A STUDY INTO BLENDED FINANCE AND INTEGRATED WATER RESOURCE MANAGEMENT SUSTAINABILITY IN ZIMBABWE. THE CASE OF SAVE CATCHMENT AREA.

BY

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DEDICATION

To my family and friends;

For the love and for always standing by me.

ABSTRACT

The main objective of the study was to explore the relationship between blended finance and IWRM sustainability in the water sector in Zimbabwe. Blended finance characteristics investigated in this study were financial leverage, financial and development impact, and financial return on investment.

Quantitative and qualitative IWRM factors were used as sustainable development measures. The study sample was selected using a stratified random sampling approach followed by simple random sampling. Further in pursuit of the study a quantitative research methodology was employed, utilising both descriptive and inferential statistics in analysing the data. For inferential statistics, correlation and regression analysis models were used. In addition, independent -tests and analysis of variance (ANOVA) models were performed on the data.

The study found a significant negative relationship between financial leverage (independent variable) and IWRM sustainability (Dependent variable). However, the study also found that there is a significant relationship between financial and development impact (independent variables) and IWRM sustainability. The study also found no optimum capital structure with blended finance characteristics in the water sector institutions in Zimbabwe. Finally, the study found that the identified blended finance characteristics and approaches can be used as a good predictor of IWRM sustainability by water sector institutions in Zimbabwe.

The implication of the research findings is that water institutions should increase their financial leverage for the purpose of increase financial and development impact and the return on investment when funding IWRM if they are to mitigate the risks of unsustainable development. It was recommended to policy makers for the introduction of a sector specific blending structure for the water sector.

The researcher further proposes that future studies should investigate the role of institutional framework, water governance and macro-economic factors on the relationship between blended finance approaches and IWRM sustainability in the water sector in Zimbabwe, Save Catchment.

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ABBREVIATIONS

AfDB – African Development Bank

CC – Catchment Council

CM – Catchment Manager

GWP – Global Water Partnership

IDA – International Development Assistance

IMF- International Monetary Fund

MDGs – Millennium Development Goals

ODA – Official Development Assistance

OECD – Organisation for Economic Cooperation and Development

OECD DAC – Development Assistance Committee

SDGs – Sustainable Development Goals

SIDA – Sweden International Development Assistance

SOEs – State Owned Enterprises

UNICEF – United Nations International Children Education Fund

WEF – World Economic Forum

ZINWA – Zimbabwe National Water Authority

CHAPTER 1

1.1 INTRODUCTION

Zimbabwe's water management system is based on the River hydrological system, making up of seven Catchments; Runde, Manyame, Sanyati, Gwayi, Mzingwane Mazowe and Save. The catchment's only source of income is the Water Fund grant from treasury and sub catchment levies, which are public funds from collection policies. Commercial capital commonly known as private funding for sustainable water investments is lacking in the financial market, and short term investment orientation. The study seek to discuss the role of blended financing and IWRM in channelling private funds into productive water investments. The water sector is underfunded and there is need to develop financial products with potential to mobilise additional funding from the private investor.

The research lay out financing concerns for sector gap on water infrastructure financing and sustainability of IWRM. The discussion concludes with discussion on blended finance characteristics in the context of strengthening the enabling environment for development finance and financial options available. Key researches on blended finance mechanisms emphasised mainly on financing for climate change, hence this study focuses on integrated water resource financing at catchment level of governance in the water sector.

1.2 BACKGROUND TO THE STUDY

According to the GWP (2012) there is evidence that in many countries WRM is inadequately funded, partly because of general fiscal and financial constraints, but also because the benefits of IWRM is not fully understood. OECD WEF (2015) reported that up to USD3.9 trillion per year in investment is required in developing countries between 2015 and 2030, and presently USD 2.5 trillion investment gap in critical sectors exist. This gap is reported to constitute approximately 1.1% of the value of global capital markets estimated at USD 218 trillion.

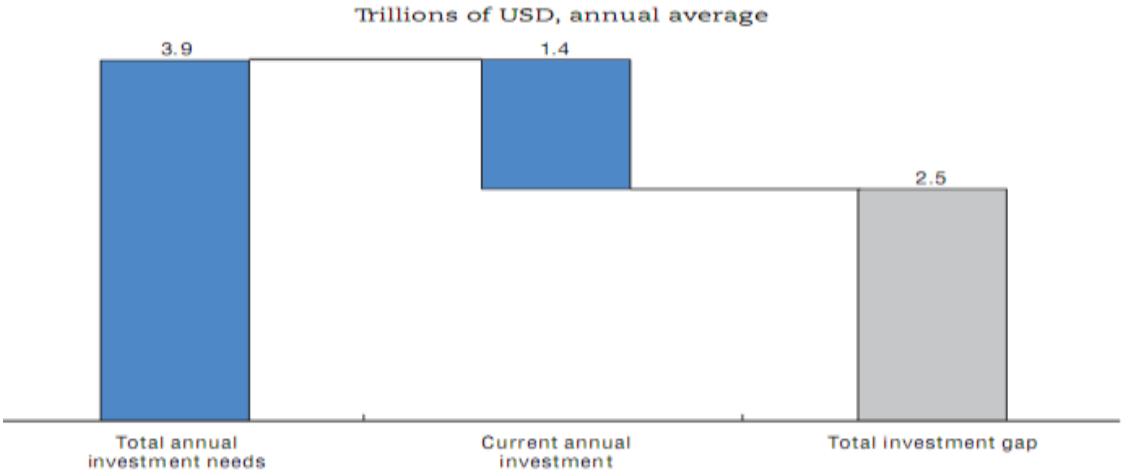


FIGURE 1 INVESTMENT GAP IN DEVELOPING *SOURCE: UNCTAD (2014)*

Recent analyses of water resources financing in Ghana, South Africa and Uganda and dialogues on financing water for climate resilience to ensure regional security in Southern Africa were identified as important elements in bringing the issue to the attention of African policy makers (Winpenney and Hall, 2012).

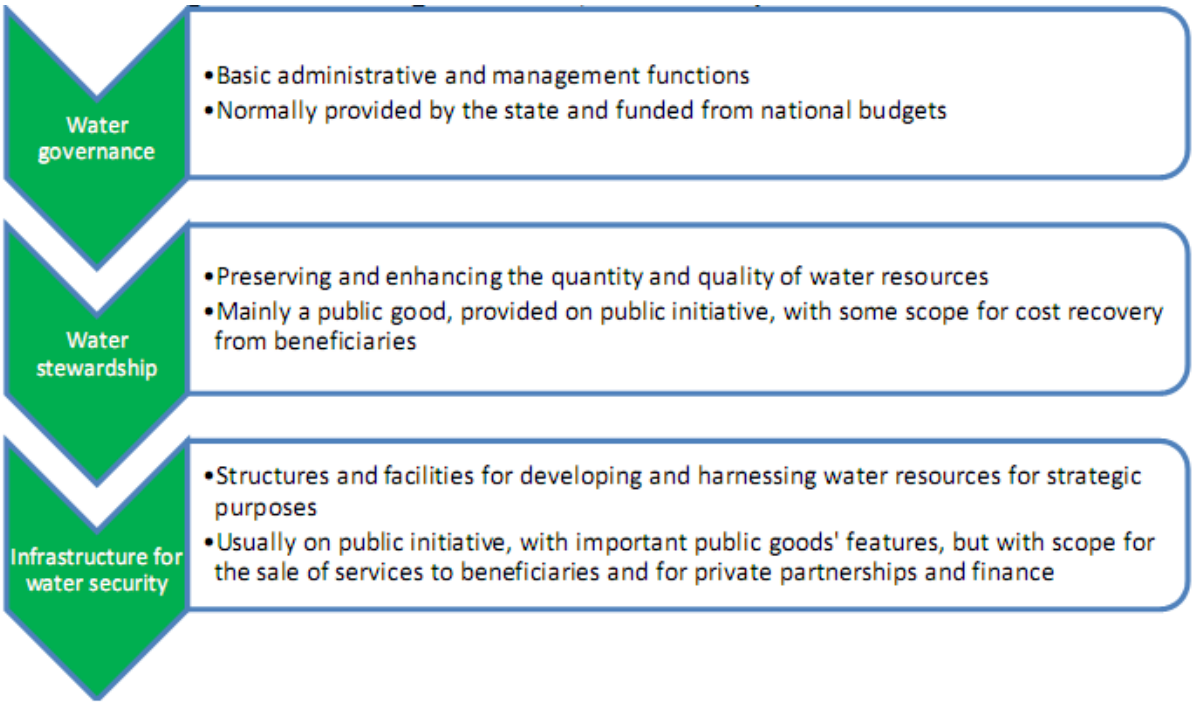


FIGURE 2: IWRM FINANCING CONTEXT

Motivated by world-wide changes in the governance of water underway, though there exist country specific variations to influence the extent and effect sustainable development has been challenged by funding problem (Saleth and Dinar, 2000). Alaerts, (2019) noted that financing for the water agenda has been dominated by public budgets. The author further notes that commercial finance holds a promise in a constrained high risk profile of many water investments. Apparently countries typically follow different methods to finance

infrastructure projects, however, ordinarily **taxes**, **tariffs** and **transfers**, the **3Ts** concept, being one way of describing financial approaches in the water sector (Ajami et al, 2018)

The goal to attain sustainable development in the water sector in Zimbabwe was initiated when the country adopted IWRM in 1998 as the programme able to facilitate achievement of SDGs on water supply and sanitation. Evidence suggest that urban centres piped water supply is very sporadic, sometimes unclean, partly due to poor sanitation and refuse systems resulting in many sewers which are highly polluted. It may appear that a number of foreign governments and NGOs are involved in water infrastructure projects to improve water supply and sanitation in Zimbabwe. Whereas developing water infrastructure is crucial for the well-being of any country in the world, there is not a single, best model for financing water according to the World Water Council, 2015 report.

According to the NWRMP (2019) report, there is evidence that funding for maintenance of dams is lacking in Zimbabwe, with both national and private dams inadequately maintained. The challenge to meet SDGs using public resources only is acute in LDCs and evidence shows that they are experiencing decline in ODA (OECD, 2018). Winpenny and Hall (2019) suggest that increase public and private financial flows must therefore be made to work for the world's vulnerable countries.

Zimbabwe has a relatively limited endowment of water resources compared to countries occupying similar climatic zones. The major rivers are Save, Runde, Mzinganwe, Gwayi, Sanyati, Manyame and Mazowe, all of which (except Save and Runde) drain into the Zambezi or Limpopo. According to AICD (2016) renewable water resource per capita was estimated at about 1547 cubic meters per year, well below Sub-Saharan African average of 7000 cubic meters. The seven main rivers make up seven catchment areas or basins and Save Catchment is one such drainage basin practising IWRM policy.

1.3 RESEARCH PROBLEM

The adoption of IWRM program had intended impact of delivering sustainable development goal on water supply and sanitation facilities. Apparently the state of water supply, infrastructure and sanitation provisions has been untenable and costly socially, environmentally and economically. United Nations in 2002, reported that Africa was facing a huge funding gap and unsustainable water resources management posing water security threat. In Zimbabwe the water sector institutions have been struggling with aging water supply infrastructure and reservoirs, treatment facilities, pumps and conveyance systems giving rise to high water losses. Sewerage treatment plans are overloaded, and in many cases have completely failed releasing raw sewage into the environment.

NWRMP (2019) reported that consultations with catchments councils revealed that there are funding challenges to undertake and supervise maintenance at catchment and sub catchment levels, old and dilapidated infrastructure, unqualified workforce to monitor and maintain infrastructure, lack of systematic approaches to

infrastructure maintenance, poor coverage of remote sites and high costs, vandalism and compliance . Evidence suggest that blended finance approaches provide the ability to mobilise additional capital from private investors who can spot the investment gap, and cover the funding gap to moderate IWRM unsustainability.

IWRM in Save Catchment is inadequately financed resulting in risk of unsustainable development and there is need to explore blended finance approach and IWRM sustainability in the Zimbabwean context.

1.4 PURPOSE OF THE STUDY

The purpose of the study was to establish the nature of the relationship between blended finance approach and IWRM sustainability in the Save Catchment, Zimbabwe.

1.5 RESEARCH OBJECTIVES

1.5.1 To determine the nature of the relationship between blended finance approach and IWRM sustainability in the water sector in Zimbabwe.

1.5.2 To ascertain whether there were differences in respondents' perceptions on the nature of the relationship between blended finance and IWRM sustainability.

1.5.3 To establish the direction and strength of the relationship between blended finance characteristics) and IWRM sustainability.

1.5.4 To determine whether blended finance can be used as a good predictor of IWRM sustainability.

1.6 RESEARCH QUESTIONS

1.6.1 What is the nature of the relationship between blended finance and IWRM sustainability?

1.6.2 Are there any differences in respondents' perceptions of the nature of the relationship between blended finance and IWRM sustainability?

1.6.3 What is the direction and strength of the relationship between blended finance characteristics and IWRM sustainability?

1.6.4 Can blended finance characteristics be used as a good predictor of IWRM sustainability?

1.7 RESEARCH HYPOTHESIS

H*1* The level of capital structure combinations with blended finance characteristics in the Save Catchment in Zimbabwe is poor.

H*2* There are significant differences in respondents' perceptions on the nature of the relationship between leverage, returns and impact characteristics and IWRM sustainability in the Save Catchment in Zimbabwe.

H*3* There is a significant relationship between blended finance characteristics and IWRM sustainability in the Save Catchment in Zimbabwe.

H*4* Blended finance characteristics can be used as a good predictor of IWRM sustainability in Zimbabwe.

1.8 RATIONALE OF THE STUDY

OECD (2019) noted that blended finance in the least developed countries suggest that SDGs are not all about transformation driven by partnership, risk-taking and innovation. Moreover, international and domestic public finance remains essential to meet SDGs signifying that public resources alone are not sufficient enough. The challenge is critical in LCDs and LICs like Zimbabwe, which has experienced terminal decline in ODA and finding it difficult to attract private investment, including FDI, in the water sector.

Yet despite the significance of the water sector to the broader economy, there has been very little studies exploring the water sector finance in Zimbabwe, at catchment level. Furthermore, earlier studies on relationship between blended finance and sustainable development are inconclusive or yielded contradicting findings. Failure to consider the financial environment in which water sector institutions operate as the case is with previous studies renders the findings difficulty to generalise to the Zimbabwean context. Francis (2019) suggest that blended finance, through multi-stakeholder partnerships and blending structures, aims to mitigate against risks by sharing risk, leading to development or public sector partners entering into project to act as first-loss funders in order to attract further private sector funding. A few of the local studies have explored water sector security, being confined to water reform and governance, none looked at the nature of blended finance approach and IWRM sustainability association.

The research methodological perspective of previously related studies utilised primary data to develop models used as proxies to measure risk of institutional or unsustainable development. Some of the criticism given for use of developed models was that global development partners have apparently been suspected in manipulation of data thereby rendering research findings not to be entirely relied upon to predict sustainable development. In that regard, the researcher sought to measure IWRM sustainability by assessing the symptoms using primary data. As such the anticipation is that the research study will contribute significantly to the existing literature in development finance and the focus on blended finance approaches.

By endeavouring to find whether blended finance characteristics can be used as a good predictor of IWRM sustainability in Save Catchment, the hope was that policy makers in the water sector and all engaged development partners would benefit, particularly if there is a connexion to;

- ✓ Water sector institutions would benefit through informed financial policy formulation.
- ✓ Investors and service providers would benefit through well-informed decisions on water infrastructure investments prospects.
- ✓ Policy makers will use the research in the formulation of water finance policy and legislation, e.g. alignment of water legislation to investment framework to mitigate against unsustainable projects and governance.

The researcher has a keen interest in development finance and sustainable development in the water sector. Undertaking the research study was very much in the researcher's carrier interest.

1.9 SCOPE OF THE STUDY

The research was limited to Save Catchment area and focussed on water institutions, development partners contributing towards water supply and sanitation goals, local authorities and financial intermediaries involved in the area during the year 2020.

The study restricted the target population to institutions associated with water supply and sanitation provision and functional within the Save Catchment since evidence suggest that relatively little or no research on blended financing approach and IWRM sustainability in Zimbabwe has been robustly assumed.

A cross sectional data methodology was used (Cheng, 2007). Institutions treasures/accountants, managers, grants officers, development analysts, and administrators were ideal candidates as they were assumed to have in depth knowledge of water supply, infrastructure, investments, administration and national policy.

1.10 DISSERTATION OUTLINE

The research study is divided into five main chapters as follows;

Chapter One: This chapter gives the outline of the research and includes a brief explanation of the research background to blended finance and sustainable development in IWRM. The chapter addresses justification for the research study, explains research objectives, questions and aim, hypothesis, scope of research, limitations, assumptions and outline of the dissertation.

Chapter two: This chapter is made up of literature review on underlying and supporting theories which include blended finance theory, sustainable development theory and IWRM programme. Supporting theories include corporate finance theories and the theory of change. The theories are critically analysed and an

empirical review of the relationship between blended finance characteristics and sustainable development presented. The conceptual framework and conclusion are also covered.

Chapter three: This chapter deals with methodology, philosophy and design adopted to undertake the research. It presents the methods and approaches used in conducting the study. Elements such as research design, sampling method, and data collection strategies will be considered.

Chapter four

This chapter contains presentation and analysis of primary data collected using questionnaires. Presentation of data is facilitated through the use of bar charts, graphs and diagrams. Brief discussions are also included in the chapter to explain each graph.

Chapter five

This chapter presents summary, conclusions and recommendations. The section gives a brief of the major findings and draws conclusions based on the findings and issue recommendations appropriate as intervention where necessary.

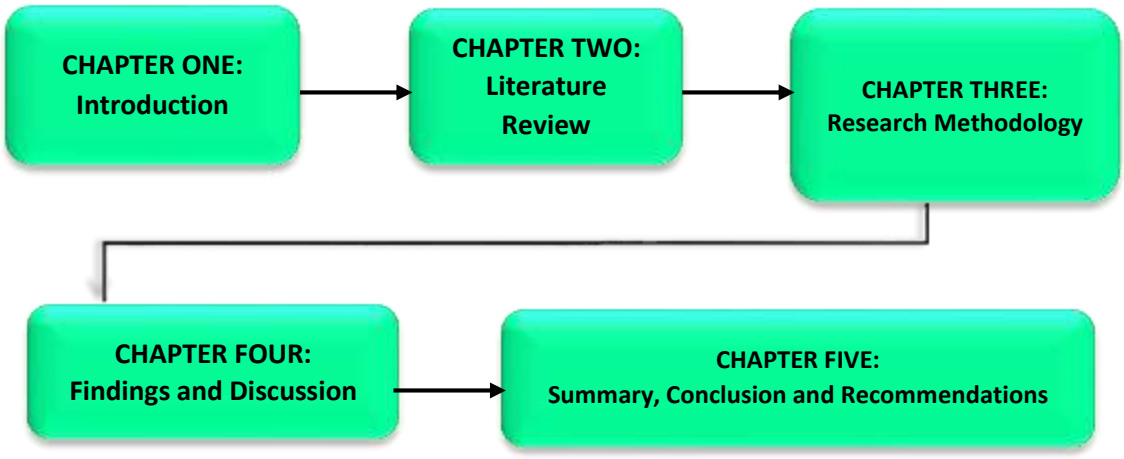


FIGURE 3: SUMMARY OF THE FLOW OF THE STUDY

1.11 CHAPTER SUMMARY

The chapter covered the introduction and background to blended finance and IWRM sustainability in the Save Catchment as the research area. It also introduced the research problem and outlined the research process with reference to research objectives, questions, aim and hypothesis. The scope and rationale for the study was explained. The following chapter addresses the reviewed literature.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter provided an overview of the research study. This chapter seek to provide theoretical literature on blended finance approach and IWRM sustainability and an empirical analysis. In particular, the chapter emphasises the most important paradigms relevant to the investigation. This literature review also addresses principles and characteristics of blended finance and IWRM hypothetical foundations. Moreover, major models and theoretical frameworks in the field of blended finance models (OECD, 2018), corporate finance theory (M&M 1958), and theory of change (2008), sustainable development (UN, 1992) and integrated water resource management (AfDB, 2000). The literature review is finalised by recognising and clarifying a gap in the present pool of literature that this dissertation attempts to eliminate.

2.2 THEORETICAL FRAMEWORK OF BLENDED FINANCE APPROACH

Trochim (2006), noted that a theoretical framework guides research, determining what variables to measure and what statistical relationships to look for in the context of the problems under study. This therefore means the theoretical literature review helps the researcher to clearly understand the variables to be analysed in the study and it provides a general framework for data analysis.

According to the OECD (2019) report blended finance approach offers potential opportunities to increase the resources available to LDCs and the missing middle. Apparently, a report by Winpenny and Hall (2012) provide evidence that in Sub-Sahara Africa financing for IWRM is not given prominence in the water world and underfunded in many countries. WECD (1987) states that sustainable development is an old concept that has been used in management of renewable natural resources to ensure to ensure that the rate of harvesting a resource is smaller than the rate of its renewal. Chitiga et al (2016), The World Bank (2018), Lawrence and Prior (2015), Ewing & Guliwe (2005) concur that the government alone cannot solve for all social challenges through the use of traditional development assistance, macro-economic programmes and legislative incentives to garner investment in key transformational areas. Currently, the Zimbabwean government is faced with freshwater uncertainty and high variability which can only be dealt with investment in storage works (NWRMP, 2019).

To substantiate the theoretical framework the researcher considered corporate finance theory, particularly concept of leverage and return on investment. Database searches were carried out to collect articles for potential inclusion in the literature review. Key search terms and phrases used were; blended finance approaches, sustainable development, IWRM and water sector investments. To qualify for inclusion in the review, an article should have been written in English, published between 1990 and 2019, working papers should have been published from 2000 onwards and consideration was on peer reviewed journals. Relevant

journals were collected from Sage, Wiley online library, Google Scholar, Ebscohost and OECD iLibrary. Reference list was considered in order to identify possible articles to include in the review. Selected articles' abstracts, introductions and conclusions were read several times to identify emerging themes across the collective findings and to identify any contradictions.

2.3 BLENDED FINANCE CONCEPT

The concept and rationale behind blended finance is not new, its rise started back in 2007 with the creation of structured mechanisms or blending platforms by the EU (Pereira, 2017). Blended finance was defined by the OECD DAC (2018), as the strategic use of development finance for the mobilisation of additional finance towards the Sustainable Development Goals in developing countries. Development finance in this context, includes Official Development Finance (ODF) as well as private funds that are governed by a development mandate, for example, financing provided by philanthropic organisations such as the Bill & Melinda Gates Foundation. The principle focuses on the increased mobilisation of additional commercial finance.

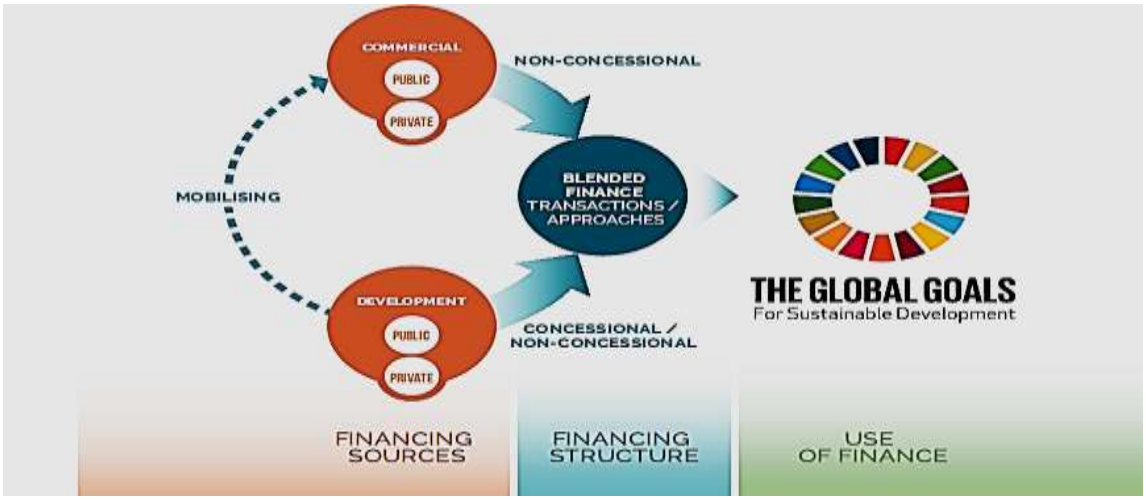


FIGURE 4 BLENDED FINANCE APPROACH SOURCE: OECD DAC (2017)

Official development finance (ODF) to the water sector is made up of concessional financing (ODA) and non-concessional financing (OOF). According to OECD/DAC definitions, ODA comes in the form of grants and concessional loans provided by official agencies on concessional terms. Winpenny et al (2016) noted that Sub Saharan Africa attracted the highest amount of ODA for water at 29%, followed by South & Central Asia attracting 25% and Kolker et al (2016) noted that development banks would typically adapt their lending terms to countries' circumstances.

AAAA (2016) discussions presented blended finance as activities that combine "concessional public finance with non-concessional private finance and expertise from the public and private sector, special-purpose vehicles, non-recourse project financing, risk mitigation instruments and pooled funding structures. Pereira (2017) noted that 'blending' is a common development finance term, and a practice that combines official

development assistance with other private or public resources, in order to 'leverage' additional funds from other actors.

Drawing from the definitions the primary purpose of blended finance is to resolve the investment or funding gap challenge in developing countries in the quest to attaining of SDGs by 2030, through availing additional finance. The World Economic Forum (2015) report presented the rational for blended finance as shifting the investment risk-return profile with flexible capital and favourable terms to overcome the problem of low returns relative to high real and perceived risks that limits private investments, sharing local market knowledge and experience to bridge knowledge and capacity gap, building local capacity to help support local markets and shaping policy and regulatory reform to help improve the local investment climate. The main lever by which blended finance is supposed to mobilise additional capital is by adjusting the risk-return relationship of a single investment, either by taking away part or total risk from investors or by enhancing a project's returns according to the OECD (2018).

In the absence of more substantial evidence about blending, the discussion about limitations and potential of blending remains at a theoretical level (Pereira, 2018). He notes blending as a tool to address market failures but there is not necessarily a lot of space or demand for it to operate. Further, he asserts that blending should be considered within a clear country framework, opportunity costs consideration in blending evaluation, models of leveraging role, and qualification of the "additionality" when combined with public finance for development. Philippe L (2019, October 10) in a study of water financing, noted that blended finance is not the panacea since the development gap in low-income markets are huge. He emphasises that investor appetite cannot be stimulated by de-risking efforts at the project level alone. More so, that blended finance is an instrument to compensate for some of the market failures and uncertainties that are stifling private investments in more challenging places. Gietzen (2019) agrees and stresses that currently blended finance accounts for only a very small amount of total flows to developing countries.

According to the Development Initiatives paper (Nov 2016), less than 1% of total investment flows are mobilised by blended finance. Convergence (2018) mentions that blended finance deals may affect the sustainability of developing countries' debt, as blended finance deals always increase a country's indebtedness, whereas grant financing does not. Critics of blended finance evoke a lack of transparency and a lack of ownership by partner countries of such transactions (Gietzen, 2019). Clark et al (2018), Tobin et al (2014) and Egler & Frazao (2016) argue that there exist a disconnection between investors seeking projects that are assured positive financial returns, rather than projects seeking funding due to lack of perceived viability. Battacharya & Khan (2019) argue that barriers to private investment are often intrinsic and systemic concerns that adversely affect the ability to create an enabling environment, thus exposing blending finance instruments to an array of challenges.

2.3.1 UNDERLYING PRINCIPLES OF BLENDED FINANCE

The centre of blended finance is on the mobilisation of commercial finance which is not currently being directed towards development-related investments. OECD DAC (2018) noted that the commitments which include ODA financing targets, the commitment on leaving no one behind and commitments related to development effectiveness as well as those related to untying aid, apply to development finance in the same way as to other financing approaches. The principles were explained as;

Principle 1:

Anchoring blended finance use to a development rationale. OECD DAC (2017) argued that the distinctive nature of blending in this context, when compared to other ways of using development finance, is that development outcomes and impact are financed to the largest extent possible by commercial sources of finance, rather than exclusively by development finance.

Principle 2:

Design blended finance to increase the mobilisation of commercial finance. OECD DAC (2017) suggest that by definition development finance resources are part of financing base for sustainable development, thus to grow this base, and to mobilise finance at the scale that is required to meet development needs, the focus must be on finance that is not already deployed to development priorities, i.e. commercial resources that do not primarily have a development purpose. However, Pereira (2015) defined the concept of 'additionality' in finance mobilisation as the unique inputs and services that the use of ODA funds provide in addition to those delivered by market and non-market institutions. The principle ensure additionality for crowding in commercial finance.

Principle 3:

Tailor blended finance to local context. This means all development finance interventions, including blended finance activities, are based on the mandate of development finance providers' to support developing countries in achieving social, economic and environmentally sustainable development. Development finance should therefore be deployed to ensure that blended finance supports local development needs, priorities and capacities, in a way that is consistent with and where possible contributes to, local financial market e.g. Seeking opportunities to work with local financial actors and avoid approaches that discriminate against the local financial sector.

Principle 4:

Focus on effective partnering for blended finance. Blended finance works if both development and financial objectives can be achieved, with appropriate allocation and sharing of risk between parties, whether commercial or developmental. Aim for scalability.

Principle 5:

Monitor blended finance for transparency and results. To ensure accountability on the appropriate use and value for money of development finance, blended finance operations should be monitored on the basis of clear results frameworks, measuring, reporting on and communicating on financial flows, commercial returns as well as development results. Ensure public transparency and accountability on blended finance operations.

2.3.2 CORPORATE FINANCE THEORY

Mutairi et al (2007) suggests that the development of the theory of corporate finance since 1950 has witnessed the formulation of major building blocks of modern theory of financial economics. The authors assert that Modiglian & Miller (1958) laid an important foundation for a positive theory of financial structure by developing the implications of market equilibrium for optimal debt policy. The nature of blended finance and sustainable development is a complex phenomenon which could not be investigated sufficiently with a single theory. Accordingly the research incorporated theories of corporate finance.

Mihaela (2007) suggest that the debate on structure of corporate finance were pioneered by Modigliani and Miller (1958). The author noted that M&M formulated two statements with major rebounds in subsequent research; *the market value of a firm is independent of its capital structure and of its leverage, respectively* (in other words, the debt/equity ratio does not have any impact on the global value of the firm) and *a firm's leverage has no effect on its weighted average cost of capital* (Miller and Modigliani, 1958). The theory states that the value of the firm is not dependent on the choice of capital structure of financing decision of the firm.

Criticism of the M&M theory led to the development of the Trade-off theory, also known as the theory of the balance between the deadweight costs of bankruptcy and the tax shield benefits derived from debt. Theory emphasised the role of tax shields benefits arising from debt financing. Kraus and Litzenberger (1973) proposed the classical version of Trade-off theory, and stated that the optimal leverage level reflects a trade-off between the tax shield benefits of debt and bankruptcy costs. They showed that for a specific period, the market value of a levered firm is equal to the market value of an unlevered firm, to which is added the present value of the tax shield of debt less the present value of bankruptcy costs.

Further to the development of the trade-off theory, Scott (1977), argues that higher leverage increases the risk of bankruptcy and financial distress and argues that the theory is applicable to large firms that are able to generate higher earnings. Contrary to Scott (1977), Pettit and Singer (1985) stated that trade-off theory applies to a lesser extent to small firms which are unlikely to have considerable earnings.

Donaldson (1961) proposed the pecking order theory and affirmed that the order of financing sources takes precedence over their weight. The theory is premised on the assumption that the firm cannot set a target debt-to-value ratio. Myers (1984) introduced an extended version of the theory where asymmetric information available to managers and investors causes adverse costs of selection (and determines the perking order in

financing new projects). Accordingly M&M theory and second proposition for the real world condition state that the cost of equity has a directly proportional relationship with the leverage level.

Interestingly, Gietzen (2019) interrogates the idea that the financing structure impacts investments in light of changes overtime. He stresses that there is no reason to believe that incentive effects of the financing structure play any less of a role in the financing of development projects than the behaviour of a firm, thus the more it seems worthwhile to give more attention to the relationship of financing structure and development results. The author also contends that while incentive effects of the financing structure on investments are well known in corporate finance, the development finance community has paid much less attention to it.

2.4. BLENDED FINANCE CHARACTERISTICS

2.4.1 FINANCIAL LEVERAGING (BFL)

Leveraging according to Alawi (2019) results from using borrowed capital as a funding source when investing to expand the firm's asset base and generate returns on risk capital. Brealey et al (2001) refers financial leverage to the extent to which a firm relies on debt. Leverage is therefore an investment strategy of using borrowed money, specifically, the use of various instruments or borrowed capital, to increase the potential return of an investment. Pereira, J (2015) argued that 'leverage' and 'leverage ratios' is an important concept in blended finance, concurring with Miller & Modigliani (1958) second proposition that equity cost has direct link with leverage level. Hayes defined a leverage ratio as the relationship between the amount of finance mobilised and the amount of finance that has been injected (essentially ODA or concessional finance). It is thus an arithmetic ratio and can be construed in many different ways depending on the amount being compare. The UE, for example, monitors Investment leverage ratio which compares the blending grant with the total amount of investment in the project (Pereira, 2017). However, the author argues that leverage ratios are purely mathematical and they have no implication for causality, leverage ratios can provide an indication of leverage effect only when additionality can be demonstrated, use binary definition of additionality (yes/no) and some leverage ratios do not seem to complete sense and involve some bold assumptions.

2.4.2 FINANCIAL RETURN (BFR)

To calculate the return that investors are expecting from particular stock using CAPM, three things are required; the risk-free interest rate, the expected market risk, and beta. Brealey et al (2001) argued that choosing a discount rate is seldom easy. OECD in 2016 presented a proposal that showed a substantial gap in the discount rates applicable to operations in different countries (LDCs + LICs: 6%; LMICs: 4%; UMICs: 3% or 1%) (Ibid, 2016).The report claim that blended finance interventions aim to create both financial returns and positive social and environmental outcomes. Described simply, these interventions enhance an investment's potential return—the money it makes over time—relative to its risk factor—the possibility of incurring a financial loss instead of a return. In other words, they improve the investment's risk-adjusted return, thereby making it more attractive to investors (Convergence, 2019). Risk-adjusted returns are an important factor in an investor's decision to invest in an activity, fund, or company. If two investment

opportunities have the same anticipated return over the same duration of time, the one that has the lower risk will have the better risk-adjusted return, making it the more likely choice for investment (OECD, 2018)

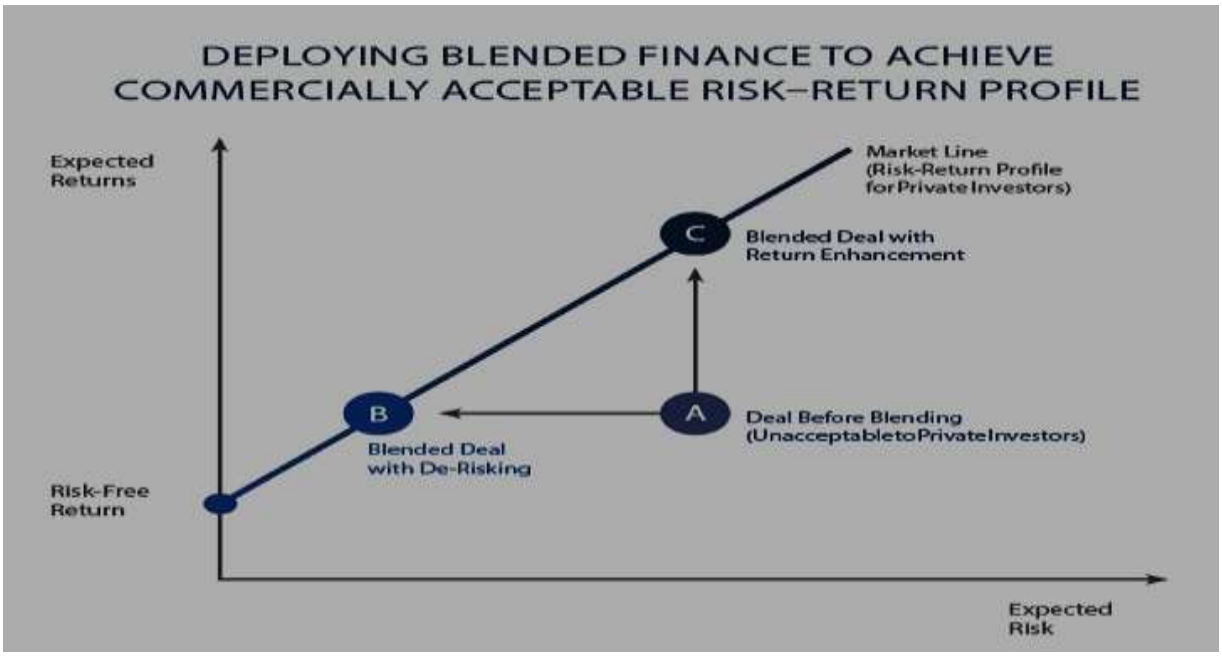


FIGURE 5 RETURN - RISK PROFILE` SOURCE: JAMES CHEN (2018)

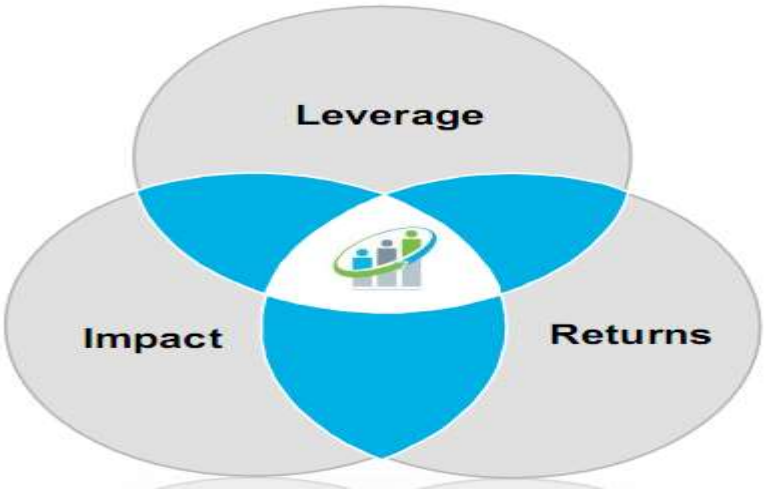


FIGURE 6: CHARACTERISTICS OF BLENDED FINANCE SOURCE: OECD (2017)

Ajami et al (2018) found that compared to the transport and energy industries, the water sector had seen very little private investment in the past. Blackstone (2017) findings revealed that in the United States, private participation in the water /wastewater sector is 12%, which reflects the continued dominance of public sector ownership and operation of water systems. The idea of **"water as a financial risk"** remains a predominant part of the private sector's attitude towards investments in water, and as a result has not brought a lot of private funding into international water programs as many would have liked (World Bank, 2017). Jin et al (2014) found various ways for private investors' to participate in the water sector. Furthermore, he noted that water stocks had outperformed the broad stock market, however, returns on water investments varied substantially with the chosen asset.

2.4.3 FINANCIAL IMPACT (BFI)

Attridge and Engen (2019) seem to suggest that two main forms of blended finance impact, financial additionality and development additionality. According to the authors, financial additionality occurs when public investments results in private investments that would not have materialised without it, while development additionality is whereby development impacts are secured in a commercial investment that would otherwise not have materialised. According to EC (2015), blending comprise the goals to provide;

- Financial leverage through mobilising public and private resources for enhanced development impact,
- Non-financial leverage through improving project sustainability, development impact, quality, innovation and enabling faster project start,
- Policy leverage through supporting reforms in line with EU and partner country policies,
- Aid effectiveness through improved cooperation between European and non-European aid actors,
- Visibility through providing more of EU development funding.

Karin and Grohs (2019) argued that the risk of using ODA as a tool to leverage private funds diverts public resources from sectors that are key for poverty reduction in Low-Income Countries. Bhattacharya and Khan (2019 support that blending should not be used to push for further privatisation of infrastructure at the expense of citizens. However, UN (2014) noted that some Heavily Indebted Poor Countries (HIPCs) have begun issuing debt on international markets, facilitated by low interest rate environment. The report found out that Sub-Saharan Africa local currency debt increased from 12 billion to 31billion in 2012, and that the excessive domestic and international debt posed economic risks, underscoring the need for prudent debt management. This apparently place financial impact in the water sector on spotlight.

World Water Council (2018) noted that difficulties of low return and high risks presented for improving the bankability of water infrastructure projects and proposed changes that engage with the challenge of inadequate water infrastructure, lack of financial innovation increasing risks. Money (2018) also argued in support of financial additionality, that the rate of return that water infrastructure assets can sustainably generate depended on the income associated with those assets. Surprisingly, Brealey et al (2001) argues that the impact of leverage on ROI is to magnify the gains of and losses of investors. The scholar implies that leverage and returns contribute to financial impact.

2.5 SUSTAINABLE DEVELOPMENT THEORY

United Nations General Assembly (1987) defined Sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their needs. Emas (2015) noted that by utilising economic tools, early theorists offered that policies to protect environment could also promote innovation and turn a profit. The scholar cite Arthur Pigou (1920) who posits that the presence of incidental, uncharged services act as a barrier to achieving equilibrium in the market. In his works, Pigou recognized that the divergence between marginal private costs and benefits and marginal social costs and

benefits create what we now call "externalities" (Pigou, 1920). Porter and Van der Linde (1999) theorised, in support, pollution as a sign of inefficient resource use. Hey suggested that win-win opportunities for the environment and economy can be captured through improvements which reduce pollution in production processes. These authors argue that competitive advantages rely on the capacity for innovation; thus by stimulating innovation, strict environmental regulations can actually enhance competitiveness (Porter and Van der Linder (1995). Cooper and Vargas (2004) reason that market-based environmental tools are generally perceived as more 'business friendly' than traditional command and control policies.

The inherent interdependence between the long term stability of the environment and the economy is the foundation of sustainable development (Emas, 2015). Porter and Van der Linde (1995) emphasised that sustainable development policies look to tackle the sources of environment degradation, not just the symptoms, while still providing opportunities and creating incentives for economic advancement. Cerin (2006), Denbarch (1998, 2003) and stoddart (2011) agree that the concept of conserving resources for future generations is one of the major features that distinguish sustainable development policy from traditional environmental policy , which also seeks to internalise the externalities of environmental degradation. The overall goal of sustainable development (SD) is the long term stability of the economy and environment, which is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process.

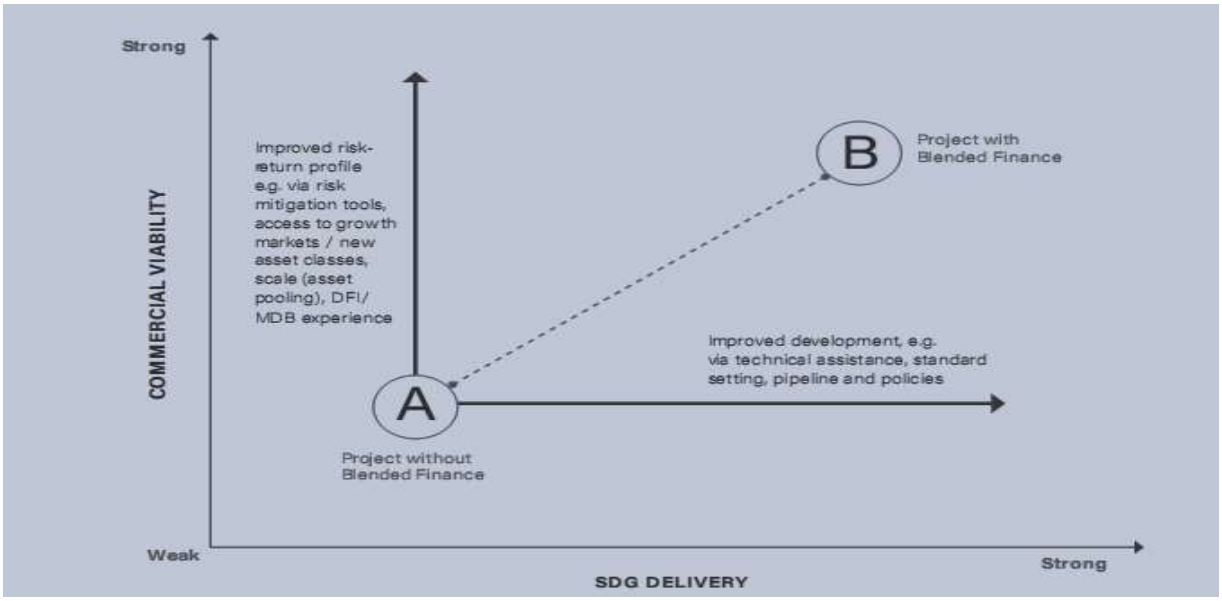


FIGURE 7: BLENDED FINANCE VIABILITY *SOURCE: BFT (2018)*

Sustainable development, therefore, implies using environmental resources in a manner which does not eliminate or degrade them, or otherwise diminish their usefulness for future generations (Jibril, 2019). It involves a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development and institutional harmony and enhance both current and future potentials to meet human needs and aspirations (Jibril, 2019)

Mindjov (1999) reproduced the 1992 Rio De Janeiro Declaration on the Environment and Development major principles on sustainable development. These are;

i. Everyone has the right to healthy and productive life in harmony with nature.
ii. Present and future generations are equally entitled to this right.
iii. Environmental protection must be seen as part of any developmental process.
iv. Each country has the right to utilise its own resources, without affecting the environment beyond its borders.
v. The polluter must compensate the damage caused to the environment; 'polluter pays' principle.
vi. Economic activities are combined with the principle of acquiring preventive measures for environment protection.
vii. States must cooperate for environment protection.
viii. The alleviation of poverty and living standards, inequality in the different parts of the world are an integral part of sustainable development.
ix. State must limit and extinguish the unstainable modes of production and consumption, and enhance the appropriate demographic policy.
x. The most efficient way of solving environmental problems is the involvement of all interested parties.
xi. States must develop and encourage the informed participation of the population in decision-making process (Participatory democracy).
xii. States must develop and implement effective legislation for environmental protection.
xiii. Environmental protection must involve all social groups.
xiv. Peace, development and environmental protection are inter dependent and indivisible.

The theory was criticised for its vagueness. Marshal (1998) argue that it is difficulty for governments which tend to be accounted to electorates over short term periods (such as four years or so) to accept the political consequences of promoting sustainable development. Brunel (2008) argued that the idea of sustainable development is perfectly helping out capitalism and protectionism from the developed countries, and thus impede the development of other countries. Anderson (2002) argued that the real purpose of sustainable development is to contain and limit economic development in developing countries. However, sustainable development is one of the leading issues in the contemporary development discourse.

2.6 IWRM SUSTAINABILITY CONCEPT

IWRM was defined by the Technical Committee of the Global Water Partnership (GWP, 2000) as a process which promotes the coordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Jonch-Clausen (2004) noted that the definition addresses water governance in a larger context through consensus building, and calls for the involvement of stakeholders at all levels.

Furthermore, that the definition recognises water as a key determinant of the character and health of ecosystems, and as such, the hydrological unit (Saravanan et al, 2009)

FIGURE 8: IWRM PROGRAMME *SOURCE: GWP, 2004*

AfDB (2000) noted that international concerns about water resources management led to the global consensus on the need to adopt a new approach to managing water resources. The Bank Group developed the new Integrated Water Resources Management (IWRM) policy. IWRM challenges conventional, fractional water development and management systems and places emphasis on integrated approaches with more coordinated decision making across sectors and scales (AfDB, 2000). The concept recognises that exclusively top-down, supply led, technically based and sectorial approaches to water management are imposing unsustainable high economic, social and ecological costs on human societies and on the natural environment. Butterworth (2014) argued that IWRM as a concept is naïve and idealistic, while other scholars contended that IWRM takes insufficient account of the politics that are at the core of most (if not all) important water-related decisions. Rather confusingly, the IWRM concept has also been criticised for being too broad and narrow that it focuses mainly on water and ignores important linkages between land and water management.

2.6.1 NATURE OF IWRM

(UNCED, 1992) provided guidelines for the implementation of IWRM, Duplin Principles were formulated at the United Nations Conference on Environment and Development. These are;

- ✓ Fresh water is a finite and vulnerable resource, essential to sustain life, development and environment.
- ✓ Water development and management should be based on a participatory approach, involving users, planners, and policy makers at all levels.
- ✓ Women play a central part in the provision, management and safeguarding of water.
- ✓ Water has an economic value in all its competing uses and should be recognised as an economic good.

2.6.2 COMPONENTS OF IWRM

GWP (2008) acknowledge and agreed the key components of IWRM process as;

- ✓ Managing water resource at the lowest possible level
- ✓ Optimising supply
- ✓ Managing demand
- ✓ Providing participatory and transparent governance and management.
- ✓ Establishing improved and integrated policy, regulatory and institutional frameworks.
- ✓ Utilising an inter-sectoral approach to decision making.
- ✓ Integrating management means receiving multiple benefits from a single intervention

Evans, (1997) suggest that water resources management is an old idea, dating back to storage reservoirs and aqueducts built thousands of years ago. One version of IWRM was established in United States in the 1930s, as an outgrowth of multiple use river basin development spurred by US federal financing of flood control and reclamation projects. However, Kasirye and Lakal, (2018) argued that research findings features many challenges in water infrastructure, supply and sanitation provision, the contribution of each factor is open-ended

Therefore IWRM can be viewed as a means to achieve three strategic objectives; Equity in water allocation to different stakeholders (e.ge social and economic groups), Efficiency in water transfer and use, and Environmental sustainability and protection of the water resources base. These salient pillars of IWRM provide an excellent fit with the emerging trend of democratising science and hydrology in particular (Paul & Buytaert, 2018). This view is aligned to the measure sthat are used in this study for sustainability challenges in IWRM policy.

2.7 EMPIRICAL REVIEW

2.7.1 BLENDED FINANCE APPROACH AND IWRM SUSTAINABILITY

Research on sustainable development outcomes as a measure for evaluating blended finance impact on IWRM has been considered and identified on multiple aspects of capital structure combinations from a range of perspectives. Prior findings showed a list of quantitative and qualitative risks associated with the practice of blending approach that could undermine its impact or that of ODA flows in general (Pereira, 2017). OECD (2018) evidence found suggest that that private commercial companies are the most frequent direct investee type among blended finance vehicles because of risk tolerance (Basile and Dutra, 2019). Nonetheless, the results show that evaluations conducted by blended finance vehicles are seldom publicly available. The common practice is to share reports only with internal management facilities) or with investors.

Derman and Manzungu (2016) found that one central mechanism for attempting to remove water finance management from political considerations was utilising ecological boundaries as the new units of management and participation. Evidence suggest that two Catchments- the Mazowe and Mapfure (now Sanyati) were the initial efforts towards IWRM sustainable development, stepping away from central water authority as argued by Derman and Manzungu, (2016). Taylor et al, (1996: 12) suggested that Mapfure Catchment was funded by

the Dutch government through grant, with the intention to serve as a model for more sustainable distribution of water. Apparently the specific objective of the project was to support disadvantaged communities to improve their opportunity to represent themselves in water management issues, and to give preference to the protection of the environment (Taylor et al, 1996). However the Dutch government withdrew from funding Sanyati Catchment in 2001 (Derman and Manzungu, 2016).

Empirical evidence disclose that the Mazowe pilot water management project focused on creating functioning council and sub-catchment councils, and mobilising additional finance for development (Derman, 2009). It may appear that aspects of IWRM were included in the Water and Zinwa Acts in 2000 as part of national water governance policy (GoZ, 2000). However, Derman and Manzungu (2016) argue on the massive donor- and –international influence in the adopting of IWRM in Southern Africa.

World Water Council (2015) findings show that blended finance approach use of funds from different sources to create a single tailored solution for constructing multi-purpose infrastructure. Gonzalez (2015) support and add that the approach showed great promise to mobilise local and foreign sources of capital more effectively and help to bridge the funding gap for high impact projects that have initially highly perceived risks and commercially viable in the long run. Possibly, the reason for adopting IWRM policy in Zimbabwe was to mitigate effects of unsustainable development in most public water works.

Talyor (2002) seem to suggest that sustainable development has to do with inter-temporal resource allocation, and that it is natural to expect a close connection between the interest rate and sustainability. Fidanosky et al (2016) findings showed that a link between the financial sector's growth and economic development is established when a mechanism is employed to induce saving and to stimulate investments, thereby contradicting Taylor suggestions. In a study on Zimbabwe by UNICEF (2018) WASH programme, it was found that between 2008 and 2018, ZINWA, Catchment Councils and Sub-catchment Councils failed to function without additional support from government to cover shortfalls in their operational budgets because of unsustainable low revenues. The findings identified limited and shrinking resources for the Zimbabwe water sector and faced with the question of whether it is economically and financially preferable to rehabilitate the infrastructure or build new infrastructure (UNICEF, 2018).

2.7.2 FINANCIAL LEVERAGE AND IWRM SUSTAINABILITY

There is little empirical studies on the relationship between leverage and sustainable development. Easterly (2009) found out that the international community has had experience in collective goal setting and tracking in light of the process used to define and execute against the Millennium Development Goals (MDGs). Sayer (2005) also found out that the private sector engagement in water sector programmes was very little and in the process saw no need to contribute beyond doing less harm. Nelson (2007) in the study on blended finance flows in ASIA, found that there was significant focus on aid from advanced economies to developing

countries, with few incentives for other stakeholders in the developed world to get engaged beyond their support for providing concessionary finance.

Temple, (2011) found that there are many theories that explain the concept of leverage, consequently exists no universalistic theory about leverage because the explanatory power of theories that might explain leverage is based on various conditions and circumstances. Bancel & Mittoo (2004) and Brounen et al (2006) agreed that the determinants of leverage in Europe, though their study was performed using different sample sizes, different European countries and different companies, differs from those of LICs and LDCs. They found evidence that financial flexibility obtained by selecting the timing issuing of debt or equity based on interest rates and market value is the most important determinant of leverage, using different theoretical explanations for their findings. Leary and Roberts (2005) argue that the leverage decisions mainly depend on adjustment costs of leverage instead of the interest rates and market value determinants.

De Jong et al (2008) noted the influence of firm-specific factors in leverage decisions into account and conducted a world-wide survey to investigate the leverage determinants. Their findings showed that country specific factors such as creditor right protection, tax rate, bond market development and GDP growth rate, having a significant influence on corporate capital structure. The authors discovered that there is a difference in the magnitude of firm-specific factors affecting leverage decision in different countries, such as firm growth and profitability. Benn et al (2017), Attridge and Engen (2019) and DFI Working Group (2018) findings revealed that only a small portion of blended finance was used for projects in Low Income Countries, thus agreeing with karin et al (2019) findings. James et al (2018) findings also revealed that water professionals could manipulate evidence about the economic and social benefits of investing in water infrastructure and services. Hasan (2014) in his studies in Saudi Arabian water sector institutions, found that leverage levels tend to lead to higher profit margins and returns on water assets and equity in the absence of acute downturns.

2.7.3 FINANCIAL IMPACT AND IWRM SUSTAINABILITY

Empirical studies on the relationship between impact and sustainable development is inconclusive and have yielded mixed findings. European Commission (2016) concluded in its report on analyses of a larger part of the EU's blended finance facilities that EU-projects relying on blended finance achieve intended outcomes and that blending finance sources have added significant value to EU's lending operation and that of DFIs. Gietzen (2019) findings revealed that 83% of all projects using blended finance in the sample of financing instruments for projects evaluated since 1990 were successful. The results by means of t-tests showed that the success rates of blended finance projects had higher than the success rates of projects financed by grants or highly concessionary loans. Consequently, the author concluded that the financing structure of development projects can impact their development results. Alearts (2015) in his findings, concluded that water is recognised as playing a pivotal function that water related impacts are considered largest concern.

However, UNICEF (2016) reported findings of declining ODA impact due to both internal factors (economic and political turbulence) and external (donor priorities). Carter (2015) noted that researchers are unlikely to get empirical evidence that subsidies (grants) increase investment until somebody agreed to run a very expensive randomised control trial. The UK AIDNETWORK (UKAN, 2015) provides a useful review of research that attempt to find empirical evidence of 'additionality', in blended finance approaches, the findings are mixed. The absence of evidence is difficult to interpret because it often reflects inadequate efforts made to gather evidence (Carter, 2015).

Saarinen & Godfrey (2019) reported findings which publicised blended finance projects in agriculture and food security in developing and Least Developed Countries. The authors note that lack of theory of change as aligned to all stakeholders was limited, with insufficient information on results reporting, thus leading to an overall information gap on the impact of blended finance. They seem to argue that in order to critically evaluate blended finance projects, evidence needs to accompany a theory of change that is aligned to all partners. World Bank (2019) found that studies conducted in Bangladesh, Nepal and Uganda did not identify the availability of proper a priori assessments of potential development impact in the project designs of blended operations, except for mandatory mention of intended impact in project proposals without any guidance regarding how it will be measured.

Convergence (2017) findings show that the analysis of development impact is a complex activity, and argued that the alignment of blended finance transactions with SDGs illustrates core alignment with four of the SDG goals and a strong alignment with other seven goals. For instant, blended finance deals best aligned with Goal 17 (Partnership), Goal 9 (Industry and Innovation), Goal 1 (No poverty) and Goal 10 (Decent Work and Economic Growth). Goal No.6 (Water supply and sanitation) was not included in aligned deals. Kasirye and Lakal (2019) in a study about blended finance in Uganda, found that existing forms of financial blending and any related evidence remained scattered, hence limited comprehensive evidence on the blending portfolio, and its impact on development.

2.7.4 FINANCIAL RETURN AND IWRM SUSTAINABILITY

Efficient Market Hypothesis (EMH), submits that an operationally efficient stock market is expected to be externally and informationally efficient; thus "security prices at any point in time are an unbiased reflection of all the available information" on the security's expected future cash flows and risk involved in owning such a security (Reilly and Brown, 2003:57). The EMH implies that no group of investors should be able to consistently find undervalued or overvalued securities using a pre-selected strategy. The EMH has been widely accepted as valid, but evidence against market efficiency has mounting. Damodaran (1996) and Kothari (2001) argued that EMH could not be empirically proved in developing and emerging markets, concern on potential sampling errors, formative nature of behavioural theories and other econometric concerns.

Convergence (2017) claim that investment opportunities in developing countries do not have an attractive risk-return profile for private sector investors. For private sector to participate, absolute risk must be acceptable, the risk-return profile of investments must be at market prices or better, and diversification through the pooling of assets and projects across countries and sectors is required (Convergence, 2017). According to DCD/DAC (2017) findings revealed that top investors in blended finance deals have been MDBs and national DFIs (these include FMO, KfW and OPIC accounting for around 46% of public investors). Evidence suggest that MDBs, including the IFC, EIB, AfDB and ADB have been found to be commonly involved in blended finance deals, making up 30% of public deals. These institutions often provides guarantees and risk-insurance instruments that positively draw crowding in.

Top philanthropic investors in blended finance deals are primarily private foundations including Bill & Melinda Gates Foundation, Calvert Foundation, and Shell Foundation, which accounted for 56% of philanthropic investors according to Convergence (2017). The report suggest that blended finance deals are often impact-driven investments, looking for both a financial and social returns. Evidence show that there are a few institutional investors in the water sector, that take a prominent role in blended finance due to perceived high risk and low return Convergence (2017). OECD data reveal that 40 LDCs had private finance mobilised during 2012-2015. The report showed that private finance mobilised was positively correlated to gross national income, and the analysis indicated that energy, banking and financial services were constantly among the top two sectors for private finance mobilised.

Attridge and Engen (2019) found that additionality in development finance context was understood in two forms; financial additionality when public investments results in private investments that would not have materialised without it, and development additionality, whereby development impacts are secured in a commercial investment that would otherwise not have materialised. Basile and Dutra (2018) support the development finance context arguing that in volumes, blended finance was targeting sectors with a more favourable risk-return relationship, such as energy, banking and manufacturing. Benn et al (2017) found a similar trend in banking sector (33%), energy generation and supply (25%) and industry (14%)

2.7.5 INDICATORS OF IWRM SUSTAINABILITY IN THE SAVE CATCHMENT

Based on above literature indicators of IWRM sustainability extracted from the regulating acts and policies are summarised as:

- effective river system outline plan (Water Act of 1998)
- Financial discipline and accountability in water management (PFM Act)
- Technological development in the water infrastructure (ZINWA ACT)
- Environment protection from pollution and deforestation (EMA Act)
- Water quality and quantity provision

According to AfDB (2000), IWRM policy was to function as an important instrument for the fulfilment of development strategy vision by enabling the sustainable development of water resources for the purpose of attaining the main objective of poverty reduction directly, and also though its congruency with other sub-sectoral and cross-cutting themes. Kundzewicz (1997) suggest that sustainable development requires an integrated approach and a holistic perspective, in which a structure of inter-linked components is taken into account. That structure contains not only hydrological components, but also environment, economic, demographic, social-cultural, and institutional subsystems (Kundzewicz, 1996).

2.8 CONCEPTUAL FRAMEWORK

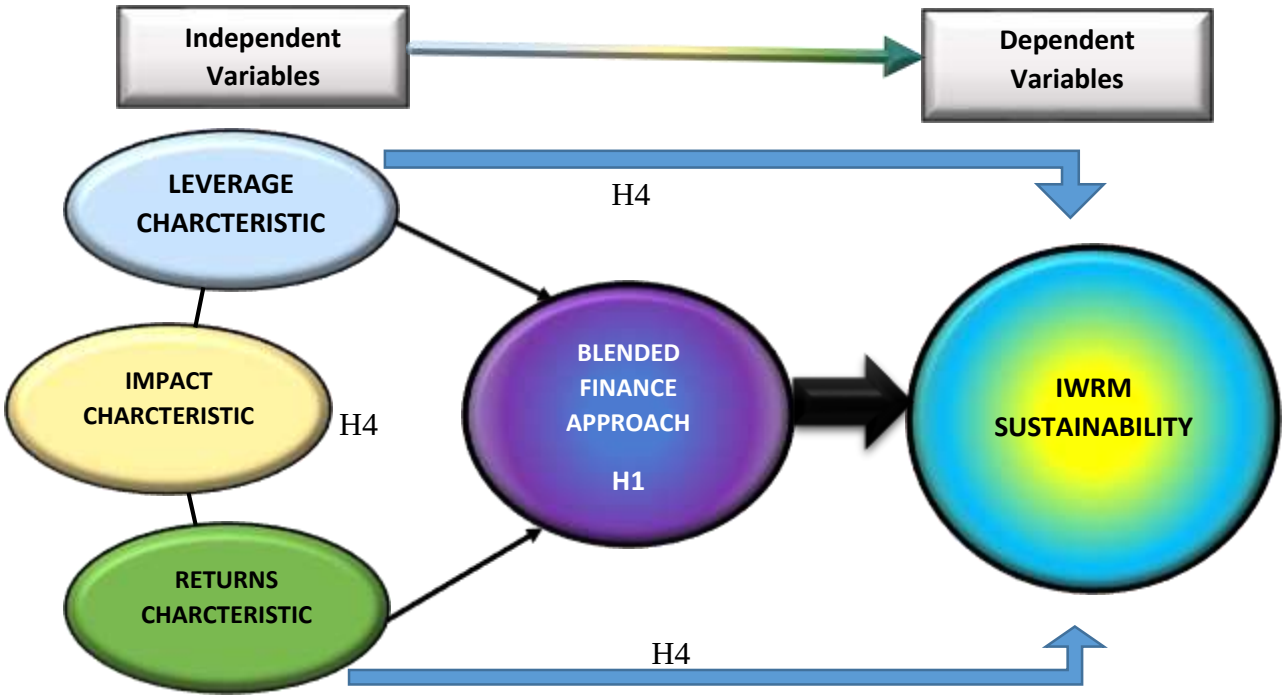


FIGURE 9: CONCEPTUAL FRAMEWORK *SOURCE: AUTHOR*

The conceptual framework for this study is represented above. Independent variables identified in the research are financial leverage, impact and return while IWRM sustainability was the dependent variable measured by water quality and quantity provisions, water infrastructure level, financial indiscipline and accountability, environmental protection levels. The research study faced inconsistencies on structure of blended finance approaches and domestic finances shaped by current water sector policies. Argument is that blended finance, rather than meeting SDGs, this mode of financing development fails to attract investments to the poorest countries and the services the poor need most e.g. health, education, water & sanitation, and preferring more profitable investment in finance, energy and industry in Middle-Income Countries.

The research's main proposition is that the level of capital structure with blended finance characteristics in the water sector investments in Zimbabwe is poor. The main research question was exploring the nature of the relationship between blended finance approach and IWRM sustainability. In order to answer the questions, a quantitative research approach was considered based on a survey administered through questionnaires.

2.9 CONCLUSION

In this chapter the contemporary literature on blended finance, sustainable development theory and IWRM concept was discussed. Extant literature on corporate finance was also argued. Research hypotheses and conceptual framework were also developed. Conclusion is yet to be reach as regards the complexity of blended finance approaches because there is few literature published on the relationship between blended finance approach and IWRM sustainability. The next chapter provides the methodology to be followed in the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter was a review of major theories underpinning this study. An empirical review of literature on the relationship between blended finance and IWRM sustainability was done, as well as the proposed conceptual framework. This chapter presents and justifies the research methodology which was adopted for the study. Research methodology is a set of systematic technique used in research (Chinelo, 2016). Collis and Hussey (2003) define research methodology as the overall approaches and perspectives to the research process designed to answer the following questions; why certain data is collected? What data is collected? Where data is collected? How data is collected and how data is analysed? The chapter also presents the research aim, primary research question, research hypothesis, philosophy, design and approach and strategy. Data collection methods and research instruments are covered in this chapter.

3.1.1 RESEARCH PURPOSE

The main objective of the study is to investigate the nature of the relationship between blended finance and IWRM sustainability in Zimbabwe.

3.1.2 PRIMARY RESEARCH QUESTION

Linking the main research objective with the primary research question of this study, the question was; what is the nature of the relationship between blended finance characteristics and IWRM sustainability in Zimbabwe?

3.2 RESEARCH PHILOSOPHY

Research philosophy relates to the development of knowledge and the nature of that knowledge (Saunders et al, 2009). Clark (2006) noted that as business and management researchers there is need to be aware of philosophical made through the choice of research strategy because this has significant impact not only on what researchers do but understanding what it is under investigation. Thus during the research process, researchers consciously or subconsciously make assumptions. Slife and Williams, (1995) posits that although philosophical ideas remain largely hidden in research, they still influence the practice of research and need to be identified. These assumptions constitute beliefs the researcher has about the nature of reality or truth (Ontology), values (axiology) and the nature of knowledge itself (epistemology). Saunders et al (2016) affirms that the system of beliefs and assumptions about the development of knowledge is what is known as research philosophy. Saunders agree with Johnson and Clark (2006) argument that the important issue is not so much whether our research should be philosophically informed, but how well we are able to reflect upon our philosophical choices and defend them in relation to the alternatives we could have adopted (Saunders et al, 2016).

The study was supported by post-positivism research philosophy because the researcher believes that the variables under study are quantified and objectively measured. Phillips and Burbules (2000) explained the term post positivism as representing the thinking after positivism, challenging the traditional notion of absolute truth of knowledge and recognising that we cannot be positive about our claims of knowledge when studying the behaviour and actions of humans. Furthermore, the study involved testing the hypothesis on causality relationship between quantifiable independent variables (blended finance characteristics) and the dependent variable (sustainable development of IWRM).

3.3 RESEARCH DESIGN AND APPROACH

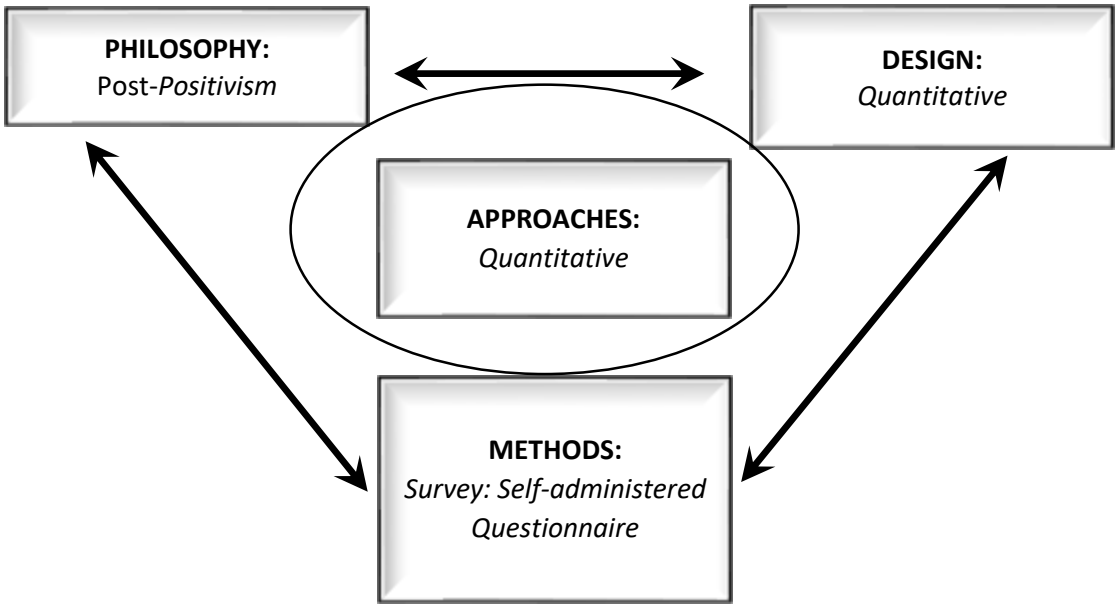


FIGURE 10: RESEARCH STUDY FRAMEWORK. SOURCE: OWN (2020)

Research design, is intended to provide an appropriate framework for a study (Sileyew, 2019). Aaker et al (2000) suggest that a very significant decision in research design process is the choice to be made regarding research approach since it determines how relevant information for a study will be obtained; however the research design process involves many interrelated decisions. Leedy and Ormorod (2010) defines research design as a plan for a study, providing the overall framework for collecting data. MacMillan and Schumacher (2001) agree with Leedy, and they further indicate that the goal of sound research design is to provide results that are judged to be credible. Durrheim (2007) view research design as a strategic framework for action that serves as a bridge between research questions and the execution, or implementation of the research strategy.

Saunders et al (2009) noted that there are two main research approaches; deduction and induction. With deduction a theory and hypothesis (or hypotheses) are developed and a research strategy designed to test the hypothesis. Induction involves data collected and a theory developed as a result of data analysis. Easterby-Smith et al (2008) argue that knowledge of the different research traditions enables you to adapt your research design to cater for constraints, enables you to make informed decision about the design and help in thinking about those research strategies and choices that will work for you , and those that will not.

The researcher adopted the deductive research approach which aligns with quantitative research design since the study seeks to investigate the strength and direction of independent and dependent variables. As a research, variable manipulation is unethical, requirement is to simply sample observed behaviours. Therefore this design is compatible with quantitative research and help to confirm or refute suspected relationships between or among variables (VUSSC & SADC-CDE, 2013).

3.4 RESEARCH STRATEGY

Saunders et al (2009) posits that research strategy/tactics is about finer detail of data collection and analysis, the centre of the research onion. The research onion has a section identifying strategies that include experiment, survey, case study, action research, grounded theory, ethnography and archival research. Yin (2009) also identified the seven choices of research strategies in agreement with Sanders et al. The authors classify research purpose as one of exploratory, descriptive and explanatory.

The choice of research strategy in this study was guided by the research questions and objectives, their association with post-positivism philosophy, deductive approach and the extent of knowledge, time and other resources availed and access to potential participants as adapted from Saunders et al (2009).

The researcher adopted post positivism paradigm and selected **survey research strategy**. S**urvey** strategy is usually associated with deductive approach, a popular common strategy in business and management research

and most frequently used to answer who, what, where, how much and how many questions (Saunders et al, 2009). Survey strategy is perceived as authoritative by people in general and is both comparatively easy to explain and understand (Saunders et al, 2009). It has the advantage of allowing collection of quantitative data which can be analysed quantitatively using descriptive and inferential statistics. Also, survey strategy can be used to suggest possible reasons for particular relationships between variables and to produce models of these relationships.

3.4.1 PILOT SURVEY

It is important that all surveys are tested before the actual survey is conducted (Adams et al, 2007). This is done to ensure that the questionnaire is clear to respondents and can be completed in the way the research wish, thus, it should be piloted on the sample to be used. The pilot survey test the following; wording of the questions, sequence and layout of the questionnaire, fieldwork arrangements, analysis procedures and used for training any fieldworkers engaged. It can also be used to estimate response rates and completion times (Adams et al, 2007).

3.5 TIME HORIZON

Owing to limited time frame imposed on final research submission within six months, a cross sectional time horizon was adopted by the researcher. Easterby-Smith et al (2012) and Robson (2002) agree that cross-sectional studies often employ the survey strategy. They assert that such studies seek to describe the incidence of a phenomenon, for example, the relationship between blended finance approaches and sustainable development. In contrast to longitudinal studies, data is gathered at more than one point in time in order to answer a research question (Sekeran and Bougie, 2013). The research study period was from 2009 to 2019. The year 2009 was conveniently chosen because it relates to declaration of MDGs in 2007 which were later replaced with SDGs in 2015.

3.6 DATA COLLECTION METHODS

Sekeran and Bougie (2013) related data collection as techniques used in gathering data during the research process, thus a problem researched with the use of appropriate data collection methods greatly enhances the value of research. There exist a logical link between data collection methods and the research approach adopted. Quantitative or deductive research approach is associated with surveys and questionnaires while qualitative or inductive approach is linked to interviews, focus groups, and observations.

3.6.1 DATA TYPES

Adams et al (2007) stated that data are the facts and figures collected for records or any statistical investigation. There are primarily two sources of information normally used for research; primary and secondary sources of data. Primary sources are those in which a survey is conducted for gathering information at different levels with regard to the inquiry. Secondary sources are those which are made available or have been collected for

other research purposes (Adams et al, 2007). Within secondary data exploration, a researcher should start first with an organisation's own data archives.

Primary data for the study would be obtained through the use of a structured questionnaire. According to Saunders et al (2009) questionnaire, as a general term, include all techniques of data collection in which each person is asked to respond to the same set of questions in a predetermined order (deVaus, 2000). It therefore, includes both structured interviews and telephone questionnaires. However, Bell (2005) and Oppenheim (2000) argue that it is far harder to produce a good questionnaire that one would think. The questionnaire will seek data from water institutions, development partners, financial intermediaries and institutional investors in the Save Catchment. The data will relate to capital structure combinations, development financial instruments, social impact and expected return on investment for the independent variables, while IWRM sustainability variable data was water quantity and supply problems, water quality challenge, increasing poverty and decreasing income, funding and liquidity challenge, unattractive water investments assets.

3.6.2 RESEARCH INSTRUMENT

The researcher used self-administered questionnaire as the research instrument. Sekeran and Bougie (2013) define a questionnaire as a 'pre formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives'. Questionnaires therefore tend to be used for descriptive or explanatory research. Jankowicz (2005) stress that if worded correctly, questionnaire normally require less skill and sensitivity to administer than semi-structured or in-depth interviews. Questionnaire development will be guided by the approach proposed by Cooper and Schindler (2007). The researcher will distribute self-administered paper questionnaire and electronic questionnaire (Zikmund et al, 2012).

3.7 DATA VALIDITY AND RELIABILITY

Cooper and Schindler (2009) pointed out that the characteristics of a good measuring tool is, it should be an accurate counter or indicator of what the researcher is interested in measuring, be easy and efficient to use. The three major criteria for evaluating a measuring tool are validity, reliability and practicality qualities.

3.7.1 DATA VALIDITY

Adams et al (2007) defined validity as the strength of drawn conclusions, inferences or propositions. Jupp (2004) state validity as the extent to which a research instrument measures what it purports to measure. It is believed that validity is more important than reliability because if an instrument does not accurately measure what it is supposed to, there is no reason to use it even if it measures consistently (reliably). Four types of validity commonly examined in research methods are internal, external, construct and conclusion validity.

Threats to validity cannot be completely eliminated, however the research will ensure complete validity of the questionnaire by conducting a pilot study. Threat to internal validity are history, maturation, testing, instrumentation, selection and mortality. External validity is challenged by reactive effects of testing, selection, and experiment setting (Adams et al 2007).

Bell and Waters (2014) suggested that no matter how constrained the research is in terms of time, it is important to perform a trial run for the questionnaire in order to determine whether it will be successful. Therefore the researcher will run a trial consisting of 10 respondents based on the study. A pilot will be used to find out, according to Bell and Waters (2014); how long the questionnaire took to complete, the clarity of instructions, which questions will be ambiguous, questions in which respondents were uneasy to answer, whether there were any major topic omissions, whether layout was clear and attractive.

3.7.2 RELIABILITY

A measure is reliable to the degree that it supplies consistent results (Cooper and Schinder, 2007). Reliability is a necessary contributor to validity but it is not a sufficient condition for validity (Malhorta et al, 2004). It is concerned with estimates of the degree to which a measurement is free of random or unstable error. Reliable instruments are robust; they work well at different times under different conditions. The time and condition distinction is the basis for frequently used perspectives on reliability, i.e. stability, equivalence and internal consistency (cooper and Schinder, 2007).

One measure widely used methods for measuring internal consistency is the Cronbach's Alpha coefficient, which estimates the degree of interrelatedness and variance among a set of items (Schumaker and Lomax, 2004). The test will show that the questions combined in scale are measuring one thing (Saunders et al, 2009).

3.8 POPULATION AND SAMPLING

Cooper and Schindler (2007) define population as the total collection of elements about which we wish to make inferences. A population element is an individual participant or object on which measurement is taken (Cooper and Schindler, 2007). A sample frame is a list used to define a researcher's population of interest from which a sample will be drawn. It refers to subject of research study, that is, the entire set of relevant units of data (Nachamias and Nachamias, 1996). The population for the study is made up of all water institutions, financial intermediaries, development partners and government departments.

The sample frame will be composed of water institutions, government departments, financial institutions and development partners within the Save Catchment. Contacts from ZINWA/Save Catchment database, MALWCRR and FAO databases was be used.

TABLE 1*: POPULATION FRAME*

SAVE CATCHMENT	Number	Source
▪ **Finance Intermediaries**	**30**	Banks, DFIs
▪ **Water institutions**	**120**	**www.zinwa.co.zw ;**
▪ **Development Partners**	**40**	**www.nango.co.zw;**
▪ **Government Departments**	**50**	EMA, Forestry, RDCs, UCs
TOTAL	**240**	

3.8.1 SAMPLING DESIGN AND SAMPLE SIZE

In this study, stratified random sampling was considered. Sampling enables a conclusion to be reached about the research objectives by inferring the sample results to the actual population (Saunders et al, 2009). Sampling techniques under probability sampling include simple random, cluster sampling, stratified sampling and systematic sampling. Rationale for sampling is to save time (Wilson, 2006).

The study will adopt probability sampling because of the inclination towards post-positivism and quantitative. Postpositivist accept that theories, background, knowledge and values of the researcher can influence what is observed (Parry et al, 2001). There are three reason a researcher chooses a stratified random sample; to increase a sample's statistical efficiency, to provide adequate data for analysing the various subpopulations or strata, and to enable different research methods and procedures to be used in different strata (Cooper and Schinder, 2007).

The target population will be divided into four strata as shown in fig 3.1 and the following formula is applied:

$$\frac{N}{1+N\,(0.05)2}$$

Where N is the population size (240) a sample size of 150 is determined. The number of sample from each stratum will be determined using proportionality of the strata to the population multiplied by the sample size needed. According to Cooper and Schindler (2007), in proportionate stratified sampling each stratum is properly represented so that sample size drawn from the stratum is proportionate to the stratum's share of the total population for the following reasons; it has a higher statistical efficiency than simple random sampling, it is much easier to carry out than other stratifying methods, and provides a self-weighting sample.

Simple random sampling will be conducted to select individual items for each stratum to make up the final sample. Selections are made from a specific and defined population i.e. the frame is known (Adams et al, 2007). Each unit is selected with known and no-zero probability, so that every unit in the population has an equal chance of selection. The method of selection is specified, objective and replicable (Adams et al, 2007).

The rational for the four strata is that the institutions have differing operating environments, with regards to governance and institutional framework, which call for different interventions and recommendations. Therefore the sample size of 150 will be broken-down as follows;

TABLE 2*: BREAKDOWN OF SAMPLE SIZE*

SAVE CATCHMENT	Population	sample Size
▪ **Finance intermediaries**	**30**	**19**
▪ **Water Institutions**	**120**	**75**
▪ **Development Partners**	**40**	**25**
▪ **Government departments**	**50**	**31**
TOTAL	**240**	**150**

The targeted respondents are accountants, grants officers, principal officers, policy makers' representatives and managers drawn from financial intermediaries, development partners, government departments and water institutions.

3.9 ADMINISTARTION OF THE SURVEY QUESTIONNAIRE

The questionnaires will be distributed using two strategies, firstly, the drop off method where the researcher will make use of catchment and sub catchment Council meeting platforms and district development meetings. Secondly, the questionnaire will be distributed using the online platform on whatsApp using Google forms. Email contacts will be collected from the Catchment Council mailing list and Zinwa Save mailing list. The list are sourced through various official whatsApp platforms used to coordinate catchment and district programs. Some respondents who cannot access online services such as emailing will be conducted through telephone. This can be achieved in the two weeks period, or more effective if the time is extended to three or four weeks.

3.10 MODEL SPECIFICATION

The researcher will use the following economic model in this study:

Equation 1:

$$\mathbf{Y = \beta_0 + \beta\, F_{it} + e_{it}}$$ Where:

- **Y** is the dependent variable (Sustainable Development [IWRM])
- $\boldsymbol{\beta_0}$ is a constant
- **β** is the coefficient of the explanatory variable
- $\mathbf{F_{it}}$ is the explanatory variables (Capital structure composition)
- e_{it} is the error term (assumed to be zero and independent across time periods).

The study will employ sustainable development indicators to measure sustainable development of IWRM as reviewed in the literature. Basing on common voluntary international standards which include quality (ISO 9001: 2015), environment (ISO 14001: 2015) and occupational health (ISO 45001:2018), the following factors will be basis of measurement; poverty reduction levels, water and quality, water infrastructure investments, environment protection, occupational health and sustainable public finance.

This study seek to investigate blended finance nature and sustainable development using leverage, impact and return characteristics as the independent variables representing capital structure.

Modifying the economic model in section 3.10 above to suit this study, the following model is developed:

Equation 2:

$$\mathbf{SD\ (IWRM) = \beta_0 + \beta_1 BFLIV + \beta_2 BFIMP + \beta_3 BFRET + e_{it}}$$

TABLE 3*: DEPENDENT VARIABLE MEASURES*

OUTCOME	MEASURE
Productivity	Decrease/increase in water quantity and quality
Water infrastructure	Decrease in water infrastructure quality e.g. dams, rivers, weirs, irrigation
Low income	Increasing hunger and starvation, increasing drought challenge
Pollution	Increasing water and environment pollution
Financial reports	Financial indiscipline and accountability challenges
Funding	Inadequate capital and unattractive investment assets
Cost of debt	Low return and long term tenure

Source: *own compilation*

TABLE 4: *INDDEPENDENT VARIABLES MEASURES*

CHARACTERISTIC	MEASURE
Leverage (LIV)	Capital structure combination
Impact (IMP)	Underlying activities financed
Return (RET)	Capital structure combination

Source: *own compilation*

3.11 DATA PROCESSING AND ANALYSIS

Data processing is a series of actions or steps performed on data to verify, organise, transform, integrate, and extract data in an appropriate output form for subsequent use. The methods of processing will be rigorously documented to ensure the utility and integrity of the data. Data analysis involves actions and methods performed on data that help describe facts, detect patterns, develop explanations and test hypotheses.

The IBM SPSS (Statistical Package for Social Sciences) version 21 will be used to analyse data in this study. Coded data will be extracted from the Likert Scale questionnaires and captured into SPSS package. Descriptive statistics will be used to extract frequency tables and graphs, test for normality using the Kolmogorov and Shapiro-Wilk H and normal Q_Q tests. ANOVA techniques will be used to test for the significance of each independent variable (Leverage, Impact and Return) and on sustainable development variables.

3.12 ETHICAL CONSIDERATIONS

Conducting research requires not only expertise and diligence but also honesty and integrity (Polit and Hungler, 1993). Carson et al (2001) noted that this is done to recognise and protect the rights of human subjects that are involved in these studies. The research will make prior arrangements with respondents in order to obtain consent. The researcher will also secure a cover letter from GSM to substantiate the purpose of the

study and assuring the respondents of their anonymity. The right to withdrawal from the study at any time during the data gathering process will be respected. Responses will be treated with maximum confidentiality, and no personal identifiers linking data to the respondents will be used.

3.13 RESEARCH LIMITATIONS

Targeted institutions making up the study population hold some data confidential and with non-disclosure policies. Permission to participate in the survey will be sought first before respondents are contacted. Seeking permission may delay questionnaire administration, however, the research will make follow ups should time limits constrain. The other limitation likely to impact the study is on periodic updates of databases by institutions. The research will seek online databases as well as manual registers to guarantee data quality.

3.14 CONCLUSION

The chapter described and justified the research methodology adopted for the study. Account was given of how data will be processed and analysed for the purpose of answering research questions. Target population, sampling techniques adopted and sample size were explained. The following chapter presents the data analysis and a discussion of the research findings.

CHAPTER 4

DATA ANALYSIS RESEARCH FINDINGS AND DISCUSSION

4.1 INTRODUCTION

The preceding chapter was a discussion of the methodology used in conducting the research study. The chapter looked at research design, research approach and research strategy adopted for the study. The section addressed data collection methods, target population and sample size, sampling techniques as well as measures to address validity and reliability. Data analytics techniques were also discussed and adopted in line with ethical issues. This chapter is a presentation and analysis of the data collected. Inferential and descriptive statistics were adopted to analyse data. This chapter is the foundation from which conclusions and recommendations of the study were drawn.

4.2 RESPONSE RATE

Out of 170 questionnaires which were administered by the researcher, 155 of them were completed and returned, yielding a response rate of 92.38%. This was above the recommended minimum response rate of 50% (Bryman, 2009), thus increasing confidence and validity of the findings. The 92.4% was achieved through vigorous follow ups and cooperation from fellow workmates and approached institutions. 33 respondents from water institutions made up the pilot study which was administered through Google forms. The results were incorporated into the final data analysis collectively. The target population of 240 was not reached due to Covid19 lockdown restrictions on movement for non-essential services.

TABLE 5*: RESPONSE RATE*

Institutions	**Questionnaires distributed**	**Questionnaires returned**	**Unusable questionnaires**	**Response rate**
Financial intermediaries	22	22	0	100%
Water institutions	78	70	8	89.74%
Development partners	33	29	4	87.87%
Gvt Depart	37	34	3	91.89%
Total	170	155	15	92.38%

4.3 ANALYSIS OF DATA

The following frequency tables present an analysis of the demographic data of the respondents categorised by gender, age, level of qualification, number of years working for the organisation, number of employees and organisation's period in the respective sector linking with IWRM.

TABLE 6*: LEVEL OF EDUCATION*

Level of Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	40	25.8	25.8	25.8
	Bachelor's Degree	41	26.5	26.5	52.3
	Professional Qualification	38	24.5	24.5	76.8
	Master's Degree	30	19.4	19.4	96.1
	PHD	6	3.9	3.9	100.0
	Total	155	100.0	100.0	

The table above shows that 41 (26.5%) of the respondents are Bachelor's degree holders, 40 (25.8%) hold a diploma while 38 (24.5%) have a professional qualification. 30 (19.4%) of the respondents are holders of a Master's degree, with only 6 (3.9%) holding a Doctorate. This indicates that the respondents had valuable

experience and expertise in their respective institutions thus the responses were well informed. The respondents were well qualified to provide the data for the study with limited bias.

TABLE 7*: FUNCTIONAL AREA OF RESPONDENT*

Functional area of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	project implementation	79	51.0	51.0	51.0
	finance management	41	26.5	26.5	77.4
	policy formulation	8	5.2	5.2	82.6
	monitoring & evaluation	13	8.4	8.4	91.0
	environmental protection	6	3.9	3.9	94.8
	Awareness campaigns	8	5.2	5.2	100.0
	Total	155	100.0	100.0	

From the table above, it is indicative of water institutions dominance in the IWRM as projects implementers, while policy formulation and awareness campaign low percentages imply lacking strong institutional framework. Environmental protection function low frequency is indicative of government monopoly on environment regulating through the agency thus limited number of respondents.

TABLE 8*: IWRM ISTITUTIONAL PARTNERS*

IWRM partners

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Financial Intermediary	20	12.9	12.9	12.9
	Water institution	78	50.3	50.3	63.2
	Development partner	25	16.1	16.1	79.4
	Government department	32	20.6	20.6	100.0
	Total	155	100.0	100.0	

The analysis shows that the majority of players in IWRM in Zimbabwe are in water institutions. This might be indicative of a non-response to water sector reforms, or due to national policy shift towards nationalisation. Other reasons could include limited capital availability in some sectors as a result of poor economy performance.

TABLE 9*: RESPONDENTS PERIOD OF SERVICE IN EMPLOYMENT*

Respondents duration of service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 5 years	23	14.8	14.8	14.8
	6 to 11 years	43	27.7	27.7	42.6

	12 to 17	64	41.3	41.3	83.9
	Above 18 years	25	16.1	16.1	100.0
	Total	155	100.0	100.0	

To affirm that respondents had knowledge of their organisation mission and appreciation of IWRM issues discussed, the analysis shows that the majority of the respondents have worked for their institutions for at least 6 years. The analysis reveals that the respondents had valuable information on IWRM, capital structure and blending activities hence the responses were helpful and informed for the study.

TABLE 10*: NUMBER OF PEOPLE ENGAGED IN IWRM*

Number of employees involved in IWRM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 25 people	43	27.7	27.7	27.7
	25 to 50 people	53	34.2	34.2	61.9
	more than 50 people	59	38.1	38.1	100.0
	Total	155	100.0	100.0	

As indicated in Table 4.7 above 43 (27.7%) of the respondents indicated that their institutions had less than 25 individuals involved with IWRM, 53 (34.2%) indicated that their institutions had between 25 to 50 individuals involved in IWRM, while 59 (38.1%) indicated that at least 50 people were in IWRM directly.

TABLE 11: *YEARS IWRM FUNDING HAS BEEN RUNNING IN THE WATER SECTOR*

Duration of IWRM funding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	.6	.6	.6
	10 to 15 years	6	3.9	3.9	4.5
	15 to 20 years	85	54.8	54.8	59.4
	more than 20 years	63	40.6	40.6	100.0
	Total	155	100.0	100.0	

The above analysis of responses given in respect of the number of years the respondent's employer has been disbursing or receiving funding for IWRM. This is attributed to challenges that the water sector faced between 2000 and 2008, prior to multicurrency regime.

4.4 RELIABILITY TEST

The coded sample data was subjected to reliability tests in order to measure the internal consistency of the questionnaire. The test was carried out to ensure that the instrument items were computing the same constructs. A reliability score of 0.70 and above indicates that the measuring instrument is consistent. This implies that the study can be repeated and still yield the same results. Table 4.8 below is a presentation of the Cronbach's alpha coefficients of the various parts of the questionnaire and the Cronbach's alpha coefficient for the whole questionnaire.

TABLE 12*: CRONBACH'S ALPHA MEASUREMENT INSTRUMENT*

Section	**Number of items**	**Cronbach's Alpha**
Section B: Financial Leverage characteristic	5	0.805
Section C: Financial Impact characteristic	7	0.779
Section D: Financial Returns characteristic	5	0.776
Section E: Blended financing and likelihood of sustainable development	7	0.788
Total for questionnaire	**32**	**0.805**

TABLE 13*: SUMMARY OF CRONBACH'S ALPHA*

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.792	.805	32

The research instrument showed a Cronbach's Alpha coefficients of 0.805 for financial leverage, 0.839 for financial impact characteristic, 0.839 for financial returns characteristic, and 0.833 for sustainable development of IWRM likelihood, which are above the minimum threshold of 0.70. Overall, the questionnaire had a Cronbach's Alpha coefficient of 0.848 which is also above the minimum threshold of 0.70. This can be interpreted to mean that the measurement instrument had high level of internal consistency, thus the same results are expected if the study is repeated.

4.5 NORMALITY TESTS

An assessment of the normality of data is a prerequisite for many statistical tests because normal data is an underlying assumption in parametric testing. The data was tested for normality using the Shapiro-Wilk test, which is applied when the sample size is below a thousand. If the obtained p-value is below 0.05 ($p<0.05$), the implication statistically will be significant result, thus rejecting the assumption of normality to indicate that the data is not normally distributed. As shown in the table below, a test statistic of 0.815 and a p-value of less than 0.05 ($p=0.000$) was obtained to confirm data not normally distributed.

TABLE 14*: NORMALITY TESTS*

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
IWRM sustainability	.326	154	.000	.815	154	.002

a. Lilliefors Significance Correction

Where data is not normally distributed non-parametric tests should be conducted as opposed to parametric test.

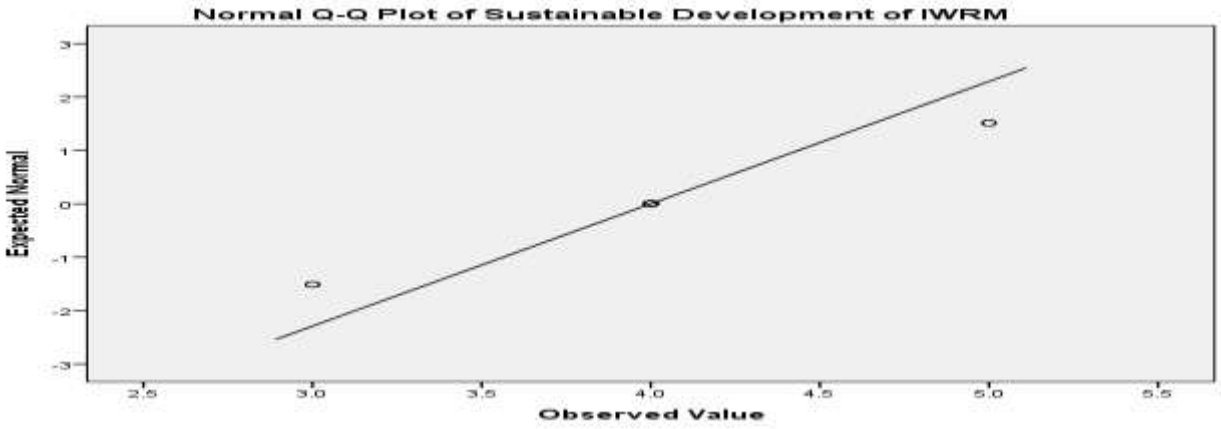


FIGURE 11: NORMALITY TEST

Most of the data points are straying from the diagonal line, and assumption was that the data did not come from a normally distributed population.

4.6 FACTOR ANALYSIS

TABLE 15*: KMO AND BARTLETT'S TEST*

KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	1580.415
	Df	276
	Sig.	.000

a. Based on correlations

The KMO is 0.785 which is greater than 0.5 therefore the data is suitable for further analysis. Moreover, the statistical significance is 0.000, a **p**-value less than 0.05. The significance measure overrides KMO on suitability decision. There are 7 factors as shown by the factors with Eigenvalues' > 1, as shown by the scree plot in Figure 1 above.

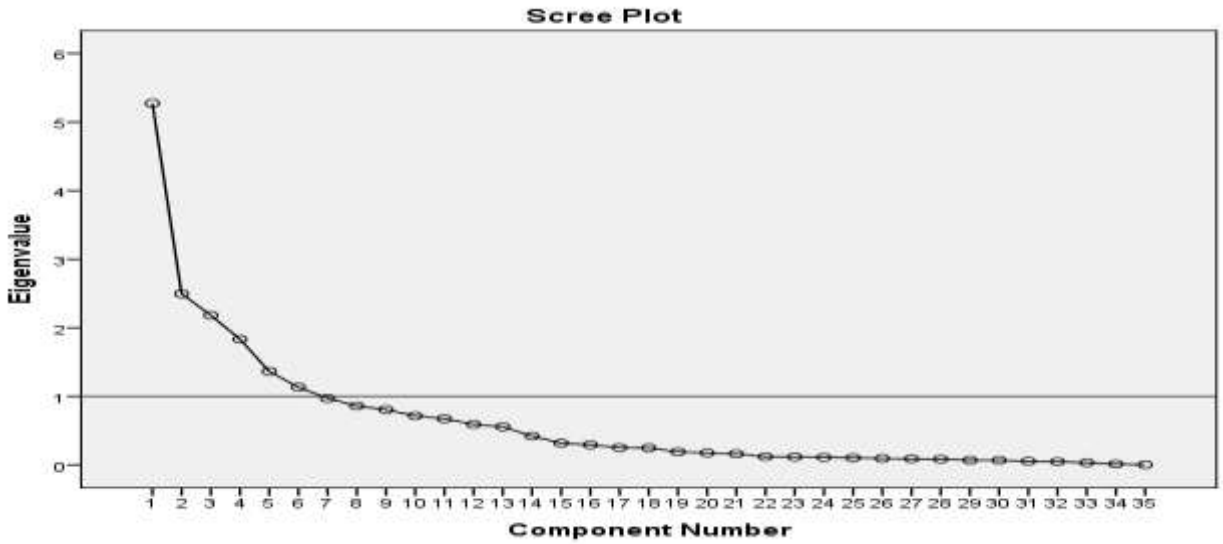


FIGURE 12: SCREE PLOT

4.7`ANALYSIS OF FACTORS INFLUENCING THE LEVEL OF CAPITAL STRUCTURE COMBINATION ADEQUATE FOR SUSTAINABILITY

The segment is in essence there to answer the research objective seeking determination of the factors influencing water infrastructure investments levels in the Save Catchment in Zimbabwe. Questions which sought information on blending finance characteristics in identified institutions were posed to respondents in section B, in order to determine the extent of the institution's water investment perspective. Section C and D had questions and statements relating to blended finance impact and returns respectively. The results of the analysis are presented below:

4.7.1 FINANCIAL LEVERAGE CHARACTERISTIC (FLC)

Section B carried questions relating to financial leverage resulting from funding IWRM using concessional debts, public equity and private capital as additionality to revenue collection, technical assistance and grants.

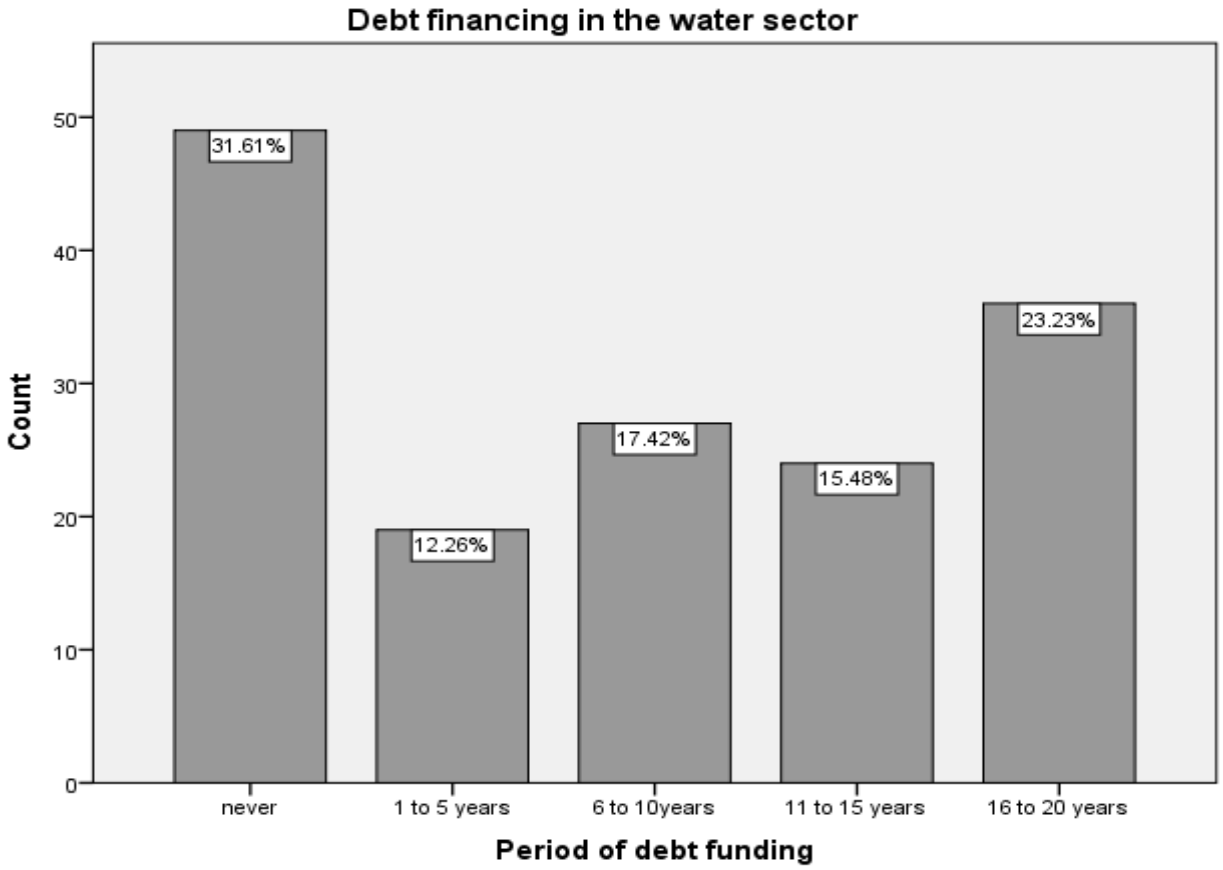


FIGURE 13: IWRM DEBT FUNDING TIMELINE

According to Reilly and Brown (2010) the relationship between interest rates and debt capital is positive and the only variable that changes is the discount factor. Figure above shows that majority (68.39%) of water institutions used debt financing in IWRM sustainability for at least a year and. 31.61% of institutions in the water sector had never considered debt financing in IWRM. The findings showed that water sector institutions not considering debt finance are state owned enterprises and donor organisations whose contribution serve as instruments to guarantee improved perceived risk by private investors. It can therefore be resolved that water sector institutions in Zimbabwe rarely consider financial leveraging in IWRM for one reason or another.

4.7.2 FINANCIAL IMPACT CHARACTERISTIC (FIC)

Section C of the questionnaire sought answers on the financial impact of funding, received and disbursed for the purpose of water infrastructure investments, in order to measure the extent of compliance with OECD definition of blended financial additionality and development additionality on sustainable development goals. The results of the assessment are shown below.

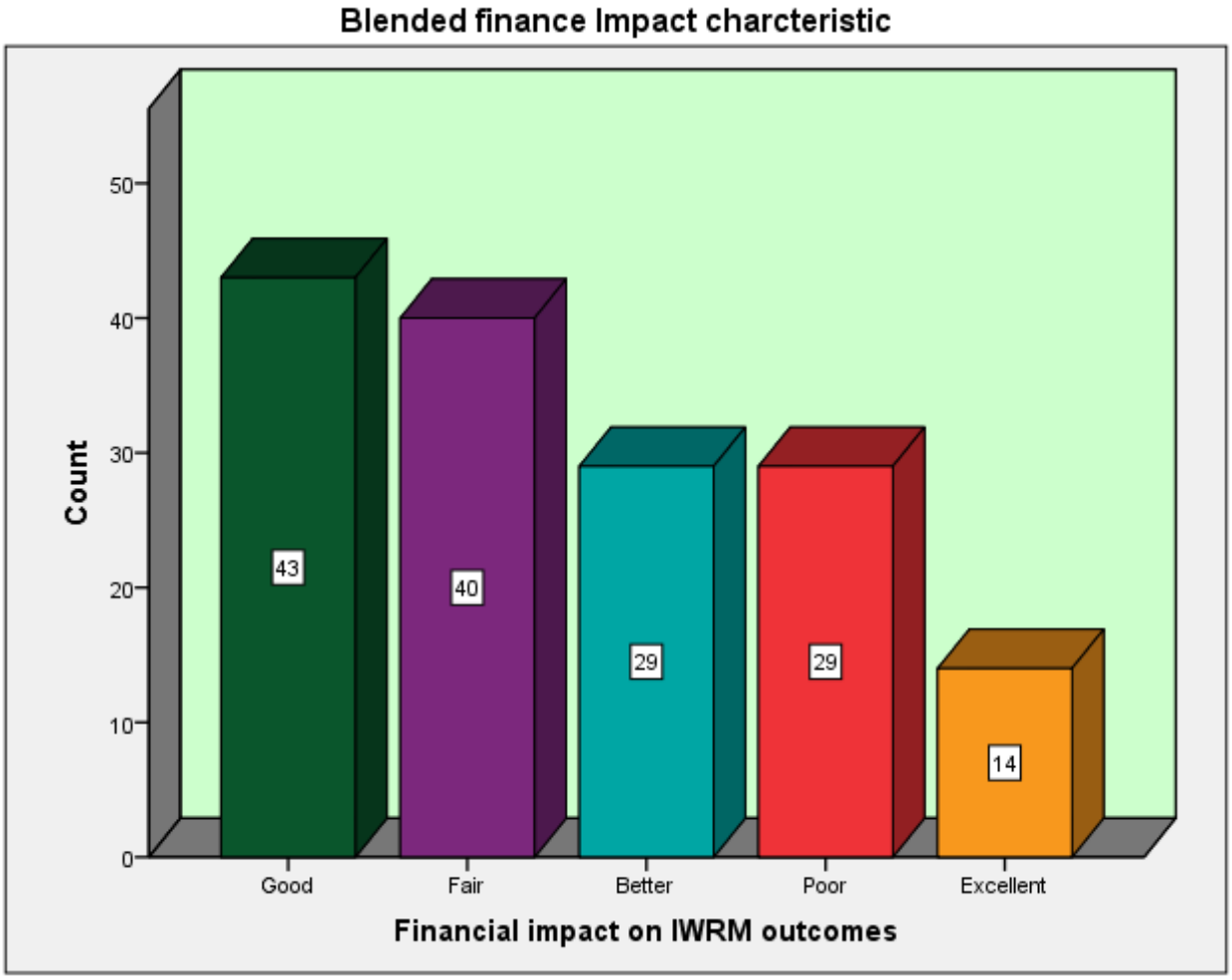


FIGURE 14: IMPACT OF ADDITIONAL CAPITAL ON IWRM OUTCOMES

The above analysis shows that the respondents' perceptions on impact in terms of both financial and developmental additionality, agreed that institutions contributing to the water sector in the catchment were aware of IWRM sustainable outcomes. Results revealed that only 30% of respondents perceived financial impact as poor. The implication is that 70% of respondents perceived blending finance as panacea for IWRM sustainability. This therefor means that the generality of the institutions understand and perceive blended financing as best practice which recommends optimal capital structure that covers the funding and investment gap in the sector. However, findings according to Francis (2019) the complexity of blended finance and the multi-layered partnerships suggest that there are diverse expectations from development impact to financial returns. The evidence seem to suggest that the level of IWRM sustainable development in the Save Catchment is generally low since the capital structure composition is below optimal to achieve SDGs.

4.7.3 FINANCIAL RETURNS CHARACTERISTIC (FRC)

Section D of the questionnaire sought to solicit responses on financial return on investment when blended finance approaches are considered in financing IWRM sustainability. The results of the assessment are shown in Figure 4.4 below.

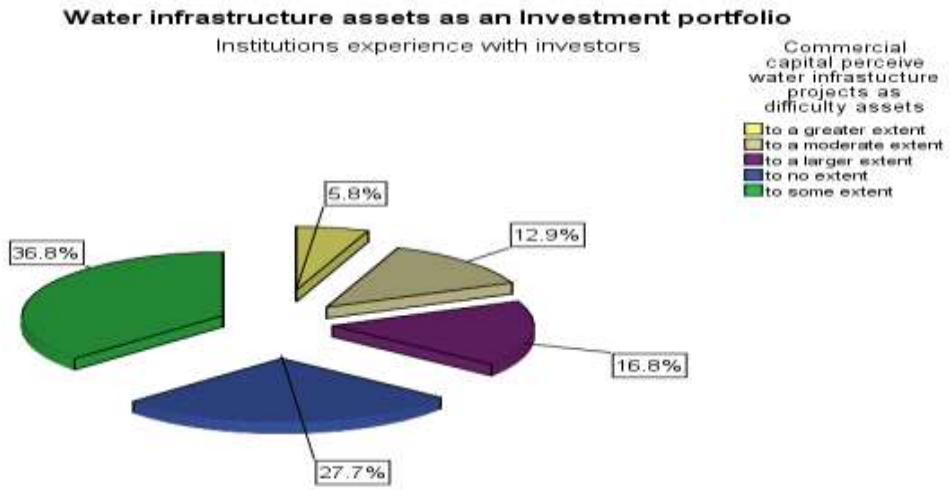


FIGURE 15: IWRM INFRASTRUCTURE AS AN INVESTMENT PORTFOLIO

As shown in the above diagram, only 5.8% of the respondents perceived water assets difficult to a greater extent, while 27.7% of the respondents perceived the portfolio not a difficult investment option. 36.8% of the respondents perceived water infrastructure assets as difficulty to some extent and 16.8% perceived the assets as difficulty to a larger extent. 12.9% of the respondents perceived water assets as difficulty to a moderate extent. This implies that the general perception within institutions contributing to the water sector in Zimbabwe are aware of the inherent difficult nature of water investment and their association with low returns. This might be indicative of the water sector institutional framework predominated by state enterprises and local authorities. Other reasons could include limited growth opportunities in the sector due to country risks.

4.8 MEASURES OF IWRM SUSTAINABILITY

TABLE 16*: DEPENDENT VARIABLE MEASURE (STD DEVIATION)*

Sustainable Development parameters

	N	Mean	Std. Deviation
Decrease in water quantity and quality	154	3.60	.836
Deterioration of water infrastructure	155	3.89	.857
low income, health standards and poverty challenges	155	3.32	1.011
Pollution and deforestation challenges	155	3.10	.899
Financial mismanagement i.e. liquidity	155	4.05	.728
Sustainable development funds	155	2.46	.989
Increasing cost of borrowing	155	2.74	.891

Valid N (listwise)	154		

The results for financial and development impact of blended finance on IWRM sustainable development shows that the means values vary with each specific measured outcome, ranging from 2.46 to 4.05. The deviation of data reveals high variability in income, health standards, poverty and funding problems characterising unsustainable enabling financial environment. The implication is that financial/development impact has direct relationship with IWRM sustainability. Where blended finance alternatives are not considered, water infrastructure assets seem to remain secondary and the evidence suggest unattractiveness.
The mean values for Financial mismanagement challenge was very high and an outlier. The implication is that availability and consideration for blending finance significantly relates to improvement in financial sustainability. Respondents indicated that current blended finance characteristics have moderate chance of improving the financial management.

4.9 CORRELATION ANALYSIS

In order to test how the independent variables correlated with the dependent variable, the Spearman Rank correlation test was performed. The Spearmen Rank correlation test was used because the data was judged not normally distributed when Shapiro Wilk and the normal Q-Q tests were performed. The objective of the Spearman rank correlation test was to define significance, strength and direction of the relationship between each of the independent variables against the dependent variable. Table 4.11 below is a presentation of the results of correlation analysis done.

TABLE 17*: CORRELATIONS*

Correlations

			Leverage characteristic	Impact Characteristic	Returns Characteristic	Sustainable Development of IWRM
Spearman's rho	Leverage characteristic	Correlation Coefficient	1	-0.127	.181*	-0.047
		Sig. (2-tailed)	.	0.114	0.024	0.56
		N	155	155	155	154
	Impact Characteristic	Correlation Coefficient	-0.127	1	.195*	.288**
		Sig. (2-tailed)	0.114	.	0.015	0
		N	155	155	155	154
	Returns Characteristic	Correlation Coefficient	.181*	.195*	1	.333**
		Sig. (2-tailed)	0.024	0.015	.	0
		N	155	155	155	154
	Sustainable Development of IWRM	Correlation Coefficient	-0.047	.288**	.333**	1
		Sig. (2-tailed)	0.56	0	0	.
		N	154	154	154	154

*. Correlation is significant at the 0.05 level (2-tailed).

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

To help in the interpretation of the correlation coefficients correctly, the standard threshold is applied. The p-value measures the significance of the relationship where p<0.01 and p<0.05 are statistically significant results which are indicated by a double star (**) for the 0.01 ***LOS*** and a single star (*) for the 0.05 ***LOS***.

4.9.1 INTERPRETATION OF CORRELATION RESULTS

4.9.1.1 FINANCIAL LEVERAGE CHARACTERISTIC AND IWRM SUSTAINABILITY

Table 4.11 indicated by r = -0.047; p<0.05. The correlation results imply that there is a significant weak and negative correlation between financial leverage and sustainable development in the water sector in the Save Catchment. These findings differ with Bancel & Mittoo (2004) and Brounen et al (2006) who found that the timing issuing of debt or equity based on interest rates and market value is the most important determinant of leverage. However the results accord with Hayes (2019) that using borrowed capital as a funding source when investing to expand the firm's asset base leverage returns on risk capital. The implication is that increasing financial leverage is expected to lower the risk of decreasing sustainable development and improve efficiency. This is consistent with the corporate finance theory and Trade-off theory which argues in favour of benefits derived from debt.

4.9.1.2 FINANCIAL IMPACT CHARACTERISTIC AND IWRM SUSTAINABILITY

Table 4.12 showed r = 0.288** and p<0.05, a statistically significant and weak positive correlation between blended finance impact and sustainable development. This implies that by increasing debt and private/commercial private capital in IWRM, it is likely to increase sustainable development. These findings coincide with findings by Gietzen (2009) that the financing structure of development projects can positively impact their development results. Findings by Alearts (2015) are not conclusive regarding the relationship between impact of blended finance and sustainable development, challenging findings in this research.

McKeown (2002).findings revealed that sustainable development is thought to have three components; environment, society and economy. The wellbeing of these three is intertwined, not separate.

4.9.1.3 FINANCIAL RETURNS CHARACTERISTIC AND IWRM SUSTAINABILITY

Table 4.12 indicated r = 0.333** and p<0.05, a statistically significant and moderate positive correlation between blended finance returns and sustainable development. Conflicting with the Modligian & Miller Theory, this finding suggest that returns on investment combined with leverage decrease risk as suggested by the Trade-off theory as benefits from debt. This is in agreement with Convergence (2019), Bancel and Mittoo (2004), Brealey (2001) and Hasan (2014) who found a significant connexion between returns, leverage and sustainability. However, Damodaran (1996) and Kothari (2001) argued that in developing and emerging markets, empirical evidence was challenged by sampling error.

4.10 BLENDED FINANCE CHARCTERISTICS AS A GOOD PREDICTOR OF IWRM SUSTAINABILITY

TABLE 18*: ANALYSIS OF VARIANCE*

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.601	3	7.867	15.944	.000[b]
	Residual	67.237	150	.473		
	Total	106.838	153			

a. Dependent Variable: Sustainable Development of IWRM

b. Predictors: (Constant), Returns Characteristic, Leverage Characteristic, Impact Characteristic

Table 17 above shows the independent variables of financial leverage, technical assistance leverage, financial impact, financial returns characteristics, and alternative investments returns proved they are predictors of sustainable development to some extent as evidenced by value **F** (15.944) and a p-value of 0.000. F represents model of fitness or how fit the model to answer the research gap. The higher the positive value of F, the more fit is the model to predict the dependent variable.

TABLE 19*: REGRESSION COEFFICIENT*

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.739	.220		12.429	.000		
BFLC	-.040	.048	-.063	-.837	.404	.940	1.064
BFIC	.164	.052	.240	3.173	.002	.939	1.065
BFRC	.223	.052	.333	4.274	.000	.926	1.080

a. Dependent Variable: Sustainable Development of IWRM

The results of the regression model shows that in the absence of blended finance the level of sustainable development of IWRM in Zimbabwe is 2.739.

Built on ***Table 18*** results, the equation for the regression line can be computed as follows;

SD (IWRM) = 2.739 - 0.063 (FLC) + 0.240 (FIC) + 0.333 (FRC)

Where SD = IWRM Sustainability; BFLC = Blended finance leverage; BFIC = Blended finance impact and BFRC = Blended finance returns

Using the regression model above when given values for leverage, impact and returns, a prediction of sustainable development can be made.

TABLE 20*: MODEL SUMMARY FOR BLENDED FINANCE CHARACTERISTICS AS A GOOD PREDICTOR OF IWRM SUSTAINABILITY*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687[a]	.431	.415	.758

a. Predictors: (Constant), Returns characteristic, Leverage characteristic, Impact Characteristic

The regression tests yielded an adjusted R square value of 0.415. Adjusted R Square is recommended because it is free from sampling error and bias. The Adjusted R Square of 0.415 implies that blended finance characteristics identified in the research study explain only 41.5% of the variance in sustainable development of IWRM in Save Catchment. The other 58.5% is explained by other factors. The possible reason for the low adjusted R Square is likely as a result of the negative correlation between leverage and sustainable development and the difficulty nature of water finance assets.

4.11 DISCUSSION OF RESULTS

The research observed that the nature of blended finance approaches and IWRM sustainability have direct and indirect link with a substantial positive effect on water infrastructure. Capital structure combination is undermined and not significantly embraced in the water sector, as such water institutions implement IWRM relying on revenue collection, grants and donations. This has affected water infrastructure development and timeous delivering of sustainable development goals and periodic targets in the Zimbabwe current economic environment.

The findings revealed that blended finance approaches and sustainable development of IWRM as water sector programme are possible approaches for effective delivery of SDGs for Agenda 2030, with outcomes of reduced poverty, increased quantity and quality of water supply, financial viability improvement and environment protection. However, the findings also indicate that leverage, return and impact are the main determinants of effective blended finance approach in the water sector thus concurring with findings from previous researches carried out in the field. Water institutions such as ZINWA and Catchment Councils are

reluctant to explore and recommend various capital combinations available from both public and private finances.

The analysis argue out that leverage, returns and the impact characteristics are regarded as important financial aspects in the achievement of sustainable development in the water sector. Commercial private finance is least considered in water infrastructure investments due to the unattractiveness nature of water finance assets and low returns. The submission is that financial policy for water investments are occasionally approved by government ministries, as such the process is challenged by red-tape and time lapses.

Blended finance and sustainable development understanding influenced the respondents' perception of water infrastructure investments, as being significant to the achievement of water provision outcomes. The financial approach that could can be adopted by institutions in the water sector enables improved attraction of water assets for investment by commercial private sector and thereby informing financial innovation and IWRM sustainable development.

The analysis revealed predictability of sustainable development based on blended finance characteristics, the results which confirm prior research conclusions that blended finance is identified by its ability to mobilise additional private finance for water infrastructure development.

The research concluded that blended finance approach is linked to IWRM sustainable in the water sector as indicated by a mean score of 4.05 and a standard deviation of 0.87. The scores impose that the recognized results was not coincidence but a reflection of the opinions of the respondents. In addition, KMO value above 0.7 proved that this conception was important to the study at hand. Supporting these findings, Bhattacharya and Sabin (2019) note that national governments need to engage with development partners in harnessing potentials of blended finance as well as discouraging bureaucratisation and over-regulation. OECD published the challenge that blended finance information on operations is not systematically disclosed on grounds of confidentiality (Andersen, et al., 2019).

The outcome of this study contrasted with a study conducted by Garcia-Castro et al (2010), who examined the relationship between firm's sustainable programs and financial performance, reporting a positive relationship between leverage, return on investment and impact.

In contrast, return characteristic and impact characteristic are two of the predictor variables in this study, which had a statistically significant relationship with IWRM sustainability.

The third predictor variable in the study was leverage characteristic with IWRM sustainability scores in negative and weak. The findings from the study are similar to the study by Basile and Dutra (2019) who examined blended finance facilities leverage influence on public goods in South Africa. They hypothesised that blended finance approaches could reduce financial risks. Similar to this study's findings, Francis (2019) found that there was perceived risk associated with traditionally high-risk projects. The author noted that there was lack of understanding on how certain projects could be deemed both bankable and feasible, and therefore deemed risky.

4.12 CONCLUSION

The purpose of the data analysis chapter was to explore the nature of blended finance and sustainable development as a goal towards Vision 2030 SDGs on water supply and sanitation provision, exploring the relationship between blended finance characteristics, i.e. leverage, return and impact, and IWRM sustainability. The researcher used standard linear regression to examine blended finance leverage, return and impact as predictors of IWRM sustainable development programme. Assessment of the assumptions surrounding regression analysis shown no superficial violations. The findings were that blended finance leverage characteristic has negative and statistically weak significant relationship with IWRM sustainability, while return and impact characteristics had a positive statistically weak to moderate significant scores.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

In the previous chapter the nature of blended finance and sustainable development as represented by leverage, return and impact characteristics, and IWRM sustainability was investigated. Correlation and regression analysis, and descriptive statistics were the statistical methods used for data analysis. Research findings were discussed in relation to existing literature. A conceptual framework on nature of blended finance and sustainable development was proposed. This chapter presents the conclusion and recommendations as informed by the research findings, limitations and areas for future study.

The main objective of the study was to investigate the nature of the relationship between blended finance and IWRM sustainability in the Save Catchment, in Zimbabwe. The research was dictated by the understanding that there was very few studies on blended finance approaches in Zimbabwe particularly the critical water sector In Save and Runde Catchments. Majority of available local studies on water sector finance and IWRM [(Mupindu et al (2004), Sachikonye and Bracket (2009), and Makurira & Viriri (2017)] were confined to grant support in the Save Catchment, water policy reforms and implications, and development finance in private and public sectors. However, did not cover IWRM and financing approaches available and most studies are concentrated within the Zambezi water trans-boundary scope.

5.2 ACHIEVEMENT OF RESEARCH AIM AND OBJECTIVES

Chapter one and two revealed that studies on blended finance approaches and sustainability, apart from contradictory findings, were carried out in countries whose macro-economic conditions are different from

Zimbabwe's. Apparently Ongore and Kusa (2013) found that financial performance was the results of board and management decisions with significant contributions of macro-economic factors. The findings in this study did not provide enough evidence to support blended finance theory in relation to IWRM sustainability. The findings included an insignificant relationship between financial leverage and IWRM sustainability. By studying the relationship between blended finance and IWRM sustainability in Zimbabwe's water sector perspective, the researcher sort to close the research gap.

The following section is an evaluation of the research objectives and hypotheses basing from research findings.

The objectives of the research were:

- To determine the nature of the relationship between blended finance characteristics and IWRM sustainability in the Save Catchment area.
- To ascertain whether there were differences in respondents' perceptions on blended finance and sustainable development of IWRM.
- To establish the direction and strength of the relationship between blended finance (characteristics) and IWRM sustainability.
- To determine whether blended finance characteristics can be used as a good predictor of sustainable development programme.

5.2.1 OBJECTIVE 1: Nature of the relationship between blended finance and IWRM sustainability in the Save Catchment

To determine the nature of the relationship between blended finance and IWRM sustainability questions and statements were raised on how water institutions finance IWRM and whether optimum capital structure and blended finance combinations (facilities) were considered. The questions were posed to respondents to determine their institutional level of contribution to SDGs as targeted by Agenda 2030 and the national water policy.

Descriptive statistics showed that the majority of institutions contributing and participating towards sustainable development in the water sector (69%) had a combination of debt and equity structure where financial leverage was operational for at least a year. 31% of the institutions indicated that they had never considered debt financing in water sector projects and these are localised water management institutions such as the Catchment Council, Subcatchment councils and Rural District Councils.

However, statistics on financial and developmental impact characteristic indicated that 70% of the respondents' perceived blending finance financially and developmentally impacting projects outcomes. This implied that majority of water sector institutions and development partners are aware of the value creation

expected to be mutually created for delivery of development impact and financial returns. 14% of the respondents agreed that blended financial and development impact was excellent, implying that some institutions are aligned and established on financial impact and returns as critical characteristics in order to ensure that projects are able to deliver and be measured in order to describe achievement.

Financial return characteristic's descriptive statistic revealed that 61% of the respondents perceived water sector infrastructure as unattractive investments assortment, with 13% indicating no attractiveness. This implies that the nature of water sector institutional arrangement in Zimbabwe does not incentives the private commercial capital crowding-in since most of the water institutions are wholly State Owned Enterprises. Use of grant from development agencies to attract private capital is an example where public and philanthropic monies reduces the risks from investments for private sector using financial instruments such as default insurance and loan guarantees.

5.2.2 Objective 2: Differences in respondents' perceptions on blended finance and IWRM Sustainability.

In order to ascertain whether there were any differences in respondents' perception on blended finance and sustainable development relationship in the water sector in Zimbabwe, descriptive statistic was performed on respondent's area of functional responsibility. The research findings showed that 79 of the respondents' perceptions of blended finance and IWRM, representing 51% were those in project implementation. Findings on financial management responsibility showed that 21% of the respondents had perceptions basing on their background with financial institutions and the IWRM programme. The implication is that despite the differences in gender or qualification, respondent's institution, respondents' perceptions on project implementation were identical and dominating, followed by financial management. Policy formulation, awareness and monitoring respondents' were insignificant. However, the descriptive statistic on institutional contributions to IWRM showed that financial intermediaries' perceptions were override by water management institutions whose statistic was 50% with 78 frequencies.

It can be concluded that private commercial investors are reluctant to get involved with an unfamiliar asset class such as found in water investments since IWRM projects are bespoke and small to make it worthwhile for private capital risk and return expectation.

5.2.3 Objective 3: Direction and strength of the relationship between blended finance (characteristics) and IWRM Sustainability.

To establish the strength and direction of the relationship between blended finance and sustainable development, correlation analysis was used. Since the data was not normally distributed, the Spearman Rank Correlation coefficient was used for regression analysis.

The research finding showed a statistically insignificant weak negative correlation between blended finance leverage and sustainable development ($r = -0.047$; $p > 0.5$. This implies that increasing mobilised private debt capital has very little negative effect on IWRM risk profile. This is contrary to corporate finance theory which posits that an institution can reduce financing risk using external funding obtained by issuing debt and equity. Also found was statistically significant moderate positive correlation between blending finance impact and sustainable development of IWRM ($r = 0.288^{**}$; $p < 0.05$. The suggestion is that mobilising additional finance in IWRM programme increases IWRM sustainability and consistent with the theory of sustainable development. Further, correlation analysis showed a statistically significant moderate positive correlation between blending finance returns and sustainable development of IWRM ($r = 0.333^{**}$; $p < 0.05$). The implication is that increasing mobilised additional capital is expected to increase sustainable development of IWRM and lower risk profile.

5.2.4 Objective 4: Blended finance characteristics can be used as a good predictor of IWRM sustainability

To determine whether blended finance characteristics can be used as a good predictor of sustainable development in the water sector, regression analysis was used. The approach measure impact between independent variables and the dependent variable. The purpose of regression is to assist in investigating cause and effect relationship between the variables, as well as assessing fitness of the proposed model in predicting the problem at hand.

The conclusion drawn from the findings was that blended finance characteristics are partially good indicators of IWRM sustainability since financial leverage is insignificant to influence the success of water projects. However, since financial and development impact and financial returns has significant positive association with water management sustainability, they serve as good indicators of sustainable development.

5.3 CONCLUSION

The research hypothesis formulated were as follows:

- **H*1*** The level of capital structure combinations with blended finance characteristics in the water sector in Zimbabwe is poor.
- **H*2*** There are significant disparities in respondents' perceptions on the nature of the relationship between leverage, returns and impact characteristics and sustainable development in the water sector in Zimbabwe.

H*3* There is a statistically significant relationship between blended finance characteristics and sustainable development of IWRM.

H*4* Blended finance characteristics can be used as good predictors of sustainable development of IWRM in Zimbabwe.

Based on evaluation of the four hypotheses, the overall hypothesis was partially accepted.

TABLE 21*: HYPOTHESIS EVALUATION*

HYPOTHESIS	**DECISION**
H*1*: The level of capital structure combinations with blended finance characteristics in the water sector in Zimbabwe is poor	The hypothesis is accepted
H*2:* There are significant differences in respondents' perceptions on the nature of the relationship between blended finance characteristics and IWRM sustainability in Zimbabwe.	The hypothesis is partially accepted
H*3:* There is a statistically significant relationship between blended finance characteristics and IWRM sustainability.	The hypothesis is partially accepted
H*4:* Blended finance characteristics can be used as a good predictor of IWRM sustainability in Zimbabwe.	The hypothesis is partially accepted

The researcher accepted hypothesis H1 since findings showed that all respondents viewed IWRM as funded to a large extent by grants and revenue collection. Most water sector institutions are wholly owned by the state, local authority or quasi government with the mandate to provide public service delivery, without the intention to make a profit. As such the research conclude that capital structure level in the Save Catchment was poor due to the nature of the resource and the view that water is God given thus naturally unattractive for high returns.

Hypothesis H2, H3 and H4 were partially accepted since findings showed that the respondents' perceptions varied in their views to the nature of the relationship that exist between blended finance characteristics and IWRM sustainability. The findings revealed a weak relationship between financial leverage and IWRM sustainability because water assets are naturally viewed as unattractive for profit making goal. However, impact and return relationship with IWRM sustainability showed positive sign, implying that water sector

investment can potentially attract private capital where returns and impact are perceived higher than anticipated risks. This aligns with recommendation to pursue privatisation of SOEs such as ZINWA.

5.4 ANSWERS TO RESEARCH QUESTIONS

Section B of the questionnaire raised five questions on capital structure combinations for funding IWRM plan, blending combinations of concessional finance with private capital, and whether respondents viewed the capital structure leveraging IWRM investments. The study showed that the majority of the respondents were of the view that in general, funding for IWRM sustainability in the Save Catchment was dependent on public finance in the form of revenue collection and government grants and rarely consider private capital as debt finance option for additional finance. This observation contradicts with the contention by Rees et al (2008) that most of IWRM plans do not consider how the overarching water governance and management system is to be financed. Biswas (2005) had noted that some IWRM plans do not mention financing at all.

Section C of the questionnaire raised seven questions on IWRM running period within the institutions, financial impact of the programme, risks impact, available financial instruments and measures of sustainability. Notwithstanding the variations in this section amongst the respondents, the overall view was that IWRM has been running for over a decade and blended finance approaches positively impact IWRM sustainability spurring water infrastructure development. However, a study by Fekete and Stakhiv (2014) noted that some indicators of impact relate to inputs, outputs and outcomes, thus a number of indicators relate to describing the dynamic function of the water sector at the national level. Despite this point Fekete and Stakhiv (2014) reports that comprehensive performance indicators need to objectively assess IWRM decisions.

Section D of the questionnaire raised five questions on financial instruments available for water investments, available return on investment blending structures, whether blended finance has a potential for relative value to private capital and investment policy making in IWRM plans. All respondents viewed grants as the dominating financial instrument available to the water sector. Regrettably all respondents also viewed insurance and currency hedging as non-existing in the water sector. This finding supports observation by Rees et al (2014) that market failure in the water sector due to public and merit goods nature, others being non-existent markets for some services, pervasive existence of externalities, natural monopoly and non-representation of future water users is a sustainability issue.

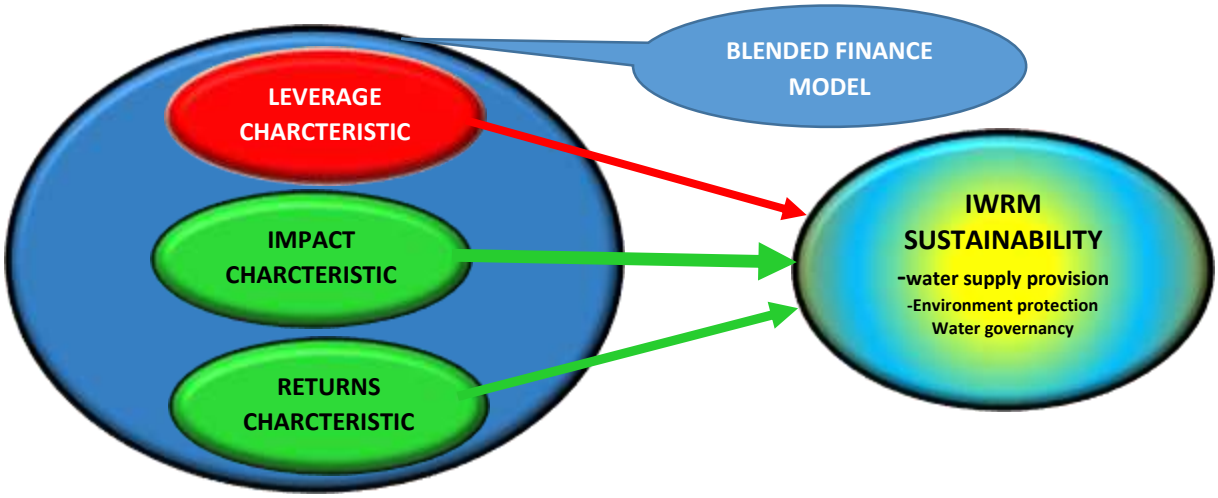
Section E of the questionnaire raised seven statement representing problems that can be potentially mitigated by blending finance approach and improve IWRM sustainability. The study findings showed that all the respondents cited financial mismanagement, water infrastructure, water quality and quantity, income and poverty, capital mobilising and cost reduction improvement when blended finance is considered. It is challenging for IWRM after injection of blended finance to be sustainable without the optimum capital

structure. However, Rees et al (2014) noted that raising finance typically has indivisible overhead costs which may cause service providers to be perceived as less credit worthy and more risky as borrowers.

5.5 CONTRIBUTION

5.5.1 Theoretical Contribution

The initial conceptual framework had independent variables as leverage, impact and return characteristics linking to blended finance approach and subsequently to IWRM sustainability the Dependent variable. IWRM is represented by water supply provision, water management at lowest level, environment protection and governing policies. The final conceptual framework was adjusted such that the independent variables are implanted within blended finance model and there exist a network of association within the method, which connect collectively direct or indirect impact on IWRM sustainability, defining the final conceptual framework as shown below. Romero (2017) argues for the notion that blended finance projects design must benefit stakeholders within the system to deliver on sustainable development outcomes.



Key:

Negative and insignificant Positive and significant

FIGURE 16: FINAL CONCEPTUAL FRAMEWORK

5.5.2 Methodological Contribution

The study adopted a quantitative research design to investigate the relationship existing between blended finance approach and IWRM sustainability in the Save Catchment in Zimbabwe. The design enabled the study to be exploratory and focusing on practitioners of development finance across institutions in the Catchment.

The research acknowledge the appropriateness of corporate finance theories developed free-standing from development finance and guidance towards quantitative approach and hypothesis testing.

5.5.3 Empirical Contribution

The research can be used to test the theoretical association between blended finance approach and IWRM sustainability because there have not been any tested in Save Catchment before. Findings from the study reveal that financial leverage factor challenges the assumption about optimum capital structure and risk mitigating. The findings from the research study can be essential to authorities such as ZINWA, Catchment Council and their Subcatchment Councils, Water User Associations (WUAs), the Ministry department of water planning, in synchronising all efforts channelled towards IWRM sustainability within the sector wide institution variation. The research findings are also beneficial in the further refinement of water finance policy and management in line with the water sector investment needs and targets.

5.6 RECOMMENDATIONS

5.6.1 RECOMMENDATIONS BASED ON BLENDING FINANCIAL RETURNS

The research study seem to be in support of the corporate finance theory perspective that financing decision on the choice of debt to equity ratio that maximise the value of the institution thereby representing the optimal capital structure that results in reduce cost of finance. This is so since debt finance is deemed private hence inclined to work in the interest of the institution. In mobilising additional private capital this ensures that the blended funds are effectively invested and monitored to make certain that decisions are not questionable and could result in unsustainable IWRM outcomes.

From Trade-off theory perspective, financial returns characteristic place assurance to private investors particularly corporates since they are sensitive to perceived risk on transaction. The water sector thus benefit from expertise and experience of financial institutions gained in drawing bankable proposals and awareness of investment risk profile and transaction costs. Perceived risk and return also connects private commercial capital to critical official development finance available. Accordingly water sector institutions and development partners should consider policies that promote mobilisation private commercial capital as additional component to preserve sustainable development.

5.6.2 RECOMMENDATIONS BASED ON BLENDING FINANCIAL AND DEVELOPMENTAL IMPACT

The study found that the greater the social impact of blended finance, the less likely water sector institutions are to experience IWRM sustainability. The findings support blended finance concept emphasising on social impact of investments that drive social, environmental and economic progress. From the trade-off theory of capital structure perspective, institutions choose how much debt finance to use by balancing the costs and benefits. As such institutions contributing towards water sector sustainable development should strive for

additional financing from private capital whilst maintaining an optimum development finance base to leverage risks.

5.6.3 RECOMMENDATIONS BASED ON THE RESULTS OF RESPONDENTS' PERCEPTIONS ON BLENDED FINANCE CHARACTERISTICS AND IWRM SUSTAINABILITY

The study findings reveals that significant differences on perception of respondents regarding the relationship between blended finance characteristics and unsustainable development based on respondent's institution, functional responsibility and qualification. The implications is on policy makers and financial experts. Whereas specific blending finance facilities are recommended for water sector programmes and projects based on varying perceptions using institutions involved, such facilities suggested should take into account the differences in institutional mandates and IWRM targets for sustainability.

5.7 MANAGERIAL IMPLICATIONS

Blended finance approach has become significant in development finance in Zimbabwe and elsewhere. As the number of development finance with blending characteristics increases the challenge of mobilising additional private capital in Zimbabwe's water sector increases likewise. There is need for water institutions to address the pertinent mobilising challenge and IWRM sustainability. Consequently, there is need for management to acknowledge that financial returns and financial impact are important factors in predicting sustainability of IWRM plans. However, financial leverage is neither important nor insignificant factor in predicting sustainability in the water sector in this study. There are noted significant differences on the perceptions of respondents on the nature of the relationship between blended finance characteristics and unsustainable of IWRM development when analysed based on type of respondents' institution, functional responsibility, period of service and qualification.

5.8 GENERALISATION OF FINDINGS

The findings from the research were case specific for Save Catchment as one of the seven catchment areas in Zimbabwe. The study is consistent with literature on capital structure combinations based on corporate finance theories. To expand the generalizability of the study further research on other development finance approaches in the various catchment areas should be done.

5.9 RESEARCH LIMITATIONS

The research study had several limitations that future research should overcome. The most significant limitations are discussed in this section.

Firstly, the low statistical clout of this research appeals for cautiousness in making analytical interpretations. The researcher agrees with Oppenheim (2000) argument that insufficiently powered research lowers the ability to reject the null hypothesis when it is false. The institutional profile of IWRM in Save Catchment and capital structure characteristics that the researcher hypothesised to be associated were not very significant. Due to chance errors, theses outcomes should be interpreted with caution.

Secondly, the research was based on a single catchment analysis, where by the extent to which water institutions are financing IWRM is also subject to specific catchment outline plan. The relationship between blended finance and IWRM sustainability as valued by water institutions is hard to generalise.

Thirdly, the study relied on self-administered survey questionnaire for data collection. More meaningful and comprehensive information would have been abstracted if complimentary data collection methods such as interviews and focus groups were conducted.

Fourth, the research was cross-sectional study which has the implication that association over time between variables were not considered.

Finally, Covid19 pandemic forced the government to invoke movement restrictions, lockdown and curfew during the research study period, which further eroded available time and inconveniencing administration of data collection.

5.10 RECOMMENDATION FOR FUTURE RESEARCH

The researcher recommends that future studies should investigate the intervening or regulating role of institutional framework, macro-economic factors and changing climate on the relationship between blending finance approach and unsustainable development in the water sector in Zimbabwe. Future researches should also consider exploring in depth the impact of green investment and hybrid finance on unsustainable development of water resources. There is a scope to conduct longitudinal studies on the same problem in order to explore the relationship over an extended period of time. Both qualitative and quantitative methods of research can be used to gain more insight into blended finance approaches and sustainable development in the water sector in Zimbabwe.

REFERENCES

Aaker, A. K. (2000). *Marketing Research.* New York: Jonh Wiley & Sons Inc.

AFDB. (2000, April 26). Policy for Intergrated Water Resources Management. *AFRICAN DEVELOPMENT BANK*. Abidjan, Cote d'Ivoire: African Development Bank.

AFDB. (2018, November 14). *African Development Bank.* Retrieved from The African Investment Forum: afdb.org/newsand events/

Ajami, N., Hank, H., Brent, F., Tim, L., & Thomas, N. (2018). *WATER FINANCE: The Imperative for Water Security and Economic Growth.* CA: Stanford Urban Policy and Innovation Team.

Anderson, J. R. (2002). Environmental Issues and Farming in Developing Countries. *International Farm Management Congress* (pp. 1-9). Washington DC: World Bank.

Andrea, R., Riccardo , B., & Lucie, C. (2019). *Change in water-use efficiency over time (SDG indicator:Monitoring Sustsainable use of Water resources.* Rome: AQUASTAT. Retrieved from www.fao.org/nr/water/aquastat/data/query/index.html?lang=en

Basile, I., & Dutra, J. (2019). *Blended Finance Funds and Facilities: 2018 Survey Results; OECD Development Co-operation Working paper, No 59.* Paris: OECD Publishing.

Brackin, S., & Sachikonye, L. (2009). *Development Finance, Private and Public Sectors in Zimbabwe: Sustainability or Odious Debt.* Manchester: Brooks World Povert Institute.

Cerin, P. (2006). Bringing economic opportunity into line with environmental influence: A Dscussion on the Coase theorem and the Porter and Van der linde. *Ecological economics*, 209-225.

Charlotte, G., & Jorge, M. D. (2018). OECD DAC BLENDED FINANCE PRINCIPLES: Unlocking Commercial Finance for the Sustainable Development Goals. *OECD DAC Defining Blended finance principles* (pp. 4-10). OECD DAC.

Clark, R., Reed, J., & Sunderland, T. (2018). Bringing funding gaps for climate and sustainable development: Pitfalls, progress and potential of private finance. *Land Use Policy*, 338-344.

Commission, B. (1987). *Common Future.* Oslo: WCED.

Convergence. (2019). *Convergence Blending Global Finance*. Retrieved April 24, 2020, from Convergence Blended Finance.

David, A. E. (2006). The pecking order hypothesis:Australian evidence. *Applied Financial Economics*.

Debapriya, B., & Sarah, S. K. (2019, January). Is blended finance trending in the LDCs? Perspectives from the ground. *Southern Voice Occasional Paper Series No. 49*, pp. 12-23.

Denbach, J. C. (2003). Achieving Sustainable Development: The Centrality and Multiple Facets of Integrated Decision Making. *Indiana Journal of Global Legal Studies*, 250-258.

Dernbach, J. (2011). Sustainable Development as a framework for national Governance.

Development, I.-a. T. (2016). *Inaugural Report: Monitoring commitments and actions.* New York: United Nations.

Dilip, K. G., & Mohamed, A. (2004). *Global Financial Markets: Issues and Strategies.* Praeger.

Easterby, M. S., Thorpe, R., & Jackson, P. R. (2008). *Management research: An introduction.* Los Angels: SAGE.

Emas, R. (2015). *The Concept of Sustainable Development : Definition and Defining Principles.* Florida International University.

Global Water Partnership. (2014). *Global Water Partnership Annual Report.* Stockholm: GWP Secretariat.

GoZ. (1998). Water Act:- Chapter 20:24. Government Printers.

Guy, J. A. (2018, October 30). Financing for Water-Water for Financing: A Global Review of Policy and Practice. *Sustainability*, p. 4 of 25.

Hasan, A. A.-T. (2014, May 05). An investigation of the effect of financial leverage on firm financial performance in Saudi Arabia's public listed companies. *An investigation of the effect of financial leverage on firm financial performance in Saudi Arabia's public listed companies*. Saudi Arabia: Victoria Univesity.

Hasan, H. M., Al Mutairi, M., & Risik, E. A. (2011, January 01). The impact of Corporate Financing Decision on Corporate Performance in the absence of taxes: Panel data from Kuwait Stock Market. Greece. Retrieved from https://ro.uow.edu.au/commpapers/1541

Hurtado, R. M., Winpenny, J., & Hall, A. (2012). Pricing Water Resources to finance their sustainable management: A think peace for the EUWI Finance Working Group. *EUWI-FWG*, 2-11.

Ibrahim, K., & Job, L. (2019, January). Blended finance in Uganda: Opportunities, Challenges and Risks. *Occasinal Paper Series. No 45*, pp. 9-16.

Irene, B., Valentine Bellesi, & Vijai, S. (2020, January). Blended Finance Funds and Facilities. *2018 Survey Results Part ii: Developement Performance*.

James, C. (2018, December 20). *.Investopedia.com/terms/r/riskadjustedreturn.* Retrieved from www.Investpedia.comwww: www.Investopedia.com/terms/r/riskadjustedreturn

Jensen, M., & Smith, W. C. (2001). *The theory of corporate finance: A historic Overview*. New York: McGraw-Hill.

Jibril, A. (2011). The concept and principles of sustainable development. *Association of Nigerian Geographers* (pp. 4-9). Sokoto: Danfodiyo University.

Keri, A. F. (2019, November 11). An exploratory study into critical success factors for effective stakeholder engagement in blended finance projects. *A research project submitted to the Gordon Institute of Business Studies (MBA)*. Pretoria, Gauteng, South Africa: Univeristy of Pretoria.

Kolker, J. E., Kingdom, B., Tremolet, S., Winpenny, J., & Cardone, R. (2016). *Financing options for the 2030 water agenda.* The Worl Region: World Bank Group. Retrieved from www.ibrd.ida.

Kublbock, K., & Grohs, H. (2019). *Blended finance and its potential for development cooperation.* Vienna: OFSE.

Kundzewicz, Z. W. (1997). Water Resources for sustainable development. *Hydrology Sciences Journal*, 471- 480.

Lago, M., Moller-Gulland, J., Julian , L., Anzaldua, G., Boteler, B., Thibaud, H., . . . Gaitan, F. (2011). *Methodological guide on Tariffs, Taxes and Transfers in the European Water Sector.* Eureau: World Water Forum.

Makurira, H., & Viriri, N. (2017). *Water Permit Systems, Policy Reforms and Implications for Equity in Zimbabwe.* Harare: Pegasys Institute, International Water Management Institute, REACH.

Manzungu, E., & Kujinga, K. (2004). The Theory and practice og Governance of Water Resources in Zimbabwe. *Journal of Humanities of the University of Zimbabwe*, 191-210.

Margaret, C. M., Ramos, M., & Tonia, K. (2005, June 1). PEP Working Paper Series 2005-01. *Computable general equilibrium micro-simulation analysis of the impact of trade policies on poverty in Zimbabwe*.

Money, A. (2018, March 01). A Topology of Water Infrastructure Projects. *Task Force on Financing Water Infrastructure*. World Water Council.

Mupindu, Murindagomo, & Chagunda. (2004). *Sida Support to Save Catchment Council.* SIDA Evaluation.

Murungweni, Z. (2011). *Zimbabwe National Water Policy- Background Paper on Water Resources Development & managemnet. Thematic Paper No.2.* GoZ.

Nataliya, P., & Cecilia, M. B.-G. (2011). *Zimbabwe's Infrastructure: A Continental Perspective.* Washington: World Bank.

OECD. (2018). *Making Blended Finance Work for the Sustainable Development Goals.* Paris: OECD Publishing.

OECD. (2018). *MAking Blended Finance Work for the Sustainable Development Goals.* Paris: OECD Publishing. Retrieved from http://dx.doi.org/10.1787/9789264288768-en

OECD. (2019). *Blended finance in the least developed countries.* UNCDF.

OECD. (2019). *Social Impact Investment 2019: The Impact Imperative for sustainable development.* Paris: OECD Publishing. Retrieved from https://dx.doi.org/10.1787/98789264311299-en

Ole, W. A., Irene, B., Antonie, d., Gunnar, G., Erick, L., & Magdalena, O. (2019, January). Blended Finance Evaluation:. *Governance and Methodology Challenges*, pp. 23-25.

Oliver, P., Mazza, F., & Wang, D. (2016). *www.waterfinancelab.org/water-financin-falility*. Retrieved from www.global innovation lab for cimate finance.

Partnership, G. W. (2014). *Annual Report.* Stockholm: GWP.

Pereira, J. (2018). *Aligning blended finance to development effectiveness: Where we are at.* ITUC-TUDCN. Retrieved from www.ituc-csi.org/private-sector-development-mapping

Pettit, R. R., & Ronald, S. F. (1985). Small Business Finance: A research Agenda. Financial Management. *Journal of finance, Vol 14*(No 3). Retrieved July 27, 2020, from www.jstor.org/stable/3665059

Philippe, B., Justin, T., Izabela, K., & Maria, C. D. (2009, July). The effects of the Financial Crisis on Public Private Partnership. *IMF Working Paper*, pp. 9-13.

Philippe, H. L. (2019, October 10). *Opinion: Blended finance, transparency and rigor must rule the day.* Retrieved from devex.com: http://www.devex.com/news

Pigou, A. C. (1920). *The Economics of Welfare.* London: Macmilllan.

Porter, M. E., & Van der Linde, C. (1995). Towards a New Conception of the Environment-Competitiveness Relationship. *Journal of economic Perspectives*, 97-118.

Porter, M. E., & Van der Linde, C. (1999). Green and competitive: Ending the stalemate. *Journal of Business Administration and Politics*.

Richard, B., Stewart, M., & Franklin, A. (2016). *Corporate Finance.* Irwin: McGraw-Hill.

Richard, D., & Rafik, H. (2014). *Climate Change and Water Resources Planning, Development and Management in Zimbabwe. An issue paper.* Harare: World Bank Group.

Sacretariat, G. (2014). *Global Water Partnership 2014 Annual Report.* Stockholm: GWP.

Saleth, M. R., & Dinar, A. (2004). *The instirutional economics of water: a cross-country analysis of institutions and performance.* The World Region: The World Bank.

Samantha, A., & Lars, E. (2019). *Blended finance in the poorest countries.* London: ODI.

Saravanan, V. S., McDonald, G. T., & Mollinga, P. P. (2009). *Critical review of Integrated Water Resources Management: Moving beyond polarised discourse.* Natural Resources Forum.

Scott, J. H. (1977). Bankruptcy, Secured Debt, and Optimal Capital Structure. *Jornal of Finance Vol 32*, 1-19.

Services, V. R. (2019). *National Water Resources Master Plan, 2020-2040.* Harare: MLAWCRR (Govt of Zimbabwe).

Sileyew, K. J. (2019). *Research Design Methodology.* Addis Ababa: Addis Ababa University.

Stoddart, H. (2011). *Apocket guide to sustainable development.* Stakholder Forum.

Suha, A. (2019, September 30). Relationship between Capital Requirement, Ownership Structure, and Financial Performance in Saudi Arabian listed companies. *Asian Economics and Financial Review*, pp. 1077-1090.

Tanvi, N., Ammar, M., & Matthew, E. (2018). *Mobilising Additional Funds for Pro-Poor Water Services.* Washington DC: Urban Institute.

Thomas, G. (2019, August). Blended Finance-An investigation into its effect on the success of development interventions. *Evaluation update No.8*.

UN. (1987). Report of the World Commission on Environment and Development. Our future. *United Nations General Assembly.* Oslo: UN General Assembly, Development and International Cooperation.

UN. (1992). Rio Declaration on Environment and Development. *United Nations Conference on Human Environment.* Rio de Jeneiro: United Nations.

UNICEF. (2018). *The State of Wash Financing in Eastern and Southern Africa: Zimbabwe Country Level Assessment.* Harare: UNICEF.

VisionRI. (2019). *National Water Resources Master Plan 2020-2040.* Harare: Govt of Zimbabwe.

Water Act. (1998). *Chapter 20:24.* Harare: GoZ.

WEF, O. (2015, September). Blended Finance Vol 1. *A Primer for Development Finance and Philanthropic Funders*.

William, M. T., & James, D. P. (2008). *Research Methods Knowledge Base.* Ohio: Mason.

Winpenny, J. (2003). *World Panel on Financing Water Infrastructure for All.* STockholm: OECD.

WorldBank. (2017). Water scarcity in the Middle East and North Africa. . In W. Bank, *Beyond Scarcity:* (pp. 11-19). Washington DC: The World Bank Group.

WWC. (2015). *Water: Fit to Finance? Catalsing National Growth Trhrough Investment in Water Security.* Marseille: World Water Council.

Zimbabwe Water Forum. (2013, April). *Zimbabwe's New National Water Policy: Responding to challenges to Create a Foundation for Sustainable growth.* Harare: World Bank in partnership with Ministry of Water Resources Development & Management.

ZNWA. (2007). *ssessment of surface water resources of Zimbabwe and guidlines for planning.* Harare: GoZ.

ANNEXURE 1

SURVEY QUESTIONNAIRE:

This self-administered and structured questionnaire is designed to assist the researcher to carry out a study to investigate the nature of the relationship between blended finance and IWRM sustainability in the Save Catchment area. The research is in partial fulfilment of a Master of Business Administration-Finance degree program at the University of Zimbabwe. The researcher values your contributions to this study and will be held in strict confidence.

Please indicate your answer by inserting an **X** or a tick (√) in the appropriate box. For clarifications, you can contact the researcher on 0783 684 036 and stanfordkaswera33@gmail.com. Thank you.

SECTION A– DEMOGRAPHIC INFORMATION

A1. What is your gender?

1. Male	2. Female

A2. Which age group are you in?

1. Below 34	2. 35 to 45	3. 46 to 55	4. Over 55

A3. What is your level of education?

1. Diploma	2. Undergraduate Degree	3. Professional Qualification	4. MBA or equivalent	5. PHD

A4. Which functional areas are you responsible for?

☐ Projects implementation ☐ Finance management ☐ Policy formulation

☐ Monitoring & Evaluation ☐ Environment Protection ☐ Awareness

A5. Which of the following clusters define your institution and its connection with IWRM sustainability?

(*Choose one option only:* **NB.** *For the purpose of this study* (i) ***Financial Intermediaries*** include DFIs (ii) ***Development partner****s comprise NGOs, Philanthropists, and ODA facilities through Embassies, (iii)* ***Government Departments*** *comprise responsible Ministries, Councils and Local Authorities, (iv)* ***Water Institutions*** *comprise ZINWA, Save CC and its Sub CCs, PWSSC, DWSSC)*

1. Financial Intermediaries	2. Water Institution	3.Development Partner	4. Government Department

A6. How long have you been engaged in water infrastructure, water supply and sanitation programmes at Catchment level?

1. Less than 5 years	2. 6 to 11 years	3. 12 to 17 years	4. Above 18 years

A7. How many people are directly engaged in water management projects in your organisation?

1. Less than 25 people	**2.** 25 to 50 people	**3.** More than 50 people

A8. How long has your organisation been engaged in sustainable development of IWRM policy?

1.*Less than 5 years*	***2.*** *5 to 10years*	***3.*** *10 to 15 years*	***4.*** *15 to 20 years*	***5.*** *More than 20 years*

Section **B** to **D** contains questions and statements which seek to solicit for information on blended finance characteristics i.e. leverage, impact and returns, associated with sustainable development of IWRM programme in Zimbabwe. Kindly insert an **'X'** or a tick **(√)** in the box which corresponds to your most appropriate answer.

SECTION B –LEVERAGE CHARACTERISTIC

B1.How is your organisation contributing towards financial capital invested in IWRM sustainability in Zimbabwe?

1. Equity	2. Debt	3. Equity & Debt	4. Grant	5.Revenue Collection

B2. What do you think is the appropriate funding structure for IWRM programme to achieve optimum investment leverage in the water sector?

1. Equity	2. Debt	3. Equity & Debt	4. Grant	5.Revenue Collection

B3. Combining public funds and private capital in IWRM significantly leverage investments perceived risks and returns?

1.Strongly Disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly Agree

B4. Blended funding instruments such as guarantees, technical assistance, hedging, insurance and grants when combined with commercial private capital reduce the risk of unstainable development in IWRM?

1.Strongly Disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly Agree

B5. Commercial private finance in water management programs is limited by lack of water institutions capacity to borrow independently as entities in Zimbabwe?

1.Strongly Disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly Agree

SECTION C – IMPACT CHARACTERISTIC

C1. When your organisation did disbursed or received funds targeting IWRM sustainability plans?

1. Never	2. 16 to 20 years ago	3. 11 to 15 years ago	4. 6 to 10 years ago	5. Less than 5 years ago

C2. How the current financial impact of disbursed or received funds for IWRM projects in the Save Catchment valued on a scale?

1.Very bad	2. Bad	3.Fair	4. Good	5.Very good

C3. How is the current developmental impact from development assistance viewed in light of IWRM sustainability?

1.Poor	2. Fair	3.Good	4. Better	5.Excellent

C4. Blended finance instruments such as grants, guarantees, technical assistance, currency hedging, and insurance are used to mitigate against a range of risks as impact characteristic. Which risk or a combination of risks is predominant in your organisation?

1.Political risk	2. currency risk	3.Credit risk	4. Market risk	5.Operational risks

C5. Blended finance impact the investment gap in water infrastructure projects through mobilisation of additional private capital to expand development capital.

1.Strongly Disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly Agree

C6. In my organisation, there are stakeholder common measures/targets for sustainable development impact assessment.

1.Strongly Disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly Agree

C7. Grant funding, technical assistance, donations and guarantees instruments impact the unlocking of additional capital from private investors through innovative financing mechanisms and structures.

1.Strongly Disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly Agree

SECTION D– RETURNS CHARACTERISTIC

D1.Which of instruments given is common to your organisation's efforts to promote IWRM sustainability?

1. Guarantees	2. Grants	3. Insurance	4. Currency hedging

D2. How do you describe the available return on investment structures ***(combination of private commercial finance (PCF) and development capital (DC))*** in IWRM programmes implemented in the water sector in Zimbabwe?

1. Senior debt/equity (**PCF**) **+** First loss guarantee(***DC***)	**2**. Preferred return (**PCF**) + Capped return (***DC***)	**3.** Debt and Equity (**PCF**) + Guarantee (***DC***)	**4**. Debt and Equity (**PCF**) + Grant (***DC***)	**5**. Technical assistant and seed capital (***DC)***

D3. My organisation's finance policy recognises that blended funding structures provide relative value (return on investment) to institutional investors by addressing real and perceived risk in IWRM projects.

1.To no extent	2. To some extent	3.To a moderate extent	4. To a large extent	5.To a great extent

D4. My organisation has access to receive/disburse alternative investments and infrastructure funding to determine strong returns and further diversify portfolios of IWRM growth path.

1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree

D5. My organisation has experience with private investors (commercial capital) who find water infrastructure in developing countries a difficulty asset class with no or low returns.

1.To a great extent	2. To a large extent	3.To a moderate extent	4. To some extent	5.To no extent

SECTION E: BLENDED FINANCE CHARACTERISTICS AND LIKELIHOOD OF SUSTAINABLE DEVELOPMENT

The statements below relate to the influences of blended finance characteristics on sustainable development of IWRM programs in your organisation. You are required to indicate the extent to which you agree or disagree to each of the statements by inserting an 'X' in the shaded box which corresponds to your most appropriate answer. The statements are represented on a Likert scale where; 1= to a great extent, 2= to a large extent, 3= to a moderate extent, 4= to some extent and 5= to no extent.

Current blended finance characteristics in the water sector's capital structure combinations are potential source the following problems:		**1**	**2**	**3**	**4**	**5**	
E1.Decrease in water quantity and quality	**TO A GREAT EXTENT**						**TO NO EXTENT**
E2.Deterioration of water infrastructure assets							
E3.Low income and poverty challenge							
E4. Pollution and deforestation challenges							
E5. Financial mismanagement i.e. liquidity							
E6. Mobilising funding for projects							
E7. Increasing cost of borrowing							

APPENDIX 2

University of Zimbabwe

P.O Box MP167

Mount Pleasant

Harare

26 May 2020

The Permanent Secretary:

The Director Finance and Administration

Ministry of Lands, Agriculture, Water, and Rural Resettlement

Munhumutapa Building

Causeway, Harare

Dear Sir,

RE: REQUEST FOR AUTHORITY TO CONDUCT RESEARCH

I am a final year student at the University of Zimbabwe, pursuing a Masters of Business Administration-Finance Course. In partial fulfilment of the program, it is a prerequisite to carry out a research project. My research topic is entitled **"Blended finance approaches and IWRM sustainability in Zimbabwe, a case of Save Catchment"** covering the period 2008 to 2019.

I hereby apply for authority to carry out this study for the years noted above. Information gathered shall be used for academic purposes and will be treated with utmost confidence. For further clarity you may contact the University using the above address.

Your assistance will be greatly appreciated,

DATE STAMP

Yours faithfully

Stanford Kaswera

(Reg: R181246Z)

Approved / Not approved