EFFECT OF GOVERNMENT AND OTHER AGENCIES FUNDING ON THE PERFORMANCE OF WATER SERVICE PROVIDERS UNDER ATHI WATER SERVICES BOARD, KENYA

BY

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DECLARATION

This research project is my original work and has not been submitted for examination in any other University.

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This research project has been submitted for examination with my approval as a university supervisor.

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May Almighty Lord Bless you abundantly.

DEDICATION

To

My dear husband and good friend Mr Samuel Karogo for your unfailing love, support and encouragement during the study period.

And my children

Joe Ndung'u

Jean Wairimu

Joanna Wambura

&

Joella Nyambura

For motivation and understanding.

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ABBREVIATIONS

AWSB	Athi Water Services Board
CAAC	Catchment Area Advisory Committees
GOK	Government of Kenya
KPIs	Key Performance Indicators
KWCL	Kiambu Water & Sewerage Company Ltd
MDGs	Millennium Development Goals
MWI	Ministry of Water and Irrigation
NRW	Non-Revenue Water
NYEWASCO	Nyeri water and Sewerage Company
RUJWASCO	Ruiru- Juja Water and Sewerage Co Ltd
SPA	Service Provision Agreement
SPSS	Statistical Package for Social Science
THIWASCO	Thika Water and Sewerage Co Ltd
TWSB	Tana Water Service Board
UNDP	United Nations Development Programme
UTAUT	Unified Theory of Acceptance and Use of Technology
WAB	Water Appeal Board
WASREB	Water Services Regulatory Board
WARIS	Water Regulation Information System
WRMA	Water Resources Management Authority
WRUA	Water Resource Users Associations
WSBs	Water Services Boards
WSPs	Water Services Providers
WSTF	Water Services Trust Fund

ABSTRACT

The purpose of this study was to assess the effect of government and other agencies funding on the performance of water service providers under Athi Water Services Board. A descriptive research design was applied in this study. The target population of this study was the nine water company's under Athi Water Services Board. These include: Ruiru-Juja, Thika, Karimenu, Gatundu South, Githunguri, Kiambu, Limuru, Kikuyu and Karuri Water and Sewerage Co Ltd. The study collected secondary data from company's Audited Financial Statements for the Five years and also from the WARIS report submitted to WASREB. Quantitative analysis was used through descriptive statistics. Inferentially, a regression analysis was conducted to establish the coefficients of each variable of interests. From the findings, the three independent variables that were studied (funding sources/access to financing, cost of capital and risk financing pattern) explain a substantial 58.3% of performance of WSPs as represented by adjusted R^2 (0.583). The study concluded that funding sources/access to financing positively and significantly influenced the performance of WSPs. The study also concluded that cost of capital negatively but significantly influenced the performance of WSPs. The study further concluded that risk financing pattern positively and significantly influenced the performance of WSPs. The study recommends that since funding sources/access to financing was seen to be a significant determinant of WSPs performance, the management should actively solicit for funding from the various sources from the development partners including focusing on possible PPPs. The study recommends that water companies should solicit for more funds from donors, increase the range of services they provide and beef-up their governance structure since financial sustainability is achieved when service and infrastructure levels and standards are delivered according to a long term plan.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Alarmingly high numbers of people around the world have no access to clean drinking water. In spite of many years of humanitarian aid and development, it remains a major challenge to ensure access to water for all people. The performance on water projects in developing countries is alarmingly low, due to a lack of resources, capabilities and spare parts for service and maintenance (Hukka & Katko, 2004). The financial hardships have left the situation even worse. However, many developed governments and donor agencies have made substantial investments in projects to improve supplies of water in poor rural areas.

According to Bowman (2011), an institution that is financially sustainable in the long term but unsustainable in the short term will be chronically short of cash. Conversely, an institution that is financially sustainable in the short term but not in the long term may have adequate cash but inflation will cause the value of its assets to erode over time. This, in turn, will cause the quantity and quality of services to diminish unless capital campaigns periodically bring infusions of new assets to understand differences in factors related to financial sustainability between for-profit and nonprofit institutions, it is important to identify and understand the long-term goals of the organization.

The African continent poses the most difficult challenge for achieving the water and sanitation MDG targets. The MDGs for water supply and sanitation services require a doubling of the pace of expansion of coverage in water supply in urban areas and a tripling for sanitation. Recent projections show that following the ‘business as usual’

trends, Sub-Saharan Africa would only reach the MDG targets for water services by 2040, and those for sanitation by 2076 (United Nations Development Programme (UNDP), 2006).

As noted by World Bank (2010), water utilities in Africa differ greatly in terms of size, organizational culture and operating environments. They share one major challenge of funding access to appropriate levels of services to their growing urban populations as can be seen clearly in the context of the MDGs where Africa lags far behind other regions. It is now widely acknowledged that insufficient funding of African water utilities are a major cause of poor access to water services.

In many systems, as much as a third of production is lost through physical and commercial losses and revenues are insufficient to cover operating costs let alone expand service coverage. In addition to the non-revenue water (NRW) challenge, most utilities are currently struggling to cover even their operating costs. In all regions, less than half of the utilities can be considered financially viable and, for many. Thus, it is becoming clear that the real potential in the African, specifically water sector in Kenya lies in funding the existing systems (Hukka & Katko, 2004).

1.1.1 Government and other Agency Funding

Funding is an act of providing resources, usually in form of money (financing), or other values such as effort or time (sweat equity), for a project, a person, a business, or any other private or public institutions. Funds are injected into the market as capital by lenders and taken as loans by borrowers. There are two ways in which the capital can end up at the borrower. The lender can lend the capital to a financial intermediary against interest. These financial intermediaries then reinvest the money against a higher rate. The use of financial intermediaries to finance operations is called indirect

finance. Lender can also go to the financial markets to directly lend to a borrower. This method is called direct finance (Mishkin, 2012).

For more than a decade, the international development community has increased its focus on measuring and improving results (Lancaster, 1999). Donors and developing countries alike want to know that aid is being used as effectively as possible, and they want to be able to measure results. The aim is to ensure that development work leads to tangible and sustainable improvements in the lives of people in developing countries. This is implicit in the Millennium Development Goals (MDGs), which were adopted by 189 countries in 2000, and the Monterrey Consensus of 2002, which stressed the need to mobilize financial resources more efficiently. The joint Marrakesh Memorandum in 2004 signaled a renewed emphasis on making aid effective. This was reinforced by the Paris Declaration of 2005 and is being emphasized in the work already underway for the Accra 2008 meeting. This commitment by donors to ensure that their assistance is effective has prompted the establishment of monitoring mechanism and vetting of projects to ensure that these projects are able to meet the needs of development in a sustainable way (Lancaster, 1999). Though foreign aid has continued to play an important role in developing countries, especially Sub-Sahara Africa, it is interesting to note that after a half a century of channeling resources to the Third World, little development has taken place (Devarajan & Swaroop, 1998).

1.1.2 Organizational Performance

Performance is described as a set of financial and non-financial indicators which offer information on the degree of achievement of an organization's objectives and results (Lebans & Euske, 2006). Griffins (2006) also defined organizational performance as

an organization's ability to acquire and utilize its scarce resources and valuables as expeditiously as possible in the pursuit of its operations goals. For organizations it is only through performance indicator identifications that they are able to measure their achievement. Knowing the determinants of organizational performance is important especially for an organization to know which factors that should be treated with keen interest in order to improve the organizational performance. Chenhall and Smith (2007) expressed performance as the actual output or results of an organization as measured against its intended goals.

Organizational Performance Management and Measurement is one of the most popular terms in today's public sector management terminology. The idea of managing organizational performance is being widely accepted and adopted all over the world. It spread rapidly from the private sector to the public sector in the developed world and has recently found its way in many developing countries. New initiatives and legislations continue to being issued as a sign of governments' insistence on following the new focus on performance orientation (Meyer, 1994).

Performance measures can be grouped into two basic types: those that relate to results (outputs or outcomes such as competitiveness or financial performance) and those that focus on the determinants of the results (inputs such as quality, flexibility, resource utilization, and innovation). This suggests that performance measurement frameworks can be built around the concepts of results and determinants. According to the performance review report of the water sector in Kenya, the key performance indicators (KPIs) of organizations in this sector include: Coverage, Sanitation Coverage, Non-Revenue Water, Water Quality (Residual Chlorine and Bacteriological), Hours of Supply, Metering Ratio, Revenue Collection Efficiency,

Staff Productivity and Operation and Maintenance Cost Coverage. The KPI's are aggregated and scored (WASREB website, 2015).

1.1.3 Funding and Performance of Water Service Providers

Organizational performance has been one of the most extensively researched issues since the early development of organizational theory (Rojas, 2000). Several studies have been conducted to establish the relationship between funding and firm performance. Hovakimian, Hovakimian and Tehranian (2004) concluded that on average, there is a strong positive relationship between internally and externally generated funds and financial sustainability.

Availability of funds for recurrent costs is seen as a major factor influencing the performance of water project intervention (Fierbusch, 1990). However availability of credit from development banks or private sources might be sought and this can be supplemented by partnerships consisting of community organizations, sponsors and at times the Government (Modigliani & Miller, 1958). The financing process, raising and maintaining adequate funds for water facilities and activities, is clearly of critical importance to sustainable performance of water service sectors. Organizations are required to use funds wisely for the purpose intended and improve the living standards of the populations meant to benefit.

Ayres (2005) expressed that most donors attach various restrictions to their funding including among others-sound financial management systems in place, good leadership with integrity, educated staff with experience and advantage and the strategic plans of the organization. Organizations lacking these ingredients have difficulties attracting donor funding. To be called sustainable, projects do not have to recover all costs so that all the resources for replacement and maintenance or new

investments are raised internally. However, organizations should be able to sustain the flow of capital subsidies for replacement and subsidy of other support costs. In practice, this may require major changes in both sectorial and macroeconomic performance, to improve cost recovery and self-reliance.

In many developing countries, organizations like water sector are largely financed from general taxation while the country itself depends on unsustainable flows of foreign aid/loans. There is a danger that the projects judged to be sustainable are merely those popular enough to attract sustained financial support (Ayres, 2005). However, insufficient financing is a major factor in poor maintenance which, in turn, is often cited as a reason for project failure (Garande & Dagg, 2005).

1.1.4 Water Services Providers under Athi Water Services Board

Water services Boards were formed under the provision of the Water Act 2002 with a mandate to ensure cost effective and sustainable provision of water and sanitation services in their area of jurisdiction as provided for by the Water Act 2002. Among them are Lake Victoria South water service board, Rift Valley water service board, Athi water service board, Northern water service board, Lake Victoria water service board and Tana water service board among others. In line with the water sector reforms, the Athi Water Services Board (AWSB) was established to oversee the management of water and sewerage services in the city of Nairobi and the districts of Kiambu West, Kiambu East, Thika and Gatundu. It was gazette via the Gazette Notice No 1775 of 21st March 2003 and licensed on 5th April 2004 by Water Services Regulatory Board. In addition, Water Service Providers (WSPs) have been constituted to provide services in these areas under agreement with the AWSB through a service provision agreement (SPA). It is intended that these institutions will implement sound

principles of management, commercial accounting and financial control. AWSB has licensed water service providers (Ruiru-Juja, Thika, Karimenu, Gatundu South, Githunguri, Kiambu, Limuru, Kikuyu and Karuri Water and Sewerage Companies) in its area of Jurisdiction and serves a population of 4.3 million inhabitants (Kimotho, 2012).

The overall budgetary allocations to the water sector have increased by more than 200% in the last five years (2009/10 to 2010/14), with the development allocation increasing by 252%, while the recurrent budget has maintained a lower growth rate of 93%. This means more donor funding (Debt) is anticipated throughout the financial years compared to local funding i.e. internally generated funds and government support from taxpayers money. Currently Recurrent and capital expenditures are financed by Equity and Debt that include: share capital (paid up), Governments Grants/Irredeemable Loans, Capital Reserves, Revenue Reserves (Profit & Loss Account), Shareholders Funds, Long term borrowing, Non-Current Creditor, Accounts payable, Short-term borrowings, Statutory obligations(Ministry of water and irrigation Kenya , annual water sector review, 2009-2010 -2011-2014).

1.2 Research Problem

There are two main ways to address the financing gap in the water sector where it appears: in the long-run, structural reforms are needed to improve the sector's revenue-generation potential so as to fill the financing gap. In the short to medium term, access to repayable finance (such as loans, bonds and equity) will be critical so as to bridge the financing gap. Given a number of structural issues in the sector, innovation is required so as to increase the attractiveness of the sector to providers of repayable finance, particularly those bringing private sector funds. There is a considerable amount of literature with respect to the optimal funding of corporate

firms (Faulkender & Petersen, 2006; Harris & Raviv, 1991). Although most studies show a positive relationship between funding and organisational performance (Faulkender & Petersen, 2006; Harris & Raviv, 1991), Cheboi (2014) in his study to examine the relationship between donor funding, total debt (control variable) and performance score concluded that on average, there is a negative linear relationship between funding, total debt (control variable) and performance score based on annual government ranking.

Kenya faces serious challenges with regards to provision of water services despite the efforts of investments provided in the past years by the Government and development partners since existing facilities have continued to deteriorate and fail to meet the demand of the increasing population, particularly in many rural areas and the very rapidly growing settlements of the urban poor, Rok (2013). This challenge is more so due to capital structure of lending institutions.

Locally, Kihumba (2013) conducted a study on factors influencing revenue generation among water service providers in Kenya, Muniu (2010) did a study on the factors influencing the performance of Nyeri water and Sewerage Company in provision of water and sewerage services in Nyeri Central District, Kenya, Githinji (2012) also conducted a study on factors affecting the performance of water service providers in Kenya: a case of Tana Water Service Board while Rao (2011) conducted a study on effect of funding sources on financial sustainability of water sector institutions in Kenya. None of the local and international studies focused on the effect of government and other agencies funding on the performance of water service providers. Water service providers under Athi water services board has their share of challenges with regards to funding by both the government and other agencies funding. This study therefore sought to fill this gap by exploring the effect of

government and other agencies funding on the performance of water service providers under Athi water service board.

1.3 Research Objective

The objective of this study was to assess the effect of government and other agencies funding on the performance of water service providers under Athi Water Services Board.

1.4 Value of the Study

The findings of this study is relevant to Water Service Regulatory Board, Water Service Trust Fund and the parent Ministry of Water and Irrigation in formulating policies and strategies that aims at improving the operations of Water Service Boards in Kenya. The findings of this study is also of great help to the Water Service Board when developing strategic and business plans, project proposals and while negotiating for funding allocation with the GOK and other development partners.

The findings is also vital to other stakeholders and funding agencies with interest in partnering with the Water Service Board in an effort to support efficient provision of clean, affordable, reliable and quality water services in Kenya. The stakeholders may include development partners, the Government of Kenya through the Ministry of Finance, Ministry of Environment, Ministry of Health, Ministry of Environment, and Ministry of Health, Ministry of Local Government, Financial institutions and fund mobilizers. The study will enable the stakeholders and funding agencies to know the critical areas that call for funding attention in the sector and thereby facilitating coordination of efforts towards the efficient performance of water service providers in Kenya.

This study will benefit researchers and academicians in finding more evidence on the effect of government and other agencies funding on the performance of water service providers. Scholars and academicians will find this study a useful guide for the same as it has recommended on areas for further research.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

In this second chapter, relevant literature information that is related and consistent with the objectives of the study is reviewed. Important issues and practical problems are brought out and critically examined so as to determine the current facts. This section is vital as it determines the information that link the current study with past studies and what future studies will still need to explore so as to improve knowledge.

2.2 Theoretical Review

The study has been underpinned in agency theory, unified theory of acceptance and public interest theory.

2.2.1 Agency Theory

Agency theory has been used to examine an agency relationship (Greenwood, 2003). Jensen and Meckling (1976) define an agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform on their behalf which involves delegating some decision making authority to the agent. Despite the fact that many different theories and approaches are used to explain executive management, the perfect contracting approach of agency theory, as introduced by Jensen and Meckling (1976), still dominates the field. It argues that the separation of ownership and control in a large organization creates a power base for executive management (Green, 2008).

Often, an agency relationship will pose the agency problem which results from the goal conflict between the principal and the agent (Huselid, 2007). Contracts used to solve the agency problem include behavior-based contracts and outcome-based

contracts. Under a behavior-based contract, the principal will directly monitor, assess, and reward the agent on the basis of information about the agent's actual behavior. Employing either the behavior-based contract or the outcome-based contract will depend on comparing the cost of measuring behavior and the cost of measuring outcomes and transferring risk to the agent (Heide, Wathne & Rokkan, 2007).

Agency theory highlights the importance of structuring incentives so that managers are responsive to these long-term interests of principals, and it also highlights the responsibility of boards for ensuring that managers make decisions that provide sustainable value (Sabetietal, 2007). Consequently, the focus of the agency theory is to design the optimal contract for resolving the agency problem, or aligning the goals between principals and agents. At the same time, agency theory research has also revealed principals who have interests that conflict with other stakeholders and do not foster sustainable practice. Some investors move quickly in and out of investments and are so sensitive to current earnings that they are not interested in the long-term prospects of firms in their portfolio. These principals also have the ability to influence decision-makers and are likely to move them away from strategic competitive actions that are often associated with sustainability (Connelly et al., 2010).

2.2.2 Unified Theory of Acceptance

The unified theory of acceptance and use of technology (UTAUT) provides a refined view of how the determinants of intention and behavior evolve over time. It assumes that there are three direct determinants of intention to use (performance expectancy, effort expectancy and social influence) and two direct determinants of usage behavior (intention and facilitating conditions). These relationships are moderated by gender, age, experience and voluntariness of use. Empirical testing of UTAUT shows that

performance expectancy, effort expectancy, and social influence have significant relationships with the intention to use technologies. Later studies found that social influence affect perceived usefulness and perceived ease of use (Lu, 2005).

However, in post adoption research, social influence on the continuance intention was inconsistent; some studies reported significant relationships, but other studies reported non-significant relationships (Chiu & Wang, 2008). UTAUT is one theory that covers extensive individual difference constructs including gender, age, experience, and voluntariness of use as moderating variables. Even though there are some inconsistencies in previous studies on individual differences, scholars reported significant moderating effects by individual differences such as gender (Venkatesh & Morris, 2000), age, prior experience and voluntariness of use. In relation to this study most firms are reluctant in fully adopting information communication and technology has highly been influenced by age, experience, perceived complexity as well as social influence.

2.2.3 Public Interest Theory

The first group of regulation theories account for regulation from the point of view of aiming for public interest. This public interest can be further described as the best possible allocation of scarce resources is to a significant extent coordinated by the market mechanism is optimal. Because these conditions are frequently not adhered to in practice, the allocation of resources is not optimal and a demand for methods for improving the allocation arises. According to Chih- Yao, Yu-Teng and Kuo-Ting (2012), one of the methods of achieving efficiency in the allocation of resources is government regulation. According to public interest theory, government regulation is

the instrument for overcoming the disadvantages of imperfect competition, unbalanced market operation, missing markets and undesirable market results.

In the first place, regulation can improve the allocation by facilitating, maintaining or imitating market operation. The exchange of goods and production factors in markets assumes the definition, allocation and assertion of individual property rights and freedom to contract. The guarantee of property rights and any necessary enforcement of contract compliance can be more efficiently organized collectively than individually (Posner, 2003).

Furthermore, the costs of market transactions are reduced by property and contract law. The freedom to contract can however, also be used to achieve cooperation between parties opposed to market operation (Robertson, 2004). Agreements between producers give rise to prices deviating from the marginal costs and an efficient quantity of goods is put on the market. Antimonopoly legislation is aimed at maintaining the market operation through monitoring the creation of positions of economic power and by prohibiting competition limiting agreements or punishing the misuse thereof. Imperfect competition can also result from the special characteristics of the production process in relation to the magnitude of the demand in the market. At a given magnitude of demand average total costs would be minimized if the production were to be concentrated in one company (Tullock, 2004).

2.3 Determinants of Performance of Water Service Providers

A performance indicator is a parameter or value derived from parameters which provides information about the achievements of an activity, a process or an organization with a significance extending beyond that directly associated with a parameter value (Marin, 2009). According to the performance review report of the

water sector in Kenya, the key performance indicators (KPIs) of organizations in this sector include: water coverage, sanitation coverage, non-revenue water, water quality (residual chlorine and bacteriological), hours of supply, metering ratio, revenue collection efficiency, staff productivity and operation and maintenance cost coverage (WASREB website, 2015). This section reviews the variables that these study hopes to shed some light on the performance of water service providers. These include; access to Government and other Agency Funding, access to capital and risk financing pattern.

2.3.1 Access to Government and other Agency Funding

Rajan and Zingales (1998) show that financial development facilitates performance of WSPs by reducing the cost of external financing, and that the industries that are more dependent on external funding grow disproportionately faster in a more financially developed market. Since then, numerous papers have argued that finance (more specifically financial development) does have real effects on organization performance. Demirguc-Kunt and Maksimovic (2007) investigate how differences in legal and financial systems affect firms' use of external financing to fund growth. They show that in countries whose legal systems score high on an efficiency index, a greater proportion of firms use long-term external financing and that an active, though not necessarily large, stock market and a large banking sector are also associated with externally financed firm growth. In a separate note, Huang and Kracaw (1984) also show that aggregate stock market volatility Granger causes various macroeconomic instruments, such as aggregate national output and unemployment.

These studies clearly delineate the link between finance and the organization performance at the aggregate level, but our understanding of the real effects of

financial structure at a more disaggregate level is limited. Chittenden et al(1996) analyze a sample of listed and unlisted water services and found that profitability, asset structure, size (total assets), age, and access to the capital market is related to the financial structure of a sector. They show that financial structure is significantly related to the growth of any sector only when the sector is experiencing a rapid growth combined with a lack of access to the external capital market. A separate strand of the literature addresses the determinants of firm growth without any reference to the firm's financial structure and its access to external funding.

2.3.2 Cost of Capital

Agency costs represent important problems in financial sustainability in both financial and nonfinancial industries. The separation of ownership and control in a professionally managed firm may result in managers exerting insufficient work effort, indulging in perquisites, choosing inputs or outputs that suit their own preferences, or otherwise failing to maximize firm value (Tullock, 2004). In effect, the agency costs of outside ownership equal the lost value from professional managers maximizing their own utility, rather than the value of the firm.

Theory suggests that the choice of capital structure may help mitigate these agency costs. Under the agency costs hypo project, high leverage or a low equity/asset ratio reduces the agency costs of outside equity and increases firm value by constraining or encouraging managers to act more in the interests of shareholders. Since the seminal paper by Jensen and Meckling (1976), a vast literature on such agency-theoretic explanations of capital structure has developed. Greater financial leverage may affect managers and reduce agency costs through the threat of liquidation, which causes personal losses to managers of salaries, reputation, perquisites, etc. (Lambert et al,

2007), and through pressure to generate cash flow to pay interest expenses (Verrecchia, 2007).

A testable prediction of this class of models is that increasing the leverage ratio should result in lower agency costs of outside equity and improved firm performance, all else held equal. However, when leverage becomes relatively high, further increases generate significant agency costs of outside debt – including higher expected costs of bankruptcy or financial distress – arising from conflicts between bondholders and shareholders, because it is difficult to distinguish empirically between the two sources of agency costs. Despite the importance of this theory, there is at best mixed empirical evidence in the extant literature (Ehrhardt, 2001).

2.3.3 Risk Financing Pattern

Weaknesses in corporate sector have been mentioned as "important" factors for either view. Corsetti et al (2000) for example, mentioned weak corporate performance and risky financing patterns as important causal factors for the East Asian financial crisis. Olsson (2008) draws attention to the "transfer problem" arising if the water service sector has large foreign exchange liabilities, where small shocks can lead to a bad equilibrium. Olsson (2008) argues that company balance sheet problems may have a role in causing financial crises, independently of macro-economic or other weaknesses, including a poor performance of the corporate sector itself. In particular, a depreciation of the domestic currency causes an increase in the currency value of foreign-denominated firm debt, with firms also facing declining sales and higher interest rates. The resulting balance sheet problems and reversal of capital flows weaken the corporate sector, and in turn the financial system. This triggers further currency depreciation with a current account surplus to accommodate the capital

reversal deficit and financial system weakness. Olsson ascertains that the risks of such event occurring are higher when there is low profitability of firms relative to the cost of funds to financial institutions.

Demirguc-Kunt and Maksimovic (1998) for example, find that the degree to which specific firms (or the corporate sector in general) use long-term external financing from either stock markets or banks, affects their growth. Sharfman (2008) review these and other papers on the relationships between financial structures and corporate finance and performance of WSPs. Sharfman (2008) conducted a study agency problems and dividend policies around the world. Sharfman (2008) looks at the expropriation of minority shareholders due to the separation of ownership and control. As noted, recent papers on the relationships between institutional factors and financial structures (Sharfman, 2008) highlighted that institutional factors in a particular country are likely to greatly influence the performance and financing patterns of firms, including their risk-taking behavior.

2.4 Empirical Studies

Over the last half century, donor funding/foreign aid has emerged as a dominant strategy for alleviating poverty in the third world. This has attracted the attention of researchers from all over the world with interest in establishing the relationship between external and internal funding and organisational performance. Leiponen, Jiahong and Zhang (2012) investigated the relationship between firm's capital structure and innovation activities in a large sample of firms in East Asian, South Asian, Central Asian and Eastern European emerging economies. They argue that access to external financial resources plays a critical role for financially constrained firms. To resolve the causality problem, we utilize instrumental-variable methods for

identification. Empirical analyses demonstrate that a broad set of primarily privately-held firms benefit from external finance for innovation activities.

Hovakimian, Hovakimian and Tehranian (2004) examined whether market and operating performance affect corporate financing behaviour because they are related to target leverage. Our focus on firms that issue both debt and equity enhances our ability to draw inferences. Consistent with dynamic trade-off theories, dual issuers offset the deviation from the target resulting from accumulation of earnings and losses. Our results also imply that high market-to-book firms have low target debt ratios. On the other hand, consistent with market timing, high stock returns increase the probability of equity issuance but have no effect on target leverage.

Ndung'u (2006) conducted a study on determinants of financial sustainability of water companies in Nyeri County. The objective of this study was to investigate the factors influencing financial sustainability of water companies operating in Nyeri County. Data on the financial and operational performance of the firms was obtained from the Kenya national audit office, financial statements and water services regulatory board, sector evaluation report by water services regulatory board. The study found that water companies in Kenya though faces challenges, have enjoyed sustainable operationalization of business. The study finally concludes that water companies' financial sustainability is influenced positively by total operating income, net loan portfolio and funds from government and donor agencies increases the water companies' sustainability and negatively by debt equity ratio, total operating expenses and average loan size.

Muniu (2010) examined the factors influencing the performance of Nyeri water and Sewerage Company in provision of water and sewerage services in Nyeri Central

District, Kenya. The objectives of the study are based on the influence of management practices, employee's motivation, water supply infrastructure and financial base on performance of NYEWASCO in provision of water and sewerage services. Data was collected using both open and close ended questionnaires where 328 customers and 34 employees responded. Data was analyzed by SPSS and excel packages using mean, mode, ratio, correlation co-efficient and frequency distribution. The main findings are that NYEWASCO services were found to be efficient in terms of quality of water supplied, employees were found to be reliable and motivated, water supply infrastructure was adequate and financial base was strong.

Rao (2013) conducted a study on effect of funding sources on financial sustainability of water sector institutions in Kenya**.** From the study findings and discussion, the study concludes that funding sources affects the financial sustainability of organizations. On the study objective, the ratio analysis revealed a strong positive relationship between internally generated funds as one funding source and financial sustainability of water sector institutions in Kenya. On the other hand the regression analysis revealed that when all factors are held constant a positive relationship is seen on financial sustainability with an increase in government grants, donor funding, internally generated funds and reserves.

Githinji (2012) also did a study on factors affecting the performance of water service providers in Kenya: a case of Tana Water Service Board. . This study examined the factors affecting the performance of water service providers in Tana Water Service Board(TWSB) area by studying three variables related to the performance namely; types of tariffs, benchmarking, governance structures. The study design was census survey and used questionnaires and observations to collect data from the WSPs in

addition to secondary data which was obtained from TWSB, the WSPs and Water Services Regulatory Board (WASREB). The findings show that the three variables account for 68.4% of the performance of water service providers and that two of the variables (tariffs and governance) are significant predictors of performance of WSPs.

Kihumba (2013) examined factors influencing revenue generation among water service providers in Kenya. The study explored service coverage, non-revenue water, metering ratio, staffing, and revenue collection efficiency of WSPs. The collected data was analyzed using Statistical Package for Social Science (SPSS) and the results presented in tables. The study showed that the level of service coverage determines the amount of revenue generated by a WSP and by extension the resources available to the WSP to finance its operations. It was also clear that the high level of Non-Revenue Water (NRW) threatens the sustainability of the majority of WSPs in the County since they are losing slightly more than half of their water hence generating revenue from far much less water compared to production yet operation and maintenance expenditure continues to rise.

Cheboi (2014) examined the effect of donor funding on the organizational performance of government ministries in Kenya. The objective of the study was to establish the relationship between donor funding and performance of government Ministries in Kenya. The descriptive study targeted a population of 42 government ministries that existed during the coalition government. The study used secondary data sources from the Treasury and Ministry of Devolution and Planning for 2008/2009 to 2012/13. Simple linear regression analysis was conducted. The findings show that, there were significant negative linear association between donor funding and performance. The study further concluded that on average, there is a negative

linear relationship between donor funding, total debt (control variable) and performance score based on annual government ranking.

2.5 Summary of Literature Review

This study is grounded on agency theory, unified theory of acceptance and public interest theory. This chapter reviewed relevant literature on how government and agency funding, risk financing pattern and financial sustainability and cost of capital affect the performance of water service provider. The study reviewed that countries whose legal systems score high on an efficiency index, use long-term external financing. It was also reviewed that company balance sheet problems may have a role in causing financial crises, independently of macro-economic or other weaknesses, including a poor performance of the corporate sector itself. Although literature has been reviewed on government and other agencies funding on the performance of water service providers, most of these studies have been done in other countries whose strategic approach and financial footing is different from that of Kenya. None of them therefore focused on how these apply in the Kenyan case. It is evident therefore that a literature gap exists on the relationship government and other agencies funding and the performance of water service providers in Kenya. This study therefore seeks to fill this gap by focusing on the effect of government and other agencies funding on the performance of water service providers under Athi Water Services Board in Kenya.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter includes the various stages that were followed to complete the study. The chapter therefore comprise of the following subsections: research design, target population, data collection and data analysis and presentation.

3.2 Research Design

Research design is the general plan of how one goes about answering the research questions (Creswell, 2003). A descriptive research design was applied in this study. Descriptive research gives researchers the opportunity to use both quantitative and qualitative data in order to find data and characteristics about the population or phenomenon that is being studied (Yin, 1994). Creswell (2003) observes that a descriptive research design is used when data are collected to describe persons, organizations, settings or phenomena. The data collection for descriptive research presents a number of advantages since it can provide a very multifaceted approach using interviews, observations, questionnaires and participation.

3.3 Target Population

According to Pole and Lampard (2002), a target population is classified as all the members of a given group to which the investigation is related. The target population of this study was the nine water company's under Athi Water Services Board. These include: Ruiru-Juja, Thika, Karimenu, Gatundu South, Githunguri, Kiambu, Limuru, Kikuyu and Karuri Water and Sewerage Co Ltd.

3.4 Data Collection

The study collected secondary data. The secondary data was gathered through a thorough review of the various indicators of the study variables as indicated in the data collection sheet (Appendix I). The collected data cover a period of five years i.e. from 2010-2015. All this information was from company's Audited Financial Statements for the Five years and also from the WARIS report submitted to WASREB.

3.5 Data Analysis and Presentation

The data collected was cleaned, coded and systematically organized in a manner that facilitates analysis using the Statistical Package for Social Sciences (SPSS Version 21.0). Quantitative analysis was used through descriptive statistics such as measure of central tendency to generate relevant percentages, frequency counts, mode, and median and mean where possible. Inferentially, a regression analysis was conducted to establish the coefficients of each variable of interests. In order to make the data more user-friendly and attractive to the readers, graphic interactive tables were generated using the computer spreadsheet to present the data.

3.5.1 Research Analytical Model

In order to test the relationship between the variables the inferential tests including the regression analysis were used to determine the relationship between government and other funding agencies and performance of WSPs. The regression equation was

$$\mathbf{Y = \beta_0 + \beta_i X_i + \beta_{ii} X_{ii} + \beta_{iii} X_{iii} + e}$$

Whereby Y = Performance of WSPs (performance score (water coverage, sanitation coverage, non-revenue water, water quality, hours of supply, metering ratio, revenue collection efficiency, staff productivity and operation and maintenance cost coverage) out of 200)

β_0 = Constant

X_i = Funding sources (measured by natural logarithm of government funding and development partners)

X_{ii}= Cost of Capital (this will be measured using the interest paid on loan acquired by these companies = natural log of interest on borrowed capital)

X_{iii} = Risk Financing Pattern (this can be measured using the amount of government funding to the organization especially in long term of loans = long term debts / Total assets

e = Error Term

3.5.2 Test of Significance

The coefficient of determination (R^2) was used to measure the extent to which the variation in interest rate spread is explained by the variations in performance of WSPs. F-statistic was also computed at 95% confidence level to test whether there is any significant relationship between government and other funding agencies and performance of WSPs. This analysis was done using SPSS software and the findings presented in form of a research report.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the information processed from the data collected during the study on the relationship between funding sources/access to financing and performance of WSPs. The target population of this study was the nine water company's under Athi Water Services Board. These include: Ruiru-Juja, Thika, Karimenu, Gatundu South, Githunguri, Kiambu, Limuru, Kikuyu and Karuri Water and Sewerage Co Ltd for a period of five years.

Data was analyzed using descriptive statistics and also a correlation and regression analysis was conducted to establish the relationship between the funding sources/access to financing and performance of WSPs. Section 4.2 presents descriptive statistics, section 4.3 discuses correlation analysis, section 4.4 presents regression analysis while section 4.5 presents the summary and interpretation of findings.

4.2 Descriptive Statistics

Table 4. 1: Descriptive Statistics of the standardized figures of the Study Variables

	Minimum	Maximum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Risk Financing	.06	.36	0.151	0.011	0.074	1.000	0.354	0.142	0.695
Access to Financing	5.18	6.93	5.407	0.170	0.536	3.125	0.687	9.825	1.334
Cost of Capital	6.87	8.75	7.115	0.039	0.264	5.668	0.354	35.649	0.695
Performance of WSPs	.25	.78	0.453	0.019	0.126	0.489	0.354	-0.142	0.695

Source: Research Data

The results in Table 4.1 showed that risk financing had a mean score of 0.151, access to financing had a mean score of 5.407; cost of capital had a mean score of 7.115 while performance of WSPs had a mean score of 0.453. Analysis of skewness shows that risk financing, access to financing and cost of capital are asymmetrical to the right around their mean while performance of WSPs was skewed to the left.

4.3 Correlation Analysis

To quantify the strength of the relationship between the variables, the study used Karl Pearson's coefficient of correlation. The Pearson product-moment correlation coefficient (or Pearson correlation coefficient) is a measure of the strength of a linear association between two variables and is denoted by *r*. The Pearson correlation coefficient, *r*, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicate a negative association. The findings are presented as follows;

Table 4. 2: Correlation Matrix

	Performance of WSPS	Access to finance	Cost of capital	Risk financing
Performance of WSPS	1			
Access to finance	.408	1		
Cost of capital	-.322	.998**	1	
Risk financing	.954	-.062	-.070	1
**. Correlation is significant at the 0.01 level (2-tailed).				

Results in table 4.2 above reveal that the correlation between Performance of WSPS and Access to finance is positive and significant (R= 0.408, p value=0.032). This implies that an increase in Access to finance is associated with an increase in performance of WSPS and a decrease in access to finance is associated with a decline in performance of WSPS. Findings reveal that the correlation between performance of WSPS and cost of capital is negative but significant (R= -0.322, p value=.005). This implies that an increase in cost of capital is associated with decrease in performance of WSPS and a decrease in cost of capital is associated with an increase in Performance of WSPS. In addition, the study reveals that the correlation between performance of WSPS and risk financing is positive and significant (R= 0.954, p value=.043). This implies that an increase in risk financing is associated with an increase in Performance of WSPS and a decrease in risk financing is associated with a decline in Performance of WSPS.

4.4 Regression Analysis

The study conducted a multiple regression to establish the relationship between the study variables. Coefficient of determination explains the extent to which changes in

the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (performance of WSPs) that is explained by all the four independent variables (funding sources/access to financing, cost of capital and risk financing pattern).

Table 4.3: Results of multiple regressions between performance of WSPs and the combined effect of the selected predictors

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.809[a]	.654	.583	1.63

Source: Research Data

The four independent variables that were studied explain 58.3% of the performance of WSPs as represented by the adjusted R^2. This therefore means the four variables contribute to 58.3% of performance of WSPs, while other factors not studied in this research contributes 41.7% of performance of WSPs. Therefore, further research should be conducted to investigate the other (41.7%) factors influencing performance of WSPs.

Table 4.4: Summary of One-Way ANOVA results of the regression analysis between performance of WSPs and predictor variables

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5316.984	3	1772.328	8.947	0.0011
	Residual	8122.127	41	198.101		
	Total	13439.11	44			

Source: Research Data

From the ANOVA statistics in table 4.3, the processed data, which are the population parameters, had a significance level of 0.0011 which shows that the data is ideal for making a conclusion on the population's parameter. The F calculated at 5% Level of significance was 8.947. Since F calculated is greater than the F critical (value = 2.601), this shows that the overall model was significant i.e. there is a significant relationship between funding sources/access to financing and performance of WSPs.

Table 4.5: Regression coefficients of the relationship between performance of WSPs and the three predictive variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.451	10.715		2.189	.021
	Access to Financing	0.5924	0.174	0.254	3.922	.025
	Cost of Capital	-0.1862	0.012	-0.453	-2.617	.016
	Risk Financing	0.2974	0.056	0.014	5.311	.037

Source: Research Data

The coefficient of regression in table 4.4 above was used in coming up with the model below:

$Y = 23.451 + 0.5924\ X_1 - 0.1862\ X_2 + 0.2974\ X_3$

From the model, taking all factors (funding sources/access to financing, cost of capital and risk financing pattern) constant at zero, performance of WSPs was 23.451. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in funding sources/access to financing lead to a 0.5924 increase in performance of WSPs; unit increase in cost of capital will lead to a -0.1862 decrease in performance of WSPs; a unit increase in risk financing pattern will lead to a 0.2974 increase in performance of WSPs. According to the model, all the variables were

significant as their P- value was less than 0.05. Funding sources/access to financing and risk financing pattern were positively correlated with performance of WSPs while cost of capital is negatively correlated.

4.4 Discussion of Research Findings

From the above regression model, the study found out that funding sources/access to financing and risk financing pattern had a positive effect on the performance of WSPs while cost of capital had a negative effect. The study found out that the y-intercept was 23.451 for all years.

The three independent variables that were studied (funding sources/access to financing, cost of capital and risk financing pattern) explain a substantial 58.3% of performance of WSPs as represented by adjusted R^2 (0.583). This therefore means the three variables contribute to 58.3% of performance of WSPs, while other factors not studied in this research contributes 41.7%of performance of WSPs. The findings of this study agree with the findings of Rajan and Zingales (1998) who argued that finance (more specifically financial development) does have real effects on organization performance. In addition, Chittenden et al (1996) show that financial structure is significantly related to the growth of any sector only when the sector is experiencing a rapid growth combined with a lack of access to the external capital market. A separate strand of the literature addresses the determinants of firm growth without any reference to the firm's financial structure and its access to external funding.

The study established that the coefficient for funding sources/access to financing was 0.5924, meaning that funding sources/access to financing positively and significantly influenced the performance of WSPs. This correlates with Hovakimian, Hovakimian

and Tehranian (2004) who concluded that on average, there is a strong positive relationship between internally and externally generated funds and financial sustainability. Insufficient financing is a major factor in poor maintenance which, in turn, is often cited as a reason for project failure (Garande & Dagg, 2005). Availability of funds for recurrent costs is seen as a major factor influencing the performance of water project intervention (Fierbusch, 1990).

The study also established that the coefficient for cost of capital was -0.1862, meaning that cost of capital negatively but significantly influenced the performance of WSPs. In line with these findings, Verrecchia (2007) predicts that increasing the leverage ratio should result in lower agency costs of outside equity and improved firm performance, all else held equal. However, when leverage becomes relatively high, further increases generate significant agency costs of outside debt – including higher expected costs of bankruptcy or financial distress – arising from conflicts between bondholders and shareholders, because it is difficult to distinguish empirically between the two sources of agency costs. Despite the importance of this theory, there is at best mixed empirical evidence in the extant literature (Ehrhardt, 2001).

The study also established that the coefficient for risk financing pattern was 0.2974, meaning that risk financing pattern positively and significantly influenced the performance of WSPs. This concur with Corsetti et al (2000) who mentioned weak corporate performance and risky financing patterns as important causal factors for the East Asian financial crisis. In addition, Olsson (2008) argues that company balance sheet problems may have a role in causing financial crisis, independently of macro-economic or other weaknesses, including a poor performance of the corporate sector itself. Further, Sharfman (2008) in a study of the relationships between institutional

factors and financial structures highlighted that institutional factors in a particular country are likely to greatly influence the performance and financing patterns of firms, including their risk-taking behavior.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The performance on water projects in developing countries is alarmingly low, due to a lack of resources, capabilities and spare parts for service and maintenance. However, many developed governments and donor agencies have made substantial investments in projects to improve supplies of water in poor rural areas. Kenya faces serious challenges with regards to provision of water services despite the efforts of investments provided in the past years by the Government and development partners since existing facilities have continued to deteriorate and fail to meet the demand of the increasing population, particularly in many rural areas and the very rapidly growing settlements of the urban poor.

The objective of this study was to assess the effect of government and other agencies funding on the performance of water service providers under Athi Water Services Board. A descriptive research design was applied in this study. The target population of this study was the nine water company's under Athi Water Services Board. These include: Ruiru-Juja, Thika, Karimenu, Gatundu South, Githunguri, Kiambu, Limuru, Kikuyu and Karuri Water and Sewerage Co Ltd. The study collected secondary data from company's Audited Financial Statements for the Five years and also from the WARIS report submitted to WASREB. Quantitative analysis was used through descriptive statistics. Inferentially, a regression analysis was conducted to establish the coefficients of each variable of interests. In order to make the data more user-friendly and attractive to the readers, graphic interactive tables were generated using the computer spreadsheet to present the data.

The three independent variables that were studied (funding sources/access to financing, cost of capital and risk financing pattern) explain a substantial 58.3% of performance of WSPs as represented by adjusted R^2 (0.583). The study established that the coefficient for funding sources/access to financing was 0.5924, meaning that funding sources/access to financing positively and significantly influenced the performance of WSPs. The study also established that the coefficient for cost of capital was -0.1862, meaning that cost of capital negatively but significantly influenced the performance of WSPs. The study also established that the coefficient for risk financing pattern was 0.2974, meaning that risk financing pattern positively and significantly influenced the performance of WSPs.

5.2 Conclusions

Water utilities in Africa differ greatly in terms of size, organizational culture and operating environments. They share one major challenge of funding access to appropriate levels of services to their growing urban populations as can be seen clearly in the context of the MDGs where Africa lags far behind other regions. It is now widely acknowledged that insufficient funding of African water utilities are a major cause of poor access to water services. Availability of funds for recurrent costs is seen as a major factor influencing the performance of water project intervention (Fierbusch, 1990). Many developed governments and donor agencies have made substantial investments in projects to improve supplies of water in poor rural areas. The study concludes that funding sources/access to financing positively and significantly influenced the performance of WSPs. The three independent variables that were studied (funding sources/access to financing, cost of capital and risk financing pattern) explain a substantial increase of 58.3% of performance of WSPs among Water Services Providers under Athi Water Services Board as represented by

the adjusted R^2 (0.583). This correlates with Hovakimian, Hovakimian and Tehranian (2004) who concluded that on average, there is a strong positive relationship between internally and externally generated funds and financial sustainability. Insufficient financing is a major factor in poor maintenance which, in turn, is often cited as a reason for project failure (Garande & Dagg, 2005).

The study also concludes that cost of capital negatively but significantly influenced the performance of WSPs. In line with these findings, Verrecchia (2007) predicts that increasing the leverage ratio should result in lower agency costs of outside equity and improved firm performance, all else held equal.

The study finally concludes that risk financing pattern positively and significantly influenced the performance of WSPs. This concur with Corsetti et al (2000) who mentioned weak corporate performance and risky financing patterns as important causal factors for the East Asian financial crisis.

5.3 Limitations of the Study

The main limitations of this study are three-fold. First, with regard to data availability, the data can be traced back only for the past five years, possibly not long enough to capture the market cycle. Further, the data was tedious to collect and compute as it was in its very raw form. Due to lack of standardization of financial statements from various WSPs, data computation was made even harder.

Second, time and resources allocated to this study could not allow the study to be conducted as deeply as possible in terms of other predictor variables for performance of WSPs in Kenya or inclusion of all the WSPs in Kenya.

The strength of this research lies in its time limit. The scope of this research was for the 5 years ending and including the year 2014. It is not known whether the results would hold if a longer period would have been researched upon. Further it is not possible to tell whether the same findings will hold for the period after 2014.

The quality of the data may be a weakness of this study. It is not possible to tell from this research whether the results are simply due to the nature and quality of data used or whether it is the true picture of the situation. Actually the use of the data from the various sources like the WASREB is based on the assumption that the data are accurately captured.

5.4 Recommendations for Policy and Practice

The study recommends that since funding sources/access to financing was seen to be a significant determinant of WSPs performance, the management should actively solicit for funding from the various sources from the development partners including focusing on possible PPPs. It is also necessary to consider the advantages and disadvantages of many options before selecting one. To be fair, the selection process should involve all relevant stakeholders. The study recommends that water companies should solicit for more funds from donors, increase the range of services they provide and beef-up their governance structure since financial sustainability is achieved when service and infrastructure levels and standards are delivered according to a long term plan.

The WSPs management should effectively control use of resources by analyzing resource utilization on a regular and timely basis so as to be able to identify resource variances and inefficiencies early so that corrective action can be taken before the situation gets worse. The Management of the water project should conduct

appropriate project audit periodically to identify the organization risk area and their nature so as to reliably assess levels of risk with full understanding of the organization and its internal and external environment so as to enhance the project Governance.

Good water governance is important for both public and private providers and is crucial for successful WSPs. Governance concerns not only the institutions but also the interactions between different levels/bodies of government and the interaction between all the stakeholders involved and the government. Principles of good governance (transparency, accountability, customer focus, health and environmental protection) are key to sustainable water services and should be at the core of any reform. There is a need to find tools to better implement good governance principles.

The management should be undertaking effective monitoring and evaluation through active process of regular performance reviews and the commitment to: anticipate and influence events before they happen by taking a proactive approach; provide knowledge and information about predicted events; inform and, where possible, improve the quality of decision making, keep track of the identified financial risks, monitoring the residual financial risks and identifying new financial risks.

The management should consider technicalities involved in water supply and sanitation service provision such as risk financing patterns and cost of capital, even when they are trying to live up to their promises. This will lessen compromises on the part of service providers that hinder the opportunities for adequate revenue generation by water supply companies and also handicaps the revenue that would have complemented the funds available for expansion to underserved areas; because the management seeks to keep tariffs low, adjustments may not even be considered for approval, if they are being amplified. The water companies should further adopt more

flexible policies and procedures that will not make them susceptible to fraud but enable them respond well to environmental turbulence.

5.5 Suggestions for Further Research

For further studies, it will be interesting to investigate the effect of private sector investment in water infrastructure development on the level of performance of WSPs since the private developers operate from a different strategic and financial footing from the government. Also, comparing the effect of government and private sector investment in water on the level of performance of WSPs could be another line of study that would be interesting to engage in.

The study only focused on nine water companies under Athi Water Services Board. Further study should include more of the WSP to generate a more generalized result on the effect of government and other agencies funding on the performance of water service providers in Kenya.

This study focused on the empirical historical data only. Performance of WSPs is also affected by non empirical factors. There is need to complement the findings of this research using a qualitative approach to find out the current behavioral issues affecting performance of WSPs such as leadership and governance.

Another study should also look on the effect of social infrastructure development especially the human resource on performance of WSPs. This is because the physical infrastructure can only enhance the performance of WSPs if there exist a sustainable social infrastructure. Other studies should also be done on the effect of microeconomic variables (internal factors) on performance of WSPs.

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APPENDICES

Appendix I: Research Data

Risk Financing

	2010	2011	2012	2013	2014
Ruiru-Juja Water & Sew co Ltd	0.0911	0.0999	0.2961	0.1940	0.0924
Thika Water & Sew Co Ltd	0.1038	0.1708	0.0866	0.2210	0.1433
Karimenu Water & Sew Co Ltd	0.0644	0.1060	0.2093	0.1121	0.0889
Gatundu-South Water & Sew Co Ltd	0.0594	0.1643	0.2583	0.2074	0.0930
Githunguri Water & Sew Co Ltd	0.0890	0.1464	0.2890	0.1894	0.1019
Kiambu Water & Sew Co Ltd	0.0733	0.1206	0.2322	1.3590	0.1011
Limuru Water & Sew Co Ltd	0.0869	0.1013	0.2823	0.2260	0.1199
Kikuyu Water & Sew Co Ltd	0.0781	0.1039	0.2051	0.1344	0.0871
Karuri Water & sew Co Ltd	0.0903	0.1353	0.2767	0.1672	0.1180

Source: Athi Water Service Board (2015)

Access to Financing (Government Funding and Development Partners in Ksh)

	2010	2011	2012	2013	2014
Ruiru-Juja Water & Sew co Ltd	565,000,000	4,501,907	12,028,708	10,079,941	11,932,553
Karimenu Water & Sew Co Ltd	11,346,273	10,393,587	11,723,578	10,995,469	11,405,776
Thika Water & Sew Co Ltd	7,448,051	13,385,188	11,348,901	12,141,191	11,504,246
Gatundu-South Water & Sew Co Ltd	12,744,777	9,693,743	8,974,373	10,253,297	18,720,563
Githunguri Water & Sew Co Ltd	9,744,482	10,475,364	10,617,718	11,837,043	17,000,159
Kiambu Water & Sew Co Ltd	10,019,647	12,615,847	11,438,290	14,457,825	13,877,624
Limuru Water & Sew Co Ltd	11,753,817	13,238,100	16,079,813	13,837,622	11,483,716
Kikuyu Water & Sew Co Ltd	10,523,285	9,078,313	13,218,518	15,780,722	17,612,776
Karuri Water & sew Co Ltd	9,444,570	12,855,420	10,781,788	10,364,792	17,262,854

Source: Athi Water Service Board (2015)

Cost of Capital (Ksh)

	2010	2011	2012	2013	2014
Ruiru-Juja Water & Sew co Ltd	475,000	217,529	180,431	151,199	178,988
Thika Water & Sew Co Ltd	0	0	0	0	0
Karimenu Water & Sew Co Ltd	170,194	155,904	175,854	164,932	171,087
Gatundu-South Water & Sew Co Ltd	0	0	0	0	0
Githunguri Water & Sew Co Ltd	0	0	0	0	0
Kiambu Water & Sew Co Ltd	0	0	0	0	0
Limuru Water & Sew Co Ltd	0	0	0	0	0
Kikuyu Water & Sew Co Ltd	0	0	0	0	0
Karuri Water & sew Co Ltd	0	0	0	0	0

Source: Athi Water Service Board (2015)

Performance of WSPs as measured by the nine key indicators for the year: 2009/10

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Score (200)**
Gatundu-South Water & Sew Co Ltd	50	90	69	0	18	58	78	10	131	57
Githunguri Water & Sew Co Ltd	24	42	30	100	8	96	77	13	138	81
Karimenu Water & Sew Co Ltd	21	100	89	75	5	70	81	6	113	50
Karuri Water & sew Co Ltd	10	0	45	100	8	100	84	8	77	49
Kiambu Water & Sew Co Ltd	78	68	58	100	11	100	96	9	107	90
Kikuyu Water & Sew Co Ltd	23	46	54	100	18	98	103	6	68	85
Limuru Water & Sew Co Ltd	23	34	38	82	8	71	100	8	84	65
Ruiru-Juja Water & Sew o Ltd	48	95	31	100	14	90	85	8	112	100
Thika Water & Sew Co Ltd	91	46	39	97	24	75	88	5	88	86

2010/11

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Score (200)**
Gatundu-South Water & Sew Co Ltd	68	95	62	76	20	0	80	9	154	92
Githunguri Water & Sew Co Ltd	14	92	32	94	8	98	89	5	153	132
Karimenu Water & Sew Co Ltd	48	90	60	67	5	84	81	9	128	65
Karuri Water & sew Co Ltd	12	70	30	54	12	99	92	8	101	91
Kiambu Water & Sew Co Ltd	33	90	37	98	9	100	101	9	100	112
Kikuyu Water & Sew Co Ltd	20	85	54	37	16	94	87	8	85	60
Limuru Water & Sew Co Ltd	25	70	30	94	6	76	113	9	102	64
Ruiru-Juja Water & Sew o Ltd	44	95	31	95	17	100	98	5	145	129
Thika Water & Sew Co Ltd	93	94	36	94	24	79	92	5	111	124

2011/12

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Score (200)**
Gatundu-South Water & Sew Co Ltd	70	59	0	91	20	75	82	6	120	87
Githunguri Water & Sew Co Ltd	35	0	49	96	14	83	90	11	80	59
Karimenu Water & Sew Co Ltd	65	0	44	96	22	84	87	10	102	96
Karuri Water & sew Co Ltd	58	80	29	0	10	100	91	9	87	83
Kiambu Water & Sew Co Ltd	35	91	32	96	9	65	105	5	85	84
Kikuyu Water & Sew Co Ltd	25	85	42	96	12	0	87	8	94	71
Limuru Water & Sew Co Ltd	56	64	32	58	0	100	91	7	104	98
Ruiru-Juja Water & Sew o Ltd	57	79	30	96	17	100	99	4	113	123
Thika Water & Sew Co Ltd	93	79	35	54	24	83	88	6	113	119

2012/13

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Score (200)**
Gatundu-South Water & Sew Co Ltd	80	62	53	57	20	88	84	5	146	104
Githunguri Water & Sew Co Ltd	26	71	39	40	13	91	93	11	76	57
Karimenu Water & Sew Co Ltd	74	79	43	41	22	100	90	7	125	117
Karuri Water & sew Co Ltd	59	91	32	41	12	93	98	6	86	99
Kiambu Water & Sew Co Ltd	35	88	41	76	9	96	76	9	95	62
Kikuyu Water & Sew Co Ltd	27	87	45	96	12	93	100	5	87	92
Limuru Water & Sew Co Ltd	40	95	34	68	17	100	94	7	107	112
Ruiru-Juja Water & Sew o Ltd	61	82	30	95	20	100	97	3	121	145
Thika Water & Sew Co Ltd	95	92	30	95	24	100	97	6	107	155

2013/14

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Score (200)**
Gatundu-South Water & Sew Co Ltd	81	65	58	51	15	90	75	8	115	84
Githunguri Water & Sew Co Ltd	30	75	35	49	15	94	95	8	95	81
Karimenu Water & Sew Co Ltd	75	79	48	39	20	100	75	9	95	78
Karuri Water & sew Co Ltd	60	90	39	39	10	90	90	9	80	83
Kiambu Water & Sew Co Ltd	40	90	35	80	12	98	90	6	112	90
Kikuyu Water & Sew Co Ltd	28	88	50	90	10	90	89	7	90	85
Limuru Water & Sew Co Ltd	35	79	46	65	12	92	85	9	105	65
Ruiru-Juja Water & Sew o Ltd	55	79	38	91	18	100	85	5	105	100
Thika Water & Sew Co Ltd	79	75	42	85	20	100	75	9	102	93

Key for performance measurement indicators

1-Water Coverage (%)

2-Sanitation Coverage (%)

3-Non-Revenue Water (%)

4-Water Quality (%)

5-Hours of Supply

6-Metering Ratio (%)

7-Revenue collection efficiency (%)

8-Staff Productivity (staff per a thousand connection)

9- Operation & maintenance cost coverage (%)

Performance measurement used to allocate scores to the key performance indicators

No	Indicators	Performance	Score
1	Water Coverage	Over 90%	30
		Less 49%	0
2	Sanitation Coverage	Over 90%	15
		Less 49%	0
3	Non Revenue Water	Less 19%	25
		Over 41%	0
4	Water Quality	Over 90%	30
		Less 90%	0
5	Hours of Supply	Over 21	20
		Less 10	0
6	Metering Ratio	100%	15
		Less 80%	0
7	Revenue Collection Efficiency	Over 95%	20
		Less 85%	0
8	Staff Productivity	Less 7	20
		Over 14	0
9	Operations and management cost coverage	Over 150%	25
		Less 89	0

Source: WASREB published annual Impact Report