

Financial Factors Affecting Operational Efficiency of Water Companies in Kenya: A Case of Nzoia Water Services Company

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Abstract: This paper sought to examine financial factors affecting the operational efficiency of water companies in Kenya. It was driven specifically by the fact that despite great improvement in the sector, water companies have not yet achieved operational efficiency. It was guided by four objectives: To assess the Effect of Firm's profitability on the Operation Efficiency of Water Companies in Kenya, to assess effect of revenue collection efficiency on Operation Efficiency of Water Companies in Kenya, to evaluate the effect of size of the firm on Operation Efficiency of Water Companies in Kenya and to evaluate the effect of Operation and Maintenance cost on Operation Efficiency of Water Companies in Kenya. A descriptive survey design was employed where stratified sampling was used to select a sample of 52 respondents. Interview schedules and the questionnaire were administered as the main tools for data collection. The Data collected was analysed using both descriptive and inferential statistics aided by SPSS software. From the findings Revenue Collection Efficiency and Operation and Maintenance Cost Coverage were found to be positively correlated with the Cash Conversion Cycle. Thus the above should be considered as key determinant enhancing operational efficiency in water service provision.

Keywords: Working capital management, Operational Efficiency, Cash Conversion Cycle, Operation and Maintenance cost, Revenue Collection Efficiency, Profitability.

1. INTRODUCTION

Water which is essential for survival of human being is still a crisis in many countries in the world according to Global partnership report (2003). This crisis is a result of many challenges and problems affecting various countries globally, which include: physical, economical, governance and social problems. In Africa the crisis is prevalent especially for water utilities due to: ageing infrastructure which is subject to frequent leaks and bursts, weak billing and revenue collection system and low staff productivity. Studies by World Bank indicate that the governance of water service provision in developing countries is poor. This is manifested by the inability of WSPs to cope with demand, failure to manage supply, institutional weaknesses and financial and technical problems. In Kenya, for instance water companies inherited schemes that were dilapidated and are subject to frequent bursts and leaks and therefore they require heavy rehabilitation and expansion of which money and time must be invested (Kisima Report, 2008). It is important therefore for water utilities to put in place measures that enhance accountability and efficiency in service delivery.

Following the promulgation of the new constitution in Kenya, every Kenyan has a right to access clean water; it is upon water companies to put in measures of ensuring that water was available to consumers in an efficient, effective and economical manner, an objective that can only be achieved if there is operational efficiency. Scholars in the sector have revealed that there are positive improvement in water sector but a key challenge which has remained is poor management of water services which led to frequent water shortage resulting from mismanagement of funds, non-payment of water bills, illegal connections, and inability of water utilities to attract and retain skilled manpower, high UFW and low revenues collections and failure to factor in their plans working capital management efficiency and consequently adopt efficient methods of service delivery (World Bank, 2004).

To achieve efficiency in water service provision companies have to operate in a sustainable way taking into account the working capital management efficiency as 90% of the company's assets are in form of current assets. Efficient working capital management means the management of the various components of working capital in such a way that adequate amount is available for smooth running and fulfilment of the organizations objectives. Working capital management provides the firm with information on the liquidity needed to operate efficiently. For example when payables are due before the cash is available, there is a liquidity problem which may result in suspensions of payments and in extreme situations financial distress. Adequate management of working capital may generate in a situation where the company incurs low financial expenses and maintain a stable growth (Rehman & Nasr, 2007).

Inadequate working capital usually affects the normal operations of the business and impairs profitability. Water Companies should consider operating like commercial entities by focus on managing their profitability, reducing the Operational and maintenance cost, clustering to enjoy economies of scale and enhancing Revenue collection measures. Efficient management of working capital is crucial in ensuring the survival, liquidity, solvency and profitability of any organization. Efficiency in working capital will ensure greater success inefficient management will lead to downfall of what might be considered a prosperous business concern (Shin & Soenen, 1998). Working capital management is important for all firms. Therefore the issue of good financial management as a prerequisite to efficient and economical provision of water services for any given Water Service Provider is an area worthy addressing. This will help in achieving our millennium development goals of having half the population access water and sanitation services by 2015 and our Vision 2030 of all people access the services by 2030. It is therefore important to focus on factors influencing the efficiency of working capital management of water service providers to help streamline the operations of the water companies.

Statement of the Problem:

Kenya took steps in solving the water problems by undertaking reforms in the water sector. Key among the reforms was enhancing water service provision through the establishment of commercial oriented Water Service Providers in order to ensure efficient and effective service. Studies within the sector reveal that the management of water service provision is still a challenge as most of the expected outcomes are yet to be achieved. Many companies lack proper financial management frameworks to run their operations. Key area in financial management for water companies is the working capital management which if poorly managed is a recipe for many challenges as currently demonstrated by water utilities. Many water utilities lack financial sustainability leading to interruptions in supply of services due to frequent power disconnections for unpaid power bills, high staff turnover and inability to attract skilled manpower due to the delay payment of salaries, high operation costs because of the inability to secure credit from suppliers due to poor credit rating among other issues. A firm with an efficient working capital management Policy; firms can reduce the possibility of being involved in financial constraints, reduce financial cost, and avoid the risk of bankruptcy. For water service provision in developing countries which is plagued with financial and technical problems of aging and poorly maintained infrastructure, weak billing and revenue collection mechanisms, low productivity of staff, uneconomic tariff structures and heavy financial losses, it is important to look at the factors affecting the operation efficiency of water service provider in Kenya to enhance service provision. In order to understand the factors that could influence operation efficiency of a Water company, the study specifically looked at how the size of the water supply, the operational and maintenance costs, firm's profitability and the Revenue collection efficiencies could influence the operational efficiency of a water company.

General Objective:

To examine financial factors affecting the operation efficiency of Water Companies in Kenya.

Specific objectives:

1. To assess the Effect of Firm's profitability on the Operation Efficiency of Water Companies in Kenya.
2. To assess effect of Revenue Collection Efficiency on Operation Efficiency of Water Companies in Kenya
3. To evaluate the effect of size of the firm on Operation Efficiency of Water Companies in Kenya
4. To evaluate the effect of Operation and Maintenance cost on Operation Efficiency of Water Companies in Kenya.

Justification of the Study:

Many water companies in Kenya face interruptions in their service provision due to challenges in managing their working capital. The inefficiency in water service provision contributes to limited quality water and results in loss of productive time searching for the product and adverse health effect on individual who cannot access quality services. The study will help in improving operation efficiency of these firms leading to improvement in living standards of Kenyans. The study findings will help managers in the water sector in implementing an effective working capital management system which is an excellent way for any company to improve their earnings and also justify its existence. The research is significant in that it serves as a guide for policy makers and administrators of the company's finances in the formulation of policies concerning working capital management. The middle level finance managers would benefit from the findings as they discharge their responsibility as the study focuses on management of their working capital.

2. LITERATURE REVIEW

The study is based on three theories of working capital management, Baumol Cash Management theory, the cash conversion cycle theory and the EOQ Model Theory.

2.1 Baumol Model:

Cash management identifies the cash balance which allows for the business to meet day-to-day expenses while reducing cash holding costs. The quantity of cash held by a firm is traditionally the function of its potential usage and returns on investing idle funds. High probability of potential usage of cash increases its level in a firm. Probability of profitable returns on cash investments in treasury bills, fixed and savings, reduces the amount of cash held by a firm. The Baumol model is based on the economic order quantity (EOQ) model. The objective of the model is to determine the optimal target cash balance. The model is based on the assumption that, the firm is able to forecast its cash requirements with certainty and receive a specific amount at regular intervals; The firm's cash payments occur uniformly over a period of time that is; a steady rate of cash outflows; the opportunity cost of holding cash is known and does not change over time; cash holdings incur an opportunity cost in the form of opportunity foregone; the firm was incur the same transaction cost whenever it converts securities to cash; cash transaction incurs at a fixed and variable cost. The organizations should be able to maintain optimum cash levels to enable meet their operation needs. As per the model, the optimum stage of cash is decided through the carrying cost of holding cash and the cost of transferring marketable securities to cash and vice versa.

2.1.1 The Cash Conversion Theory:

The Cash Conversion theory was developed to explain the period that a firm takes after buying purchases and making sales to receive cash. The cash conversion cycle, which represents the interaction between the components of working capital and the flow of cash within a company, can be used to determine the operational efficiency of any firm. The Cash Conversion cycle plays the same role in the business as the role of heart in human body. This is because when funds are generated they are circulated in the business, and when this circulation stops, the business becomes lifeless. It is because of this reason that the working capital is known as the circulating capital as it circulates in the business just like blood in the human body (Eljelly, 2004). Genesan (2007) developed cash conversion cycle as part of operating cycle which focus is on the length of time between the purchase of raw materials and other inputs and the inflows of cash from the sale of finished goods, and represents the number of days of operation for which financing is needed with a shorter conversion cycle indicating operational efficiency. It is calculated as shown below:

Cash Conversion Cycle = Days in Inventory + Days in Accounts Receivables – Days in Accounts Payable

To achieve operational efficiency, it is important to maintain optimum inventory levels, accounts receivables and accounts payable. In order to achieve optimum days in receivables, a firm will be required achieve efficient receivables management. First, to boost sales, the firm may require loosening its credit terms a factor that may increase bad debts resulting in losses apart from the firm suffering from opportunity cost by providing financial services to customers. However, tightening it would reduce receivables and bad debt losses but result in lower sales (Deloof, 2003). For efficient management of accounts payable a firm should only choose to borrow using accounts payables if it is the cheapest source of funding, after considering discounts for early payment of their trade credit i.e. the free component should always be used but after analyzing the costly component with respect to its cost and compared with the costs of other sources of funds., Thus, the efficient management of working capital management Harford (2009).

2.1.2 The Economic Order Quantity theory:

It was developed by Ford Harris (1913) to help in determining the optimum stock levels. For instance if a firm keeps more inventory, it may result in high sales, although it may be more costly in terms of holding, carrying and opportunity costs. Holding buffer stock may help a firm to minimize the risk of stock-outs and be able to deal with seasonal sales though it may lead to an increment in the carrying cost. On the other hand, having very little inventory could mean running out of stock and losing sales notwithstanding the lost customer goodwill and at times disruption in production (Brigham & Daves2004). Ford Harris through his Economic Order Quantity model argued that firms can maintain optimum inventory levels at the point where the holding and carrying cost are equal, consequently the costs are low. A theory which is supported by Deloof (2003) who argued that with inventory management there should be a trade-off between sales and costs. Managers can create value for the business by maintaining optimum stock level at lowest cost.

2.2 The conceptual framework:

To facilitate studying of the factors affecting Operational efficiency of water Companies, a conceptual framework has been developed and formulated with the aim of showing the directional relationship of various factors. The independent variables included Firm's Profitability, the Revenue Collection Efficiency, the Size of the firm and the Operation and Maintenance Cost Coverage. The dependent variable is the Operational Efficiency.

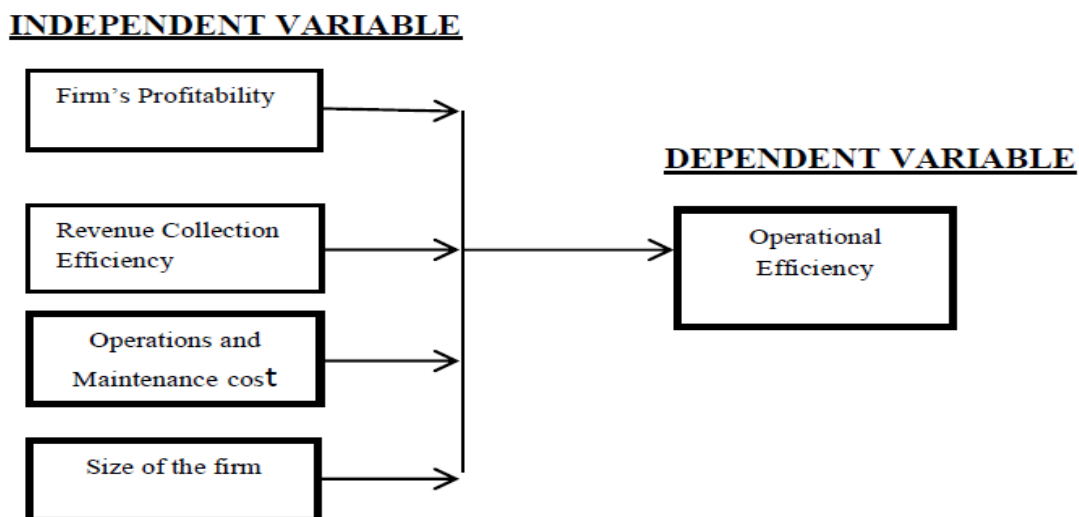


Figure 2.3 Conceptual framework

2.2.1 The Firm's profitability:

Working capital management involves risk-return nature of financial decision making. Increasing a firm's net working capital, current assets less current liabilities, reduces the risk a firm not being able to pay its bills on time, although, this will reduce the overall profitability of the firm. The more working capital amounts, the lower liquidity risk and profitability become (Filbeck & Krueger 2005). Extension of cash conversion cycle can increase the sales, thus profits of the firm. But increasing need for working capital in parallel with the extension of cash conversion cycle brings together an additional financing cost (Deloof, 2003). Ernest W. Walker (1964) through his urbanized a four-section theory of working capital outlined that a firm's profitability is determined in section through the which its working capital is supervised. When the working capital is varied comparative to sales without a corresponding transform in manufacture, the profit location is affected. If the flow of funds created through the movement of working capital is interrupted, the turnover of working capital is decreased, as is the rate of return on investment. A reduction in a firm's net trade cycle can help to reduce operational embarrassments and create value for shareholders. Shin & Soenen (1998) pointed out the importance of WCM by comparing two corporations with the same capital structure, Kmart and Wal-Mart. The former had a CCC of 61 days and the latter had a CCC of 40 days. The differences of 19 days in cash conversion cycle made Kmart to face a deficit of 198.3 million US dollars extra to finance his working capital and faced more financial constraints. Consequently, shorter cash conversion cycle would increase profitability, and would show the efficiency of management performance in managing working capital.

2.2.2 Revenue Collection Efficiency and WCM Efficiency:

Revenue Collection Efficiency measures the effectiveness of the revenue management systems of a Water Service Provider as Only cash that is actually collected can be used for operations. It also a form of Cash management which identifies the cash balance which allows for the business to meet day-to-day expenses. 100% collection efficiency means efficiency in working capital management. The higher level of billing and collection efficiency, the more cash is received by the company (WASREB, 2010). For firms to collect adequate revenue they require to manage their accounts receivables by establishing viable credit and collection policies. In any business, having sufficient cash is very important. Cash is like the oxygen for a company to survive, company needs cash to deal with their daily operations. Padachi (2006) points out that “just as circulation of blood is very necessary in the human body to maintain life, cash flow is necessary to maintain business”. Akinwande (2009) also mentions in his study that “Cash is life blood of a business, and a manager’s key mission is to assist in keeping it to flow and to take the advantage of the cash flow in making profit”. Therefore, maintaining sufficient cash can decide the destiny of a business. Revenue collection efficiency was measured by dividing cash collected during an accounting period divided by the Total billing for that period. A ratio of less than one indicates inefficiency in working capital management by Water Company. Best practice recommends that billing collection efficiency depends on a firm’s credit policy which gives a firm a guideline about how to deal with the debtor and how much credit they should liberalize to their customers. With a liberated credit policy, the sale and profitability of a firm may increase largely, but the risk of bad debts or interest foregone may also increase. With a strict credit policy, the security and liquidity of a firm may rise, but profitability of the firm may go down. Obtaining the optimal level of security and profitability is the one task of financial manager.

2.2.3 Operation and Maintenance Cost Coverage and WCM Efficiency:

Operations and maintenance (O&M) costs are the costs incurred to operate a system and maintain its infrastructure. They include personnel costs, energy costs, chemical costs and maintenance of plant and equipment. O&M cost coverage indicates that a water utility has reached short term sustainability. As per Water Service Regulatory Board (WASREB 2013) Operation and Maintenance Cost Coverage is measured by expressing the total operating revenues as a percentage of total operation and maintenance expenditures. It measures whether the WSP can recover its operating costs. O+M Cost Coverage is critical to the performance of a WSP, as it is a first step towards full cost coverage, ensuring long term financial sustainability. A WSP is estimated to have reached full cost coverage when it reaches at least 150% (“good” sector benchmark) O+M Cost Coverage. Deloof, (2003) conducted a study across firms from different sector; his findings indicated there was no significant difference in management of WC except for the chemistry sector. Operation and Maintenance Cost Coverage was measured by expressing the total O & M Costs divided by total Revenue multiplied by 100%. A WSP is estimated to have reached full cost coverage when it reaches at least 150% (“good” sector benchmark) O+M Cost Coverage (WASREB, 2010)

2.2.4 The size of water supply and WCM Efficiency:

The size of the water supply was examined in terms of the geographical coverage of the water supply and the number of customers served. Wajaj \$ Hammad (2010), pointed out that large firms tend to have excess cash, more inventories and more suppliers. It was revealed that the size of the firm has inverse relationship with working capital management efficiency. Falope and Ajilore (2009) also found out no significant variations in the effects of working capital management between large and small firms in Nigeria using a sample of 50 quoted companies. Teruel & Solano (2007) did a research on the relationship between working capital management and profitability relationships for SMEs they found a negative relationship between return on asset and cash conversion cycle. They argued that small and medium-size firms also can increase their profitability by shortening cash conversion cycle. Shin and Soenen (1998) looked at determinants of working capital and found that its management is correlated in a positive way to firm size. They also established that industry concentration does not affect working capital management and that a greater compensation paid to the CEO of the firm definitely improves the company’s management of working capital. In the water sector the size has insignificant impact on operational efficiency.

3. RESEARCH METHODOLOGY

The study adopted a descriptive survey research design. According to Mugenda and Mugenda (1992), a descriptive survey study helps to gather data at a particular point in time with the intention of describing the nature of existing conditions, identifying standards against which existing conditions can be compared and determining the relations that exist between specific events. The descriptive design was appropriate because it is a self-report study, which requires the collection of quantifiable information from the sample. The study involved collection of both quantitative and qualitative data because it was concerned with the analysis of the factors affecting the efficiency of working capital management for water companies in Kenya. The study administered structured questionnaires for data collection. Personal interviews were also conducted to the target populations who had knowledge about operations of water operations. Inferential statistics was used where Correlation was applied by aid of SPSS.

4. RESEARCH FINDINGS & DISCUSSION

4.1 Response rate:

To determine number of respondents who participated in the study. An analysis of the response rate was done as shown in table 4.1. The number of questionnaires that were sent out was 75 and the number of questionnaires that were filled and returned was 52. Constituting 70% as the response rate which therefore meeting the generalization standard as per Hogben, L. (1970).

Table 4.2: Response rate

<i>Response rate</i>	<i>Frequency</i>	<i>Percent</i>
Response	52	75
Non-responsive	23	25
Total	75	100

4.2 Reliability Analysis:

The data collected was tested for reliability and validity using Cronbach's alpha coefficient of reliability. The computed Cronbach's alpha coefficient was 0.753 which was more than 0.7 and the factor loading of all the questions were between 0.725 and 0.782. From the test it was concluded that the gathered was reliable and could be relied upon in assessing factors affecting operational efficiency of water companies.

4.3 Inferential Analysis:

The analysis was done using correlation matrix to determine the strength of relationship between the variables. Table 4.3 shows the results of Correlation Analysis. The results of Firm's Revenue Collection Efficiency is positively correlated with the Operational Efficiency, $F=0.523^*$ $P\text{-value}<0.05$. It is significant at 95% Confidence level showing that companies with generous credit policies and high profits are likely to experience inefficiency in working capital management.

The results for Operation and Maintenance Cost is positively correlated with Operational efficiency, $F=-0.78^*$ $P\text{-value}<0.05$. It is significant at 95% Confidence level showing that companies with low operational cost tend to have efficiency in their operations.

Table 4.3 Pearson Correlation Coefficient

	Cash Conversion Cycle	Accounts Receivable	Inventory Days	Accounts Payable	Firms Profitability	Revenue Collection Efficiency	Size	Operation Maintenance Cost
Cash Conversion Cycle	1							
Accounts Receivable	0.982	1						
Inventory Days	0.432	0.595	1					
Accounts Payable	-0.015	0.128		1				
Firms Profitability	0.460	0.578	0.987		1			
Revenue Collection Efficiency	0.522	0.147	-0.051			1		
Size							1	
Operation Maintenance Cost								1

Firms	0.770	0.651	-0.221	-0.239	1			
Profitability	0.283	0.325	0.028	0.075				
Revenue	0.523*	0.497	0.993	0.978	-0.332	1		
Collection Efficiency	0.012	0.145	0.339	0.345	0.012			
Size	0.056	0.242	0.924	0.918	-0.577	0.962	1	
	0.011	0.285	0.035	0.321	0.045	0.871		
Operation	0.787*	0.441	0.976	0.944	-0.377	0.992	0.967	1
Maintenance	0.250	0.332	0.325	0.302	0.745	0.780	0.78	
Cost								

**Correlation is significant at the 0.01(2 tailed)

**Correlation is significant at the 0.01(2 tailed)

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary:

The purpose of this study was to investigate the factors affecting the Operation efficiency of water companies in Kenya. Based on the case of Nzoia Water Services Company, both the quantitative and assessment method were used as my research approach to examine the relationship between organization financial factors and the cash conversion cycle as a measure of operational efficiency for water companies in Kenya. The organization financial factors included profitability, Revenue Collection Efficiency, company size, and the Operation and Maintenance cost coverage. The three components of the cash conversion cycle were; number of day's inventory, number of day's accounts receivable and numbers of day's accounts payable, were used to find the association with the related factors as well.

5.1.1 The Firm's Profitability:

From the study, 90% of the respondents agreed that increase in profits of the company will lead to reduced operational efficiency. This finding is consistent with the Results from Correlation analysis which showed that the Firm's profitability is positively correlated to the Cash Conversion Cycle with coefficient of 0.777; The positive relationship demonstrates that an increase in profitability, measured by return on assets, has an impact on a rise in the length of the cash conversion cycle which indicates less effective working capital management. It is important for water companies therefore to strive to manage their profitability to enhance their operational efficiency. The above findings are in line with the findings of Deloof (2003) Shin and Soenen, (1998) and Eljelly (2004) which showed positive correlation between the firm's profitability and Cash conversion cycle. From their studies, they suggested the reduction in a firm's net trade cycle can reduce operational embarrassments and create value for shareholder.

5.1.2 The Revenue Collection Efficiency:

Majority of the respondents agreed that Revenue Collection Efficiency was key in enhancing Operational Efficiency of water companies. 60% of the respondents indicated that management of accounts receivables was slightly satisfactory with the main challenge originating from the failure of key government institutions to pay their bills. 50% suggested that companies should contract debtor collectors to specifically follow up on government debts and ensure they are collected. The above findings are in line with correlation coefficient of 0.323 between the revenue and the cash conversion cycle. These findings are consistent with the findings of Deloof (2003) where he suggested that managers can increase corporate profitability by reducing the number of day's accounts receivable and inventories. These results show that there is a certain level of working capital that maximizes the value of the firms.

5.1.3 The Company size:

Majority of the respondents agreed that the size of the firm has insignificant influence on the operational efficiency of water companies. This is supported by the results of correlation between the size of the firm and the cash conversion cycle coefficient of 0.056. The results are consistent with the findings of Falope and Ajilore (2009) who found no significant variations in the effects of working capital management between large and small firms in Nigeria using a sample of 50 quoted companies. But inconsistent with the findings of Rehman & Nasir (2007) and Shin and Soenen (1998) who found out there was a positive relationship between the size of the firm and WCM efficiency.

5.1.4 Operation and Maintenance Cost Coverage:

Majority of the respondents agreed that reduction of operation and maintenance cost will lead to enhanced operational efficiency. 55% of the respondents were of the opinion that water companies were overstaffed and there was need for downsizing to reduce on costs. 70% of the respondent the power cost was a major contributor for increased operation and maintenance cost, the suggested that stakeholders in the sector to consider rehabilitating the existing infrastructure and investing in gravity schemes that are cost effective and cheaper to maintain.

5.2 Conclusion:**5.2.1 What is the effect of Firm's profitability and Operational efficiency of Water Companies in Kenya?**

90% of the respondents were of the opinion the firm's profitability affects the operational efficiency of water companies in Kenya. This was also shown by Correlation coefficient of 0.77. The way the working capital is managed has a significant impact on the firm's profitability. Therefore efficient working capital management is important in creating value for shareholders.

5.2.2 What is the effect of revenue collection efficiency and Operational efficiency of Water Companies in Kenya?

The revenue collection efficiency is essential in enhancing operation efficiency of water companies as per 60% of respondents. Managers should focus on debt collection and build customer relationship to enhance revenues for their companies.

5.2.3 What is the effect of Size of the firm and Operational efficiency of Water Companies in Kenya?

The size of the company does not significantly affect operationally efficiency of water companies. But companies can consider clustering to enjoy economies of scale. This is supported by the results of correlation between the size of the firm and the cash conversion cycle coefficient of 0.056.

5.2.4 What is the effect of Size of the firm and Operational efficiency of Water Companies in Kenya?

The operational and cost coverage has significant impact on operational efficiency of water companies in Kenya 90% agreeing to the same, measure to be put in place to manage costs to reasonable limits.

5.3 Recommendation:

To enhance operational efficiency, stakeholders in the water sector should consider managing operation cost to reasonable limits by investing in water schemes with low operating costs, for example invest in gravity system have low power cost and are not subject to prevent leaks and bursts. Rehabilitate the existing water infrastructure to reduce on leaks and bursts, downsizing their staff to cut down staff cost. This will enhance service delivery and minimize operating costs. Managers and staff in water companies should undergo financial management training that will enhance their debt collection skills and customer service in the wake liberalized economy building customer relations is essential to enhance revenue collection efficiency.

5.4 Suggestions for further research:

Further research can be done on the effect of water Tarriffs on performance of water companies in Kenya, an assessment of the impact of water service trust funds on performance of water companies in Kenya. The researcher believes the findings of the study will enhance water service provision,

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