was done by assigning numbers and codes to all sections of the questionnaire. After coding the data, the data was analyzed using statistical package for social scientists (SPSS) software (Adler & Clark, 2014:391) in order to come with appropriate interpretation of the findings.

Discussion of Results and Analysis

The results from the article study were based on the specific objectives and hypothesis. It includes level of community participation, sustainability or rural water project in respect to underground water source management and relationship between community participation and sustainability of rural water Projects. Whereas the calculated sample size based on study participants were 349, during data collection, a total of 341 questionnaires were used and 8 interview guides. The article findings clearly indicate low Levels of community participation, knowledge gap of underground technology and sustainability whose regression results yielded to low mean and standard deviation.
Community Participation

Frequencies and percentages of Likert scale measurement was also employed to describe further the level of community participation. Information sharing in this article as a dimension of community participation was assessed by respondents in this article as low (agg. mean = 2.43, std. =1.04).

For instance majority 236 (69.2%) of the respondents when asked whether the sub-county authorities always inform them about underground water projects to be implemented in their village or every financial year, 236 (69.2%) disagreed and only 5 (1.5%) strongly agreed. In a related assessment, more than half, 185 (54.2%) disagreed that they were always informed of underground water project progress. In matters of cash flow, a big majority, 276 (80.9%) strongly disagreed.

Table 2: Level of Community Participation

Items	Mean	Std.	Interpretation
Information Sharing			**Low**
Our sub county authority always informs us on the projects to be implemented in or village every financial year	2.04	1.02	Low
Our sub county authority always invites us to participate in the inaugural meeting before the water implementation starts	2.12	1.00	Low
All beneficiaries are aware of the implementation plan of our water sources	2.42	1.04	Low
We are always informed of water project progress	2.44	1.04	Low
We are always informed of water project Cash flow	1.78	0.90	Low
Agg. Mean and std.	**2.43**	**1.04**	**Low**
Consultation			Low
We are always invited for consultation meetings in the planning of our water sources	2.41	1.04	Low
Our sub county authority regularly consults us about our water needs	2.19	0.99	Low
We regularly hold live and open discussions with the project managers about the water source	2.38	1.07	Low
Our fellow beneficiaries always consult us about our problems and our needs	2.63	1.04	Low
Our project managers always allow our new ideas to influence the water project	2.47	1.05	Low
We have power to negotiate the issues related to the water project	2.50	1.04	Low
Agg. Mean and std.	**2.93**	**1.10**	**Low**
Decision Making			Low
We negotiate and get a compromise on possible rural water project to start	2.32	0.95	Low
Community intermediaries decide on issues related to the water	3.11	1.00	Low
Decisions related to the water Projects projects are made from outside and reach us later	3.46	1.27	Low
Local community members are best placed to make decisions related to the water project	3.12	1.05	Low
I feel personally involved in the decision making process regarding development project being implemented in this village	2.60	1.21	Low
Agg. Mean and std.	2.23	1.08	Low

Initiating Action			**Low**
We always mobilize both physical and financial resources for the water project	2.62	1.22	Low
There is community income generating activity out of the user fees you pay	1.89	1.02	Low
We have assets as a result of the user fees	1.56	0.84	Low
We are involved in establishing bye laws for our water source	2.87	1.24	Low
Agg. Mean and std.	**2.23**	**1.08**	**Low**
Grand mean and std.	**2.45**	**1.05**	**Low**

N = 241
Legend: 1.00-1.79 (very low), 1.80-2.59 (low), 2.60-3.39 (moderate), 3.40-4.19 (high), 4.20-5.00 (very high

This implies that low community participation has significant bearing on people (community members) need to be made aware of the allocation and implementation of underground water resources hence affecting ownership of the water project and even be in position to sustain these underground water facilities.

Several authors (Sarkissian & Wenman, 2010), Jean etal, 2010) highlighted the importance of community involvement and information sharing in respect to implementation of underground water project or program is to forester success and sustainability. For instance Warner (2005) argues that, long-term sustainability of the underground water sources and sanitation system is dependent upon a continuous flow of accurate information regarding operations, water quality, maintenance and financial status (Strande, Ronteltap, & Brdjanovic, 2014).

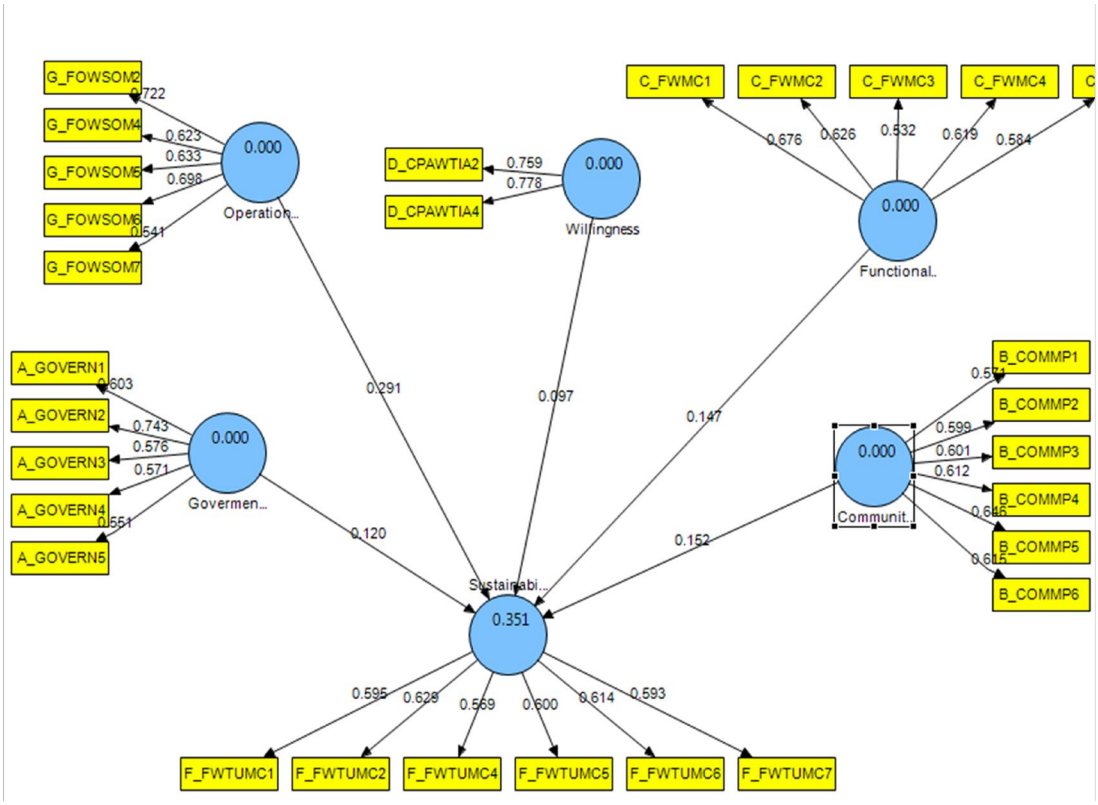
During focused group discussion, is was observed that Technical Water Users Project managers and other development partners should work with the community in developing a long-term monitoring plans and sounding sustainability strategies. This implies that the local people should be aware of what is going to take place and what is expected of them so as to ensure the sustainability of the underground water projects in their community.

Structure equation model of community participation and sustainability of underground water sources

The efforts of Kkingo Sub-County local government leaders as input to ensure that, the welfare of the citizens is eminent and primary outcomes of their participation enhance quality service delivery to the rural communities. The provision safe drinking water services for all rural communities 'is beyond the reach of central government and the public sector of their own, and that the contribution of the community participation in article variables are essential and they posts into sounding strategies for sustainability of these underground water sources as targeted (Franks and Cleaver 2007).

The generated and constructed structural equation model is further grounded on theories of good governance, stakeholder and human capital theory. The literature has however, continued to indicate that while it is crucial that a 'pluralistic' and synergetic approach to the provision of essential public services is undertaken, the local government as an actor remains the mainstay for the successful sustainability of underground water sources of all the other actors. The figure below of generated structure equation model clearly illustrates the contribution of each variables and how they post into sustainability of rural deep underground water source in Kkingo Sub-County.

Figure 2: Overall Structural Model for relationship between critical article variables and the Sustainability of rural underground water sources



The findings from structural equation model in figure clearly are grounded on theories of this articles indicated that there are a number of factors influencing the sustainability of rural deep underground water sources in the article area as predicted 35.1% of the variance in (Adjusted R Square =0.504). The remaining 64.9%, this is believed to be predicted by other factors outside the article.

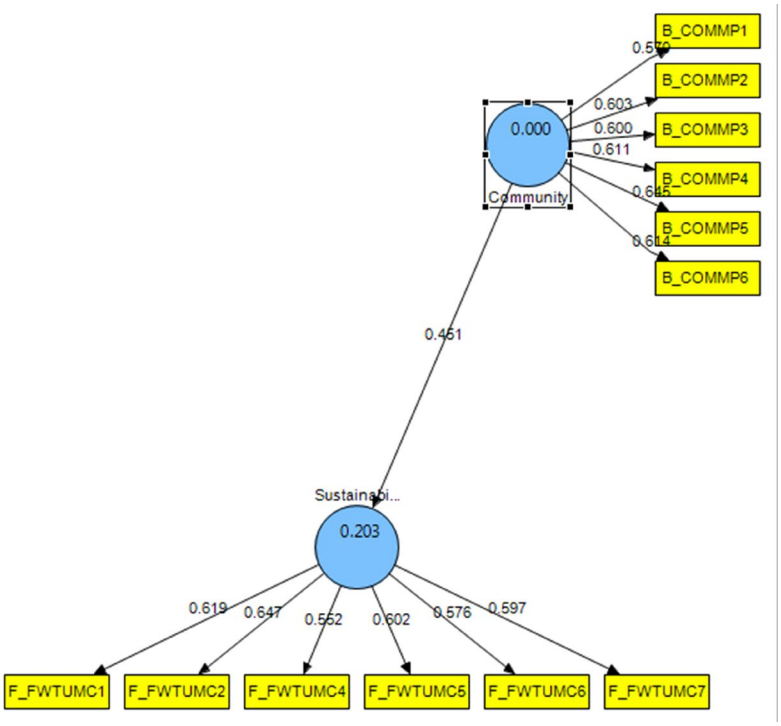
The sum of 35.1% this is model embedded in the new governance system and public policy paradigms that call for the involvement of multiple actors with different roles and responsibilities.

Community participation and sustainability of rural deep underground water sources

Brannelley et al (2009) point out that, participatory interventions at community level need to be reinforced at all levels using a superbly approach of socially acceptable and responsive driven demand to the local priorities. This kind of friendly environment will promote long lasting and move beyond individual engagement to community participation. They also argue that further effective engagement with communities should be appropriate due to its values in strengthening governance system and revalidating positive institutional mechanisms that are healthy aspects of community participation.

It is further envisaged during interviews that that ideal public policy influences the direction to appropriate service delivery in water supply. The community participation and effective environment of approach members set 'best practices' is implementation model without taking into consideration local contextual issues such as social practices validated by the community (Brannelly et al. 2009:3). The figure below demonstrates how community participation and commitment influence sustainability of underground water sources in Kkingo community.

Figure 3: community participation and commitment influence sustainability of underground water sources



Source: Primary data, 2016

Community participation influence alone (out of 35.1%) of the general influence to sustainability of water sources was predicted at 20.3% (Adjusted R Square =.203). The remaining 79.7% was predicted by other factors outside this model. The regression model was also valid (sig. <.05)

The context of community participation influence this article takes score 35.1% posting into sustainability as specific mechanisms of engaging with the community to participate in community governance their resources has as highlighted.

Sustainability of Rural underground water projects

When the community is involved in the initiation and implementation of their project, it provides an assurance for ownership and sustainability. The article dimensions considered in the assessment are; Functional water technical (user) committee and willingness pay for operation and maintenance.

There is need to increase a sense of community based participation and cultivate a paradigm shift of people's attitude and motivate them to set up water users committees as a factor that stifled the functionality of the committees and water sources. This implies that functional water user committees perform the above roles and once these roles are performed then the water sources can be sustained. Table 3 provides the summary of the findings.

Table 3: Level of Sustainability of Rural Water Projects

Items	Mean	Std.	Interpretation
Functional Water Technical (User) Committee			
Our water user committee organizes regular meetings	2.78	.99	Low
Our water user committee has got records for our water use	2.75	1.03	Low
Our water user committee has got financial records well kept	2.50	1.00	Low
Our water user committee manages user fees properly	2.45	1.06	Low
Our water user committee enforces bylaws regarding the water source use	2.98	1.03	Low
Am satisfied with the job performed by your water user committee	2.90	1.20	Low
The sub county authorities officially launch completed water sources and hand them over our community leadership	2.77	1.13	Low
Agg. Mean and std.	**2.73**	**1.06**	**Low**
Willingness to Pay for Operation and maintenance			Low
Our water user committee does regular inspection and servicing of the water source	2.72	1.01	Low
Our water user committee always do minor repair	2.76	1.11	Low
Our water user committee replaces broken and worn out parts	2.82	1.03	Low
We do regular maintenance of the fence	2.33	1.04	Low
We do regular maintenance of the drainage	3.02	1.16	Low
We maintain the vegetation around our water source as a water catchment area	2.95	1.32	Low
Our sub county authority initiates the signing of memorandum of understanding with the beneficiary communities on the operation and maintenance of projects	2.44	1.11	Low
Agg. Mean and std.	**2.72**	**1.12**	**Low**
Grand mean and std.	**2.73**	**1.09**	**Low**
N = 341			
Legend: 1.00-1.79 (very low), 1.80-2.59 (low), 2.60-3.39 (moderate), 3.40-4.19 (high), 4.20-5.00 (very high			

According to the article sustainability was assessed as low (agg. mean = 2.73, std. = 1.08) only 79 (28.2%) agreed that their user committees organize regular meetings. In a related assessment, 158 (46.9) strongly disagreed that their user committees have got records for their water use. More than half, 193 (56.6) disagreed that their water user committees has got financial records well kept. In respect whether their water user committee enforces bye laws regarding the water use, only 105 (30.8%) agreed. Once water sources are completed, only 97 (28.5%) agreed that sub county authorities officially launch completed water sources and hand them over to the community leadership.

Community participation and sustainability

The article was to establish the relationship between the Community Participation and sustainability of rural water projects in the article area. Karl Pearson Correlation analysis was used to generate using Pearson correlation coefficient (r) moment and coefficient of determination (r2).the summary of the findings.

Table 4: Regression analysis of Community Participation and Sustainability

Description	
Pearson Correlation (r)	0.509**
P – Value	0.000
Coefficient of Determination (r2)	0.25
N = 314	

**. Correlation is significant at the 0.01 level (2-tailed)

According to Table 4, based on (r = 0.509, p = 0.000), there is a positive, strong and significant linear relationship between Community Participation and Sustainability of Rural Water Projects in the article area. Wallace (2014) indicate that Pearson (r) between 0.44 – 0.66) is a strong linear relationship.

This implies that improvement in community participation, there is a substantial improvement in Sustainability of Rural Water Projects in the article area. Therefore a strong consideration in community participation is very vital for sustainability of water project. Furthermore, according to Coefficient of Determination (r2 = 0.259), Community Participation accounts for 26% of the Sustainability of Rural Water Projects in the article area. It also implies that there are a range of other factors responsible for the sustainability of water projects.

Table 5: Contribution of Community Participation Dimensions to Sustainability

Predictors	**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	1.252	0.178		7.030	.000
Information Sharing	0.077	0.056	0.094	1.372	0.171
Consultation	0.243	0.058	0.299	4.191	0.000**
Decision Making	0.126	0.058	0.107	2.172	0.031*
Initiating Action	0.157	0.046	0.178	3.439	0.001**
**. P < 0.01, *p < 0.05 (2-tailed)					

In the Table 5, consultation, decision making and initiating action are significant contributing factors to sustainability of rural water Projects in the article area, while information sharing is not. According to model summary (Appendix Table 1), R = 0.515, R Square = 0.265, adjusted R Square = 0.256, Std. error of the estimate = 0.54654).

According article findings in Table 9 based on standardized coefficients (beta) and p – value, indicate that, consultation (b = 0.299 or 29.9%, p = 0. 000), decision making (b = 0.107 or 10.7%, p = 0.031), initiating action (b = 0.178 or 17.8%, p = 0.001). ar significant factors in sustainability of rural water Projects in the article area. However, information sharing (b = 0.094, p = 0.171) is not a significant contributing factor to sustainability of rural water Projects Consultation is a significant contributing factors (b = 0.229, p = 0.000) to sustainability of rural water Projects in the article area. The findings imply that one unit improvement in the consultation improves about 22.9 % sustainability of rural water Projects in the article area.

This implies that as project managers consult and discussion with the Community members both the problems and solutions even issues on the sustainability of the project can be discussed and agreed upon so that the community members can own the project, come up with the water source committee and agree on the operation and maintenance of the water facility.
One Parish chiefs aid; during the interview "
----- Beneficiaries don't want to contribute towards regular servicing of the boreholes. Can you imagine some water sources are in bushes and some were not functional due failure to carry out minor repairs -------"maintenance becomes very hard for some of the Underground water sources.

During the data collection, it was actually noted in one of interviews that some underground water sources were non-functional to inadequate involvement of water users and knowledge gap of the technology. Beside that were lacking water management committees' For instance in at Kisoso village in Senya Parish, one at Kasaana village and another one at Kaganda village in Kaganda Parish. According to residents around those abandoned underground water sources claimed that those were not functioning due to lack of regular servicing and minor repairs.

Alexander, (2013)communities are responsible for the routine maintenance and minor repair of their water

facilities and that with good routine maintenance the need for repair is normally minimal, and where it occurs the costs are relatively low. Some maintenance tasks can be done by the community and stakeholders. The more complex maintenance tasks and minor repairs are done by an (pump technician). This implies that when the operation and maintenance is taken care of then the underground water sources can remain functional for a long time.

According to Fischhoff,(2012) contend that effective community participation activities and functionality of water sources require water user committees to collect water fees, hire caretakers, and oversee operations and repairs. Governments and other partners in such situations should ensure that the establishment of the water user committee is in accordance with local laws and financial regulations. This implies that the water user committees are supposed to carry out the operation and maintenance of the water facilities.

Implication of policies

The study findings reflect that local government leaders of Kkingo Sub-County, Lwengo district have a low positive significant role to play in promotion of quality service delivery to the community. The articles suggest that local leaders should reinforce information sharing, consultation, decision making as a policy matter so as enhance the dimensions of community participation in Kkingo Sub-County.

The national safe water policy requires the local leaders and political will so as to effectively sensitize masses of their responsibilities to protect and preserve their resources. This policy paradigm shift will reinforce community participation and empower the water project users to make regulatory measures that are binding to all the beneficiaries'. These will make the community water users to remain accountable in order to promote operation and maintenance of underground water projects as a key indicator of sustainability of rural water project.

The safe water guidelines and institutional mechanism will encourage the local community members to be involvement in governance dynamics of the underground water sources in Kkingo Sub-County that alone will provide assurance for sustainability as policies implication.

Therefore in the attempt to achieve good governance and sounding sustainability of rural deep underground water sources in Kkingo Sub-County there is need for adoptions relevant models and theories to enable communities' willingness to contribute towards sustainability. The reinforcement of appropriate institutional mechanism, sensitize masses of national policies on safe water, empower the local community leaders and advocate for good governance practices in order to enhance maintenance of the available underground water sources and claim for sustainability.

Conclusion

The article finding indicate low and insufficient information sharing, consultation, decision making and initiating action as dimensions of community participation. The study further demonstrates low functional water users management committees. We conclude that there is need for rural community leaders involve stakeholders and empower them for realistic maintenance and sustainability of water sources in the study area.

In the study demonstrate a moderate positive relationship between Community Participation and Sustainability of Underground Water Sources in the study area. We conclude that active and practical community participation is paramount and it contributes to sustainability of water projects and we recommend for high involvement of community and stakeholders will enhance water projects ownership and sustainability of these underground water sources.

The findings reflect low willingness to contribute towards operation and maintenance of underground water

source. The article concludes that there is need increase rural communities willingness to contribute towards the functionality and sustainability of rural water projects in the study area. The low functionality of the available water sources depends on knowledge gap of local leaders to empower community with safe water guidelines polices.

The low levels of sustainability of rural water sources a positive significant relationship between community participation and sustainability of rural water supply in Kkingo Sub-county. Achieving sustainability requires incentives of all high involvement and commitment of stakeholders, financing and favourable institutional policies. We recommend for good governance practices and adoption of strategies that can ably contribute to the underground water sources in Kkingo Sub-County. .

Sustainability of underground water sources can be achieved in Kkingo Sub-County there must be supported by favourable theoretical framework, government institutional mechanism, proactive policies, community leaders and good governance practices. Similarly, the article recommend for a further comprehensive analysis of the water users potential willing contribute to values for safe water in order to enhance appropriate maintenance and management of the available underground water sources and claim for sustainability.

The new model is envisaged to perpetuity high community involvement and improvement of safe underground water service delivery. It is further believed short term "project" mentality on the part of funding organisations should be eschewed in favour of long term and evolving commitment to developing country partners and eventually sustainability will be realised.

Recommendation

The article recommends active community participation and sensitization of all community members as stakeholders in order to increase chance of access safe drinking water and sustainability of underground water sources in Kkingo Sub-County.

The articles commends: formation of functional water users committee so as to encourage community willingness to contribute towards governance and set realistic bylaws with target to contribute for operation and maintenance of the water sources as indicators of Sustainability of Rural Underground Water Sources.

The article recommends stakeholders and beneficiaries to take lead in appropriate management systems and sustainability of underground water users, and setting sounding strategies for water technical management committee and water departments' leaders affect their governance dynamic of water facilities.

The article recommends to adequate local community support in order to ensure empowerment water users through increased decision making and initiating action as dimensions of enhancing community participation and financing of underground water sources in Kkingo Sub-County which greatly contribute towards the functionality and sustainability of the available underground water sources.

The article lastly recommends that rural community members adopt the knowledge of structural equation model's approaches and it approaches be institutional mechanism, proper use of financial, contractual, and legal relationships between communities' participations and non-governmental agencies to support short and long term strategies for sustainability.

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