

EFFECT OF FUND MANAGEMENT ON SUSTAINABILITY OF PREPAID WATER METER KIOSKS PROJECT IN SAKU CONSTITUENCY IN MARSABIT COUNTY, KENYA

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Abstract: The lack of effective policy strategies regarding the funding of projects by Marsabit County government, which affects the prioritisation of projects, can be seen in the fact that the county has not been able to finance water and irrigation project that would alleviate the consequences of recurrent drought affecting the social, economic and cultural life of the inhabitants of the Saku sub-county. The projects also lack a proper monitoring and evaluation system, which has resulted in the projects not meeting the necessary quality standards of users. Most community water projects started in the county are less than two years old. Sustainability of water supply isn't guaranteed if you don't look for a long-term solution and don't have a clear framework for sustainability. This study sought to investigate the effect of fund management on sustainability of prepaid water meter kiosks project in Saku Constituency in Marsabit County, Kenya. The study was conducted in five prepaid water meter kiosks projects. The respondents of the study were the members of self-help groups running the five Kiosks, ministry of water officials within Marsabit County, and key informants within Marsabit County. The study used a descriptive research design. A census of all group members running various Kiosks was conducted to obtain primary data. SPSS software package version 21 was used to analyse data. Regression statistics was used to assess the correlation between the various variables in the study. According to the study, fund management positively and significantly impacted the sustainability of the prepaid water meter kiosk project in Saku Constituency, Marsabit County Kenya. The study concluded that good fund management provides a systematic process where a project manager manages, deploys, operates and upgrades assets cost-effectively while ensuring successful sustainability of a project. The study suggested that project managers focus on a few key financial metrics that are relevant to particular project cases to gain greater insight from project deliverables.

Keywords: Fund Management, Project Sustainability.

1. INTRODUCTION

According to the World Health Organization's (WHO) and United Nations Children's Fund (UNICEF) Joint Monitoring Programs (JMP) on water supply, sanitation and hygiene (SDG 6.1), at the end of 2017, 2,2 billion people were still without access to safe and clean drinking water, sanitation and hygiene services. By 2030, SDG. (GLAAS Report, 2019). Almost 79% of people without access to better drinking water sources reside in rural regions, according to UN data from 2015. In the world, women spend up to 200 million hours every day trekking in search of and collecting water (UNICEF, 2016). Women and children walk an average of 3.7 kilometres each day lugging 20kg containers to gather water (OHCHR, 2010).

In Africa's pastoral rural environments, the distance is significantly greater. According to (UNICEF/WHO 2019) JMP report 2019, between 2000 and 2017, the global population that lacked essential drinking water reduced from 19% in 2000 to 10% in 2017. Four hundred and 785 million people globally who used limited services and unimproved water sources lived in Sub-Saharan Africa.

Globally, challenges have been documented in sustaining community-based water projects. In India, for instance, it has been observed that despite efforts like changing ownership to local communities who benefit from the project and increasing the participation of community members, 30% of water supply systems fail and ground to a halt within 3 years of its establishment. (Hutchings, Franceys, Smits & Mekala, 2017).

In Sub-Saharan Africa, only 56% of the overall population is covered by the water supply system, and 22.5% of rural water schemes are non-operational. In addition, 48% of the rural population relies on unimproved water sources (Behailu, Pietila & Katko, 2016). Many of the Subsaharan African countries experience scarcity in water supply, and some do not receive sufficient and constant water resources throughout the year. Operational failures and non-functional water sources are as high as 60% and 35%, respectively. The situation is worse in areas with dense populations as the limited water resource, and its system is further burdened to reach all the populations (Tadesse, Bosona & Gebresenbet, 2013).

In a Swaziland-based study, Graciana et al. (2012) came to the following conclusions on what made water projects sustainable. Functionality, design flow, water fetching time, capacity to meet increased demand, population use, equity, participation in operation and maintenance judgment, availability of funds for operation and maintenance, willingness to make financial contributions, presence of a user's committee, involvement in the initial planning and design of the water scheme, and coordination between the local leaders and user's committee.

Water scarcity can destroy lives and livelihoods in Kenya, particularly in rural regions. Waterborne illnesses are particularly dangerous for children under the age of five. With an estimated 50,000 water supply points lost, this is a national calamity. The failure of the water community to properly plan for infrastructure upkeep also poses a substantial obstacle to achieving the aim for water and sanitation set forth in the Millennium Development Goals. 2008 (Cumming).

Kenya's water sector is plagued by a number of problems, including the long-term sustainability and availability of freshwater resources, as well as inequality in access to safe drinking water and sanitation facilities at different levels (Francesco, 2011). Community-based projects in Kenya are characterised by poor or low stakeholder involvement, without which failure will persist, and investment in projects will not be effective. Many residents walk far, queue for water from unsafe wells, and pay for the same water nearer their homes (Heymans et al., 2014).

To ensure a constant flow of outputs and, ultimately, the realization of the desired change, which may be social, cultural, or economic, water projects need to have their services maintained over time. Even though most projects are successfully carried out, ensuring their long-term viability might be difficult. A common issue with many expensively executed projects is their sustainability. Prominent funders have expressed concern over the situation, including the World Bank and bilateral aid organizations (World Bank, 2003). While the trajectory for implementation is improving, post-implementation durability is poor, with fewer initiatives being sustained on a regular basis, according to a number of recent studies. This shows that even if these governments spend a lot of money on initiatives, low sustainability prevents them from seeing the returns on their investments that they would like.

Kenya Government launched ambitious reform programs in water sector in 2002, culminating in the enactment of the Water Act 2002 and later repealed by the Water Act 2016. The Act established crucial water institutions, increased public spending and separation of water services providers and water resources management. Kenya has the third largest (23%) population with no water system access. Only 30% have access to basic sanitation at home (UNICEF, 2017). Water is an essential component in national development. The right to access sufficient supplies of clean, safe water is guaranteed by Kenya's 2010 Constitution, Article 43(1)(d). The water Act 2016 was passed in order to put the constitution's clause into practice. The Act separated the management of water resources and the provision of water services, established important water institutions and increased public spending. The Act distinguished between national and sub-national responsibilities. For instance, required the WRA to develop a national water resource strategy, while the WASREB was responsible for oversight and regulation of water and wastewater services across the country. The Water Works Development Agency coordinates cross county public water works, while county governments are responsible for overseeing water service providers responsible for service delivery at the county level.

Data on rural water supply performance in Kenya remains scanty (WASREB, 2015). The sustainability of rural water utilities remains an issue due to subpar O&M by communities. Facilities breakdown, low access rate, poor water quality, and an increase in disputes are the consequences (MWI 2012). In Kenya, (ASALs) make up 80% of the land mass, therefore access to clean water is worse there. The coverage currently stands at 57% in support of Kenya Vision 2030- (Universal Access to Water) (WASREB 2019). In Kenya, access to water remains low. Rural household access to piped water increased from 9 to 10%. The water act of 2002 (amended 2016) introduced regulatory and tariff reforms, which has brought about small community-based (self-help groups) water providers as part of the solution (Ababa, 2013)

Huggins (2001) argues that different cultures have varied water regulations. The ownership of water sources amongst the pastoralists of Northern Kenya was vested in the community and not the household. Whereas customary systems of water management remained static, technologies and regulations have changed, and because of cultural changes and experimentations, innovations were introduced. O & M of rural water scheme is an essential element of sustainability. Adoption of technology, availability of financial resources, adequate budget and frequent support are critical for sustainability (Ababa, 2013)

Huggins (2001) posits that there has been a realisation since the 1980s, that the Kenyan government does not have the financial capacity to be the sole provider of water services, particularly the high cost of O & M and hence attempts to hand over responsibility for the management of water infrastructures to the communities themselves. Community-based projects in Kenya are characterised by poor or low stakeholder involvement, without which failure will persist, and investment in projects will not be effective. Increasing access to basic drinking water for the most vulnerable populations in developing countries is hampered by financial barriers that hinder potential customers from paying for the services they require (Heymans et al., 2016).

Marsabit is amongst the counties with the highest poverty index in Kenya and ranked 44 out of 47 counties with a poverty rate of 83.2%. Marsabit County can be categorized as a dry land county because it is located in arid and semi-arid regions. The County, which has a total size of 70,961.2 square kilometers, is situated in the far north of Kenya, between latitudes 02°45'North and 04°27'North and longitudes 37°57'East and 39°21'East. In addition to sharing a border with Ethiopia to the north, it also shares borders with Samburu County to the south, Wajir County to the east, Lake Turkana to the west, and Isiolo County to the east (County Government of Marsabit). The county includes four drainage systems that cover an area of 948 square kilometers but no permanent rivers. The largest of these systems is the Chalbi Desert. Runoff from the nearby lava and basement surfaces of Mount Marsabit, the Hurri Hills, Mount Kulal, and the Ethiopian plateau is received by it. Climate change and population growth are projected to make the problems with water supply worse. Kenya's Saku Constituency is a voting district. It is one of Marsabit County's four constituencies in northern Kenya. Laisamis Constituency and North Horr Constituency are its northern and southern neighbors, respectively. The district was created in time for the 1988 elections. The county seat, Marsabit town, is located in the Saku constituency.

Water is an essential commodity, an entitlement that should be granted to each citizen regardless of economic and social status (Reniko & Kolawole, 2020). Due to the shortage of water and in order to improve the efficiency of management of the limited water resources, the prepaid water meter kiosks water supply model was introduced. Whereas the installation of prepaid water meters deprives the poor of the fundamental right to water, the debate on the merits and demerits of prepaid water meters continues.

There are five water kiosks in the target study area, Saku Kiosk, Shauri Yako, Dirib Gombo, Ajay Tiisa and Majengo. The five Kiosks are run by self-help groups which are competitively selected. The group purchases water in large quantities from the Marsabit water source and then sells it in 20-litre units to the Saku village. The price of water is currently Kshs 3 for every 20 litres of Jerrycan. The project's operating and maintenance expenses are paid for using the money raised from the sale of water. This study will concentrate on the viability of water projects, namely the Saku Marsabit Prepaid Water Meter Kiosk Project.

STATEMENT OF THE PROBLEM

Marsabit County is water insecure because it lacks permanent water sources like lakes and rivers. The anticipated daily demand for water is 6,750,000 liters, while only 4,050,000 liters of water are produced each day. Because of factors like a lack of technical expertise, insufficient operational efficiencies, poor governance and management practices, a lack of accountability, and expensive and inefficient technology, the majority of water delivery systems rely on NGOs and FBOs for financial viability (Marsabit County Government, 2018).

Poor water performance in Marsabit County can be attributed to mismanagement of resources. Across the county, projects have been delayed for a variety of reasons, including delays in hiring community experts during the early stages of community development based projects (Kaimenyi & Wanyonyi, 2019). Additionally, the government of Marsabit County lacks efficient funding strategies, which has a negative impact on how projects are prioritized. This is further evidenced by the county's refusal to support water and irrigation programs that would reduce the impact of repeated drought events on the culture, economy, and community of the Saku sub-county (Marsabit County Government, 2019). Moreover, these initiatives' poor monitoring and assessment procedures have stopped them from living up to the high standards set by their users. In less than two years, the bulk of the county's initiated community water projects have failed (Cheruiyot, 2016). In Saku Sub County, numerous community water projects are launched, but many of them fail to achieve their intended goals and collapse before they are finished (Kaimenyi & Wanyonyi, 2019). Saku Sub County, Marsabit County, community water projects have not been completed since 2016 due to financial constraints caused by reduced donor funding, poor management of resources by management committees and lack of clear management policies to implement the project (Galm Qampise Galgallo -program officer-Kivulini Trust). Despite the best efforts of the government and NGOs, not all areas have access to water, especially in rural areas.

Water service providers face the challenging issue of covering the costs of providing clean and affordable water in the face of increasing water demand from customers who cannot afford or won't pay (Heymans et al., 2014). The water sector is underfunded, receiving less than 40% of the sector's required funding, and is heavily dependent on outside development partners, according to the WASREB report (issue no. 12/2020).

Although contacts between various stakeholders led to the installation of prepaid water kiosks, it is unclear how consumers in low-income communities are involved in decision-making (Boakye-ansah et al., 2020). The Kericho WSP (KEWASCO) set up 23 water kiosks in several LIA areas in 2002. Most of the Kiosks stopped working for a variety of reasons, including operator nonpayment of bills and technological issues, among others. Despite the fact that most water customers favored prepayment, prepaid meter systems are plagued by issues such as difficulty refilling tokens or credit cards, a lack of vending machines, faulty meters, delayed repairs, and a lack of readily available skills (Heymans et al., 2014). It is believed that commercialization and profit-driven water sales may deprive the poor of their fundamental need for water (Helou, 2018).

2. LITERATURE REVIEW

Theoretical Literature Review

"The origins of TOC can be traced back to the late 1970s, when Goldratt created an efficient scheduling tool to boost plant performance in response to a neighbor's appeal for help with his Israeli chicken coop manufacturing business (Naor et al., 2013). Eliyahu Goldratt initially used the term "TOC" in the 1980s. The theory was eventually improved, but at first it concentrated on industrial technology. Every system "has at least one bottleneck which limits the system from reaching its goal," according to the TOC theory. (1990, Goldratt). The theory concentrated on the management of restrictions that prevent output maximization.

The TOC was initially intended for the manufacturing industry, but it has since changed in terms of methodology and area of application to become a management theory (Tu et al., 2014). "TOC is being applied more frequently to scenarios beyond the manufacturing setting, including distribution, marketing, project management, accounting - in fact, any circumstance involving change to a system" (Mabin & Balderstone, 2003: 570). ToC views a limitation as a focal point around which a firm may be organized or enhanced, which distinguishes TOC from conventional management approaches (Blackstone, 2001).

Everything that prevents a system from performing better and attaining its objectives is a constraint. Two (2) premises serve as the foundation for and summary of the TOC idea. that there must be at least one limitation in every system, and that the presence of constraints creates chances for advancement (Rahman, 1998). According to Goldratt, profit-making businesses will generate limitless profits if there are no limits in a system. Goldratt regards constraints as an appositive rather than a negative in his theory of constraints. According to Goldratt, since limitations affect a system's performance, they should be viewed favorably since they can be gradually raised to improve performance.

While coping with limits, managers will need to make three crucial decisions, according to Goldratt. What must change, what must change, and how must the change be brought about. The key to making changes is identifying the fundamental issue that, when fixed, will have a significant effect. What to change means that managers need to be able to create straightforward, workable answers. In order for the audience to regard the problem that is being given to them as their own and commit to finding answers, it is necessary to encourage the proper people to design such solutions. The issue is how to put the solution into practice.

Constraints that may hamper achievement of sustainability of prepaid water kiosk water supply may be internal factors. In order to ensure realization of project goal of providing water to residents at affordable price, reduce round trip to water point, reduce queue, reduce non-revenue water etc. and sustainability of the supply of water through prepaid water kiosks, these constraints must be mitigated.

Empirical Literature Review

The effectiveness of public projects in Mombasa County and project management methods were examined by Mathenge (2020). (Kenya). The study's pillars were stakeholders, constraints, and theories, along with the system and competencies. The descriptive survey method of the study was utilized to collect both quantitative and qualitative data using both open-ended and closed-ended questionnaires. Using a stratified sampling method, 66 respondents were selected from a pool of 189 project officers. The data were analyzed using descriptive and inferential statistics. The findings imply a relationship between project performance and financial management. One of the limitations of the study is that other factors, such as risk management, which may affect performance, were not addressed. Because Mombasa is the study's context, it may not be applicable to other jurisdictions..

Mrangu (2018) did a study on assessment of the factors affecting sustainability of community-based programs Bagamoyo area, Tanzania. Participatory theory, Top-down model theory, Theory of change, and Financial Distress Theory were all employed in the study. The study's research methodology was a descriptive survey. 170 respondents were given questionnaires to fill up, and 20 respondents were interviewed to collect data. The study found a strong link between sustainability, M&E, community involvement, and fund management. Due to the study's location in Tanzania, there is a contextual gap.

A study on "HIV and AIDS programs financing and sustainability in Kenya: a case of the National AIDS control council" was conducted by Musyoki (2017). (NACC). The resource-based, resource-dependent, and constraint theories served as the study's foundation. To choose the respondents, the researcher employed a descriptive survey research design and stratified random sampling. Data were gathered using both structured and unstructured questionnaires. Results were analyzed using descriptive and inferential statistics. According to the study, there is a link between sound financial management and the longevity of HIV/AIDS initiatives. The study's weakness is that, other than financial management, it did not take into account how other factors that I evaluated might affect sustainability.

Kimutai et al., (2017). conducted a study on the longevity of the water, sanitation, and health initiatives AMREF undertook in Kenya's Nairobi City County. In the study, the researchers used institutional theory as well as stakeholder theory. A stratified random sampling of 433 participants and a descriptive survey design were used for the investigation. According to the research's conclusions, there is a strong and favorable association between how funds are used and the long-term viability of WASH projects. The study also found that competent financial management, budgeting principles, and audits of financial resource use contributed to sustainability. However, because the study was carried out in Nairobi, it exhibits a contextual gap and cannot be extrapolated to other regions.

3. RESEARCH METHODOLOGY

The study was conducted in five prepaid water meter kiosks projects. The respondents of the study were the members of self-help groups running the five Kiosks, ministry of water officials within Marsabit County, and key informants within Marsabit County. The study used a descriptive research design. A census of all group members running various Kiosks was conducted to obtain primary data. SPSS software package version 21 was used to analyse data. Regression statistics was used to assess the correlation between the various variables in the study.

4. FINDINGS

The descriptive statistics results of fund management are presented in Table 1.

Table 1: Fund Management

Statement	M	SD
Cash collected are banked on daily basis	4.50	0.499
Cash collected are recorded and cash book maintained	4.61	0.386
The costs for various activities are budgeted	4.06	0.937
Proper books of accounts are maintained	3.88	1.117
Proper fund management affects sustainability	4.03	0.965
Tariffs charged to water users enable financial sustainability	4.51	0.485
Prepaid kiosks generate more revenue	3.64	1.357
All funds are properly utilized	3.90	1.096
Financial statements are prepared	4.09	0.909
Expenditures are properly authorized	3.76	1.237

The results in Table 1 show that the respondents strongly agreed that; Cash collected are recorded and cash book maintained (M=4.61, SD=0.386), tariffs charged to water users enable financial sustainability (M=4.51, SD=0.485) and that cash collected are banked on daily basis (M=4.50, SD=0.499). The respondents agreed on the statements that; Financial statements are prepared (M=4.09, SD=0.909), the costs for various activities are budgeted (M=4.06, SD=0.937), proper fund management affects sustainability (M=4.03, SD=0.965), all funds are properly utilized (M=3.90, SD=1.096), proper books of accounts are maintained (M=3.88, SD=1.117), expenditures are properly authorized (M=3.76, SD=1.237) and that prepaid kiosks generate more revenue (M=3.64, SD=1.367).

Results of Inferential Statistics

Correlation analysis

Table 2: Correlation Analysis

		Fund management	Project sustainability
Project sustainability	Pearson Correlation	.709*	1
	Sig. (2-tailed)	.000	
	N	98	98

The results as presented in Table 4.8 show that the Pearson r value of fund management on project sustainability was at 0.709 with a significance value of 0.000 which is less than 0.05. This shows that funds management had a strong effect on the sustainability of prepaid water meter kiosks project in Saku constituency in Marsabit County, Kenya. This confirms the findings of Mrangu (2018), who conducted a study on the impact of sustainability on community-based programs in Bagamoyo, Tanzania. The results of the study showed a strong correlation between sustainability, market and economic development (M&E), community engagement, and fund management.

Results of Regression Analysis

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.770 ^a	.806	.795	1.117

The adjusted R-square value was at 0.795 (79.5%) indicating the extent to which funds management had affected sustainability of prepaid water meter kiosks project in Saku constituency in Marsabit County, Kenya. Therefore, it can be concluded that the remaining 0.205(20.5%) could account for other variables not studied.

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.709	.207		3.425	.000
	Fund management	.694	.170	4.061	4.082	.000

The results as demonstrated in Table 4, holding funds management to a constant the sustainability of prepaid water meter kiosks project in Saku constituency in Marsabit County, Kenya would be at 0.709. In addition, the study revealed that a unit increase in fund management would lead to an increase in the sustainability of prepaid water meter kiosks project in Saku constituency in Marsabit County, Kenya by a factor of 0.694/

Therefore, the resulting regression equation was as follows:

$$\text{Project sustainability} = 0.709 + 0.694 (\text{fund management})$$

The study examined that fund management had a positive and significant effect on sustainability of prepaid water meter kiosks project in Saku constituency in Marsabit County, Kenya as indicated by t-values ($t=4.082$; $P<0.05$).

5. CONCLUSIONS

The study concluded that proper fund management ensures a systematic procedure in which a project manager maintains, deploys, operated and upgrade assets in a cost-effective manner while they ensure successful sustainability of the project. Usually, a project manager has to pay detailed attention to the return of the project along with the associated cost and risk with the available opportunities. Effective fund management of a project therefore implies the continuation of project activities without losses leading to successful project sustainability.

6. RECOMMENDATIONS

The study recommended that the project managers focus on a few key financial metrics that are relevant to particular project cases to gain a better understanding of the project deliverables. Project funds management must have a strong focus on project ROI to be effective. Therefore, the right strategies need to be adopted by the constituency management to focus on key projects while updating project funds metrics on a regular basis so that the constituency can map changing data metrics and concentrate on more real-time metrics that accurately reflect project progress.

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