RESPONSIBLE INVESTMENTS AND SUSTAINABLE VALUE CREATION IN SELECTED JOHANNESBURG STOCK EXCHANGE LISTED COMPANIES

by

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DEDICATION

I dedicate this dissertation to my late father, Mr AM Malatji and my mother Mrs MP Malatji.

DECLARATION

I declare that “Responsible investment and sustainable value creation in selected Johannesburg Stock Exchange-listed companies” is my own work and all sources that were used or quoted have been indicated and acknowledged by complete references, and this work has not been submitted before in any other institution.

Malatji, S E (Ms) April 2019

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ABSTRACT

Responsible investment combines shareholder's objective of financial performance with environmental, social and governance (ESG) issues when making investment decisions. Responsible investment has become necessary because most companies neglect the impact of their operation on the environment; society while focusing on short-term profits. Moreover, the collapse of big companies due to poor governance also demand that they focus on the need to strengthen good corporate governance. This study examines whether SA mutual funds companies listed on the JSE incorporate environmental, social and governance (ESG) factors in making investment decisions. The study further examines the relationship between selected ESG factors and financial performance measured using ROE. A total of 28 companies where SA mutual fund companies have invested their funds were sampled and studied between 2007 and 2017. Secondary data was used whereby raw data was collected from the annual, integrated and sustainability reports of the selected companies' websites and the IRESS database. Although many ESG factors could influence responsible investment such as climate change, waste and pollution, deforestation, working conditions, local community, bribery and corruption, however, some of these factors cannot be easily quantified. Hence, this study focused on one component per ESG factor that can be quantified. All these factors are required to have a deeper understanding of responsible investment. This study adopts the quantitative research method and adds to the growing number of studies by examining the relationship between independent variables represented by water usage (environmental), employee health and safety cost (social) and gender diversity (governance) and dependent variable which is financial performance measured by ROE. The Stata statistical software utilising the panel data method was used to analyse the data. The

study results show a positive and insignificant relationship between water usage and ROE, a positive an insignificant relationship between employee health and safety cost (number of work-related fatalities) and ROE and negative and insignificant relationship between the percentage of women on corporate boards and ROE. The results show that UN PRI guideline that encourages responsible investments is not followed by South African (SA) mutual fund companies. This study recommends that SA mutual funds companies follow the UN PRI educate different stakeholders as to the importance of incorporating ESG factors in business operations and the benefits thereof. Future studies can consider incorporating ESG indicators other the ones presented in this study.

***Keywords*:** ESG factors; mutual funds; responsible investment; sustainable value creation; corporate governance.

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List of acronyms

Acronym	Expansion
ESG	Environmental, Social and Governance
FEM	Fixed Effect Model
GHG	Greenhouse gas
JSE	Johannesburg Stock Exchange
MLR	Multiple linear regression
MNEs	Multinational enterprises
PRI	Principle for responsible investment
REM	Random Effect Model
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on investment
ROS	Return on sales
SA	South Africa
SRI	Social responsibility investment
TBL	Triple bottom line
OECD	Organisation for Economic Co-operation and Development
OHS	Occupational health and safety
OHSA	Occupational Health and Safety Act
OHSAS	Occupation health and safety assessment series
OHSMS	occupational health and safety management system
UN PRI	United Nations principles for responsible investment
VBS	Venda Building Society

VIF	Variance Inflation Factor
VOC	Volatile Organic Compound

CHAPTER ONE: GENERAL INTRODUCTION

1.1 Background

Governments have realised the need to regulate companies' sustainable business practices (Korditabar, 2015). This may be due to many companies engaging in unsustainable business practices. Consequently, with awareness being raised about the significance of sustainability responsibility as demanded by both internal and external stakeholders, companies have increasingly embraced the idea of improving their sustainability performance (Korditabar, 2015). The integration of corporate social investment into the day-to-day practices of companies is changing the way businesses approach new investments from an ethical and socially responsible perspective (Stankevičienė & Čepulytė, 2014). It involves the inclusion of non-financial factors into the selection of investment opportunities. Therefore, financial and non-financial factors may contribute to the sustainability of the investment decision process (Stankevičienė & Čepulytė, 2014). The issue of responsible investment advocates that companies who seek to be sustainable should not focus only on financial factors but should realise that non-financial factors are equally important. Non-financial factors to be considered should include environmental, social and governance (ESG). With ESG factors integrated into investment decisions, more in-depth focus on each factor can help to achieve a genuinely sustainable business practice (Korditabar, 2015). However, every company seeking to achieve sustainable business practices cannot focus on environmental, social and economic issues in isolation; but should be merged under a broader strategy (Korditabar, 2015). This may mean that companies seeking long-term sustainability should consider integrating ESG issues into their business strategy in order to achieve their long-term objectives.

Investment in projects that incorporate not only financial issues but also ESG issues can assist companies' management in managing their resources better and attracting the right kind of investors (Escrig-Omedo, Rivera-Lirio & Miñoz-Tores, 2017). Attracting good investment through consciously crafted investment approach is likely to result in repeat investments by investors that may add value to the company. Regarding environmental sustainability, companies that are dedicated to addressing environmental challenges are less likely to be subjected to environmental fines and lawsuit (Auer, 2016). Therefore, companies can save costs by being environmentally friendly but may incur more costs that may cripple the company financial position if they disregard environmental issues. Sustainability initiatives that are generated internally by the managers may include activities such as the development of new products that will reduce both the environmental and social impact of their operations (Husted & de Sousa-Filho, 2017). Companies that follow the responsible investment principle may be forced to invest in those companies that take initiatives to improve the environmental impacts of their actions.

The inclusion of environmentally inclined directors with board committees dedicated to environmental and social issues can address some of the corporate governance concerns (Husted & Milton de Sousa-Filho, 2017). Having such an environmentally friendly management team could be the first step in addressing environmental challenges confronting to the company. Moreover, companies that adhere to good corporate governance practices are likely to attract and retain good employees resulting in increased sales due to improved employees' satisfaction (Auer, 2016). As such, when employees feel safe at work, they are likely to give their best because they feel secure. Contrastingly, employees may not feel safe to work for an unsustainable company where management has no concern for sustainability performance. Good

corporate governance by companies may result in improved sustainability performance and overall firm performance. The board of directors are decision-makers that are collectively responsible and accountable for a wide range of stakeholders (Rao & Tilt, 2016). Moreover, board composition especially gender diversity and their influence on making responsible investment decisions is significant for this study.

Nonetheless, corporate governance is one of the significant components of SRI because of the many scandals that characterised the business world in recent years (Lulewicz-sas & Kilon, 2014). One of the major scandals that shook the accountancy profession is the collapse of big companies such as Enron where many employees lost their life saving, and investors lost billions of investments (Paulsen, 2002). Moreover, based on the recent corruption scandals that crippled the South African (SA) economy such as the incidence of state capture highlights the need for responsible investment in businesses. Additionally, the collapse of Venda Building Society (VBS) Bank in South Africa also accentuates the need for responsible investment because bad corporate management resulting from poor corporate governance practices may be attributed to the loss of investment by investors (Mantshantsha, 2018). Conversely, investing in creating social good is now a requirement for companies that seek to be socially responsible (Dheeriya, 2017). Hence, it is plausible that managers who seek to comply with good corporate governance principles should consider ESG issues when deciding to invest in different projects.

The concept of SRI has received much attention in recent years. The change in approach towards responsible investing is caused by the consequences of changing morality after World War I (Lulewicz-sas & Kilon, 2014). Factors such as environmental

protection, human rights and labour relations have drawn much attention when evaluating whether an investment meets the SRI requirements. Moreover, the concept of SRI has a long tradition through the name itself has been functioning relatively recently (Lulewicz-sas & Kilon, 2014). SRI is referred to differently such as impact investing, responsible investing, corporate social responsibility, blended value, economic, social and governance investing (Dheeriya, 2017). It is therefore essential for managers to consider the sustainable business practices of the companies they choose to invest. Moreover, investing in companies with poor sustainability performance may result in reputational damage to the investor or investment company.

Companies should not only focus on improving their economic sustainability; they should as well focus on social sustainability by adhering to good ethical standards whereby morality and commitment are upheld. This is important since SRI is consistent with the triple bottom line (TBL) theory that covers economic, social and environmental sustainability (Elkington, 1994; Korditabar, 2015). In this vein, Korditabar (2015) contends that companies should be committed to preserving the ecosystems to limit CO_2 and greenhouse gas (GHG) emissions to mitigate global climate. Furthermore, companies are expected to use trees, water, and other natural resources efficiently and sustainably since the degradation of such non-renewable sources might endanger future generations' ability to meet their needs (Korditabar, 2015). It is therefore expedient that companies ensure that their operations do not deprive future generations access to use natural resources in meeting their needs.

Incidentally, companies that incorporate ESG issues in their investment decisions are considered socially responsible. Additionally, SRI is concerned with making ethical

investment decisions and has grown significantly in the last decades (Zulkafli, Ahmad & Ermal, 2017). Making ethical investment decisions require that investments be evaluated to determine whether the interest of stakeholders affected by the company operations are considered. Moreover, SRI is an investment strategy, which aims to maximise profits while considering ethical issues based on the principles of sustainable development (Lulewicz-sas & Kilon, 2014) by including ESG issues in investment decision-making (Eurosif, 2012; Sievänen, 2014; Majoch, Hoepner & Hebb, 2017). SRI is an investment that combines investors' financial objectives with their concerns about ESG issues (Eurosif, 2012; Miralles-Quirós & Miralles-Quirós, 2017; Pilaj, 2017). This indicates that companies may not be regarded as responsibly investing if they select investments based on financial returns only. Responsible investment, as opposed to the traditional investment approach, represents those investments that explicitly contribute to the sustainable development of companies (Pilaj, 2017). Traditional investment approach may not achieve sustainable development because it focuses mainly on high financial returns to the investors without consideration on how those returns are generated. Consequently, companies should consider their long-term impact on the environment and society (Zulkafli *et al*., 2017). Therefore, managers have a duty of ensuring that companies' operations are conducted in a manner that no harm is done to the environment, meets the society needs, and generate good returns to investors while creating value to the stakeholders.

Moreover, value is a function of benefit and cost (Korditabar, 2015). Sustainable value principles require the application of financial capital to natural and social resources which are regarded as scarce resources (Manzhynsi, Figge & Hassel, 2015). Sustainable value assumes that a return such as profit is created not only from one

resource like economic capital but rather a bundle of scarce resources. The fact that companies are incurring a cost when investing in different projects results in an expectation of benefit from the cost incurred. The question then is: Do companies benefit from making responsible investments and if they are, in what way, and how are the benefits measured? The fact that profit is not created from one resource makes it necessary for users to use the available scare resources efficiently. More efficient use of resources is linked to sustainable value creation (Manzhynsi *et al*., 2015). It is of importance that companies efficiently use available resources so that future generations can also benefit from the same kind of resources. If care is not exercised when utilising the current scarce resources, depletion of those resources can occur, and therefore future generations may suffer the consequences. In promoting responsible investment, Poland spent an estimated total cost of €1.2 million on SRI projects, which is approximately 0.3 percent of the total value of assets managed in that country indicating that while the concept of SRI is widely known, most investors still do not utilise it in their investment decision-making (Lulewicz-sas & Kilon, 2014). It is therefore expedient to determine whether South African mutual fund investors utilise the ESG factors when making investment decisions.

1.2 Problem statement

The study by Ogbuka and Fakoya (2016) revealed that institutional investors in South Africa invest in business operations that have a detrimental impact on the environment. For instance, Sasol Ltd results for 2014 indicate that business activities resulted in a release of volatile organic compound (VOC) emissions like benzene, toluene, xylene, ethylbenzene, 1.3-butadiene and acetaldehyde (Ogbuka & Fakoya, 2016). Likewise, Steinhoff International Holding results for 2014 indicate that their

business operations caused the release of dust, hazardous chemicals and odour to the environment (Ogbuka & Fakoya, 2016). This result indicates that environmental issues can be linked directly to societal issues in the sense that pollution to the environment may affect the society living in that particular area. A polluted environment may cause water and river contamination and diseases to the host community which may result in harmful health effects and mortalities thereby reducing lifespan. Once the community become aware that the company's operations cause their diseases, they are likely to cause disruptions in the business in the form of strikes where the company's operations can be halted which may result in financial losses being reported. Moreover, companies that fail to pay considerable attention to ESG issues in making investment decisions could risk both reputational damage (risk) and consumer backlash thereby exposing them to business disruptions and spiralling costs. The investee may not see the need to cease the running of inappropriate business practices that damage the environment and society if there are no consequences through the loss of investment. Hence, this study seeks to determine whether mutual funds companies incorporate ESG issues in their investment decisions to force investees to practice businesses that create sustainable value and the impact of considering ESG issues on the financial performance of investees. Mutual funds companies have been selected because they invest huge amount of money on behalf of investees. Therefore, it is appropriate to determine the type of investments' mutual companies commit their funds.

1.3 Research hypothesis

The following are the hypothesis for this study:

H_1: There is no correlation between environmental sustainability investment (water usage) and return on equity (ROE).

H_2: There is no correlation between social sustainability investment (employee health and safety cost) and ROE.

H_3: There is no correlation between gender diversity (percentage of female representations on corporate boards) and ROE.

H_4: There is no correlation between firm size (market capitalisation) and ROE.

1.4 Research objectives

The following are the objectives for this study:

- To determine the correlation between environmental sustainability investment (water usage) and ROE.
- To determine the correlation between social sustainability investment (employee health and safety cost) and ROE.
- To determine the correlation between gender diversity (percentage of women representation on corporate boards) and ROE.
- To determine the correlation between firm size (market capitalisation) and ROE.

1.5 Significance of the study

The activities of companies affect different stakeholders in different ways. The significance of this study is discussed for the different stakeholder groups that may be influenced such as academics, investors, regulators, SA mutual fund companies and society.

1.5.1 Academia

The study results generate knowledge and pave a way to academia to consider ESG indicators other than the ones covered in this study to examine responsible investment by SA mutual fund companies.

1.5.2 Investors

Existing and potential investors may be influenced by the way they select their investment portfolios and may migrate from the traditional approach of focusing on short-term profits to including ESG factors when making investment decisions to create sustainable value.

1.5.3 Regulators

The government is one of the dominant structures that can be used to enforce compliance with principles for responsible investment. The SA government can adopt the UN PRI and localise it in the context of SA. The study results can be used to strengthen current investment policies by providing tax incentives to encourage companies that are at the forefront of operating sustainable businesses and complies with required responsible investment legislation.

1.5.4 SA mutual fund companies

The study results provide a platform for asset managers to educate investors about the importance of responsible investment by considering ESG issues and the benefits thereof.

1.5.5 Society

The society is directly affected by the way different companies conduct their businesses because they are operating within the society. By not paying adequate attention to the environmental impact of their activities such as water usage that directly affect members of the surrounding community could hurt their livelihood. The inability of companies to address issues of health and safety of employees can result in unhappy employees battling with diseases and reduced lifespan. The lack of gender diversity and balance in corporate boards could result in gender inequality that has been adjudged to promote sustainability performance in boards with an appropriate number of women.

1.6 Limitations and Scope of the study

The United States principle informs this study for responsible investment (UN PRI) that encourage academics and other researchers to explore responsible investment as an area for research. The UN PRI also encourages different investment companies to consider ESG factors in investment decisions to achieve sustainable business practices. This study examined only one component of ESG factors that can be easily quantified. The ESG factors under this study were water usage to represent environmental sustainability, employee health and safety cost measured by several work-related fatalities to represent social sustainability and percentage of women on corporate's boards to represent governance factor. There are many mutual funds companies in SA. However, the study only selected the top 20 mutual fund companies that are listed on the JSE and selected companies that they invested their funds where there are physical activities. The study excluded mutual fund companies that are not listed on the JSE. The study also covers a period between 2007 and 2017. The study

results can therefore not be generalised to the entire mutual fund companies that are not listed on the JSE.

1.7 Definition of key concepts

Responsible investment: is defined as the inclusion of non-financial factors (i.e. environmental, social and governance) into the selection of investment opportunities (Stankevičienė & Čepulytė, 2014).

Sustainability: the ability to meet the needs of the present generation that does not deprive future generations to meet their own needs (Brundland, 1987; Christofi, Christofi & Sisaye, 2012). Sustainability is also described as the ability to maintain a balance between the economic, environmental and social issues (Lorenz & Lutzkendorf, 2008; Eurosif, 2012; Eurosif, 2014). Economic sustainability in the context of this study refers to the ability of managers to generate increased returns on investments and thereby maximising shareholders wealth (Ciasullo & Troisi, 2013).

1.8 Structure of the study

The study consists of five chapters outlined as follows: Chapter One- General introduction; Chapter Two- Literature review; Chapter Three- Research methodology; Chapter Four- Analysis of study results; and Chapter Five- Summary, Conclusion and Recommendations. The next section briefly provides an overview of the different chapters.

1.8.1 Chapter One - General introduction

Chapter One: Covers the background, problem statement, research hypothesis, research objectives, the significance of the study, limitations and scope of the study.

Under the background, the topic under this study is introduced, and the origin of responsible investment is outlined and the link thereof with sustainability. The national and local governments are coming up with legislation and regulations to compel companies to operate without harming the environment and society. The consequences of non-compliance with the set regulation are introduced which may include incurring fines and penalties that can cripple the financial performance of companies and consequently unsustainable business practices. Despite the effort by legislation to enforce compliance to invest responsibly, most companies are still following a traditional approach of investments by focusing solely on short term profit making with no consideration of the needs of other stakeholders. The consequences of focusing purely on short term financial gain are also outlined. The importance of financial and non-financial information is also explained in the context of stakeholder's needs.

1.8.2 Chapter Two: Literature Review

The theories relating to the hypothesis are introduced and discussed in detail. Three theories have been adopted in this study which is sustainability, stakeholder and agency theory. Sustainability theory is adopted due to the need for companies to adopt sustainable business practices that will ensure that there is no depletion of natural resources that can deprive the future generation needs. Stakeholder theory is adopted because all companies have different types of stakeholders that should be accountable for them. Stakeholders affected in this study include employees and board of directors. Agency theory is adopted because SA mutual fund companies are regarded as agents as they invest funds on behalf of different investors. After a detailed discussion of relevant theories, detailed literature is reviewed to support the

hypothesis and contextualise in this study. The relationship between selected ESG factors of selected companies that SA mutual fund companies have invested and financial performance measured by ROE was discussed in detail concerning existing literature. The UN PRI was also discussed that encourages all investors to consider ESG factors in investment decisions and contextualised to the study.

1.8.3 Chapter Three: Research methodology

This chapter discusses detailed methodology which includes research design, paradigm, method, data collection method, population, sample size, data analysis approach, control variables, the significance of the study, reliability and validity, limitations and ethical clearance. A correlational research design was adopted because it is appropriate in analysing relationships between independent and dependent variable. A positivist research paradigm was adopted with a quantitative research approach used to analyse the secondary data extracted from annual, integrated and sustainability reports of 28 selected companies for a period between 2007 and 2017. Detailed discussions of how the data was collected were provided, and the data and its analysis instruments are valid and reliable.

1.8.4 Chapter Four: Analysis and results

The chapter analyses the study results based on theories and statistical method used. Panel data was used and placed in MsExcel and after that placed in Stata 15 Software to get the results. The data used is considered to be reliable because many tests conducted on Stata 15 software were not contravened. The data used was considered to be normally distributed with no serial correlation, heteroscedasticity and multicollinearity that sometimes problems in most cases where panel data is used.

The study results were discussed by adopting the FEM after the Hausman tests proved it to be appropriate.

1.8.5 Chapter Five: Conclusion

In this chapter, research objectives and research process followed in this study were restated. Furthermore, the summary, contribution, recommendation and overall conclusion is provided.

1.9 Summary of the chapter

A general overview of the topic and its background, the problem statement, hypothesis and objectives of this study were discussed. The significance of the study towards different stakeholders is also outlined. Furthermore, the limitations and scope of the study are outlined, and key concepts are defined to provide clear clarity of their meaning. Chapter Two provides a comprehensive review of related and relevant literature.

CHAPTER TWO: LITERATURE REVIEW

2 Introduction

Chapter One outlined the scope and background of the study. The research hypothesis and objectives were formulated. This chapter reviews extant literature relating to responsible investment and sustainable value creation. Section 2.2 lists the theories adopted for this study. Section 2.2 discussed details of the theories adopted in this study, which is sustainability, stakeholder and agency theory and how they relate to the study. Section 2.3 discusses the UN PRI in the context of this study. Section 2.4 discussed environmental sustainability investment in terms of water usage and the effect thereof with financial performance. Section 2.5 discussed social sustainability investment in terms of employee's health and safety cost and the effect thereof on financial performance. Section 2.6 discussed governance factor which used gender diversity as a proxy in terms of percentage of women representation on boards and the effect on financial performance. Section 2.7 discussed firm size and the effect thereof on financial performance. Section 2.8 discussed sustainable value creation in detail. Section 2.9 discussed the financial performance of the company measured using ROE. The study determines whether SA mutual funds investors incorporate ESG factors in their investment decisions and the impact thereof on financial performance. The chosen ESG factors for this study that represents responsible investment are discussed in 2.4 to 2.6.

2.1 Preamble

This study focused on responsible investment and sustainable value creation of selected companies listed on the JSE that SA mutual funds have invested their funds.

Sustainability enables the present generation to meet its needs without jeopardising the future generation's capacity to meet their own needs (Brundland, 1987; Christofi, Christofi & Sisaye, 2012). Sustainability is also described as the ability to maintain a balance between the economic, environmental and social issues (Lorenz & Lutzkendorf, 2008; Eurosif, 2012; Eurosif, 2014). This is an indication that companies may be required to integrate economic, environmental and social issues to achieve sustainable business practices. Therefore, sustainability may not be achieved if companies are focusing only on one sustainability factor and ignoring the others. Investors who are looking for quick financial returns for their investment are unlikely to invest in companies that focus on long term financial performance because those companies sometimes sacrifice short term financial gains for long term financial performance of the company (Eccles *et al*., 2014). Contrary, investors that are long term orientated are unlikely to be attracted by short term financial gains with no strategy to make the performance sustainable in the long run (Eccles *et al*., 2014). This may support the principle that investors have different preferences about the investment of their funds, some may be looking for short term financial gains whereas others looking for long term survival of the business and do not mind to wait longer to receive their financial returns from the investment made. Sustainability factors are inclusive. Hence this study selected only one factor under each of the economic, environmental and social sustainability issues. Economic sustainability includes factors such as the company's performance concerning markets, efficiency, growth and consumption activities (O'Connor, 2007). Economic sustainability into the context of this study refers to the ability of managers to generate increased returns on investments and thereby maximising shareholders wealth (Ciasullo & Troisi, 2013). Investments in projects that generate a higher return above the cost of capital may

improve the financial performance of the company which may result in good shareholders returns. This study used return on equity as a measure of financial performance to represent economic sustainability. A company that is not profitable is likely to be unsustainable. Regarding environmental sustainability, environmental challenges include factors such as climate change, pollution to air, water and soil which impact on human life (Osbaldiston & Schott, 2012). Environmental sustainability focuses on natural capitals which can either be renewable or non-renewable (Ruggeri, 2009). Renewable resources include factors such as forest and fish stock (Brundtland Commission, 1987), water (Eurosif, 2014) while non-renewable resources include factors such as fossil fuel and minerals (Ruggeri, 2009).The inability of companies to address environmental challenges had resulted in problems like climatic changes that subsequently resulted in global warming, ocean disruptions and deforestation (Pagalung, 2016). SA is among countries that are battling with environmental challenges that require urgent attention. Companies should strive towards reducing the environmental impact caused by their operations and thereby reduce the environmental cost incurred in addressing environmental problems (Pagalung, 2016). Again, this study used the amount invested in water reduction to represent environmental sustainability. This is significant given the degree of water scarcity in South Africa. Some of the methods that can be used to eliminate environmental problems include government policy, international agreements, companies leaderships, educational programme and enhancement through technology (Osbaldiston & Schott, 2012). Environmental sustainability may also be achieved if companies address environmental problems such as water scarcity by implementing strategies to reduce their usage. Also, social sustainability issues include human capital. Human capital refers to resources that relate to humans and their capabilities

(Rajabifard, 2011). This indicates that employees are part of human capital. Example of human capital sustainability includes labour and skills, intelligence, social networks, political systems, trust and reputation and influence and power (Rajabifard, 2011). Social issues for employees include factors such as diversity, equal opportunities, work-life balance and health and safety improvement and internal promotion (Eccles *et al*., 2014). The social issues of employees addressed in this study relate to health and safety. Regarding social sustainability, companies are forced to take responsibility for their stakeholder's needs including the environment (Freeman, 1984; Ciasullo & Troisi, 2013). This indicates that companies may not be seen as socially sustainable if the stakeholder needs including environmental issues are ignored. The primary focus of sustainable development is about peoples' wellbeing (Moldan, Janoušková & Hák, 2012). This suggests that sustainable value may not be achieved if companies in their operations ignore the well being of employees. Notwithstanding, this study used employee's health and safety cost to represent social sustainability to determine whether it is of concern to the selected companies.

Companies need to recognise that while growth and profit maximisation is essential for sustaining the business, it is equally important for companies to pursue sustainable goals of environmental protection, social justice and equity, and economic development (Wilson, 2003; Lorenz & Lutzkendorf, 2008; Christofi *et al*., 2012). This means that companies need to realise that focusing solely on financial performance while ignoring societal and environmental performance are unsustainable business practices. Therefore, companies that incorporate ESG issues in their investment decisions are likely to contribute to sustainable value creation. The importance of environmental and social aspects of the ESG has already been emphasised above. Companies with policies and procedures in place to ensure sustainable business

practices are likely to form a separate board committee to address sustainability issues which reports directly to the board of directors (Eccles *et al*., 2014). Moreover, the governance issue is represented by gender diversity in terms of female representation in companies' boards. Diversity is one of the critical factors that can be used to enhance the quality of company leadership and decision making processes (McElhaney & Mobasserri, 2012). Diversity can also be used to enhance financial, environmental, social and governance performance which will, in turn, result in a sustainable company. The presence of females in leadership positions is deemed to be associated with good financial performance for the company (Liu *et al*., 2014). Female leaders have been found to contribute positively to environmental and social performance (McElhaney & Mobasserri, 2012). This indicates that gender can be associated with the performance of the company and therefore should be taken into account when board structures are formed in companies. The study by Eccles *et al*. (2014) whereby 180 US companies where sampled found the financial performance of companies that have policies and procedures in place to address sustainability issues is higher than of those companies that do not have sustainability policies and procedure This indicates that there is a reward for companies that practice sustainable business practices. Therefore, sustainability challenges may be mitigated when mutual fund companies invest in those companies that consider ESG issues in their operations. Hence, long-term profitability of companies may be achieved through improving the health and safety of employees, saving in the amount invested in water usage and having gender diversified boards.

2.2 Theoretical framework

This section explains the theories adopted in the study. Three theories are adopted which are sustainability theory, stakeholder theory and agency theory.

2.2.1 Sustainability theory- The four-capital model of sustainability

There are two sustainability theories, that is, the four-capital model and natural capitalism. The natural capitalism deals with radical resource productivity, investing in natural capital, biomimicry and services and flow economy (Rajabifard, 2011). Natural capitalism is not appropriate because it does not cover the variables under this study. The four-capital model covers the social, financial and environmental sustainability. The four-capital model under the tetrahedral model of sustainability is economical, social, political and environmental factors (O'Connor, 2007). Under this model, financial performance is regarded as one of the economic factors, the governance as a political factor, water as an environmental factor and employee health and safety as a social factor (O'Connor, 2007). The four-capital model of sustainability is appropriate because it covers all the independent variables and the dependent variable for this study. Therefore, the four-capital model of sustainability is adopted for this study.

In this study, the economic capital is represented by financial performance (ROE), the social capital by employee health and safety cost, the political capital is represented by governance factor (gender diversity – the percentage of female representation on companies' boards), and the environmental factor is represented by water usage. Water is one of the limited environmental resource (Ali, 2017). Saving in natural capital such as water by companies may result in the future generation benefiting from the

same kind of resources. For the social factor, the relationship between employee health and safety cost and ROE is analysed. Investment in health and safety of employees by companies may result in productive employees and good financial returns for the company, and therefore, it is important for companies to invest in the health and safety of their employees. Despite the importance of employees' health and safety, most of the companies are still reluctant to implement measures that would improve its performance for its employees (Haslam, O'Hara, Kazi, Twumasi & Haslam, 2016). For the governance factor, the relationship between gender diversity and ROE is analysed. Female representation on companies' boards is likely to impact the way the company is operating and also impact investment decision making.

The study examined the relationship between ESG factors and financial performance (ROE) of selected JSE listed companies that mutual funds have invested in to determine whether the mutual fund companies are investing responsibly by considering ESG factors in their investment decisions to force companies they are investing in to be involved in sustainable business practices.

2.2.2 Stakeholder theory

Stakeholder theory is a rational theory because all companies that exist have different stakeholders that are directly or indirectly affected by the business operations (Harrison, Freeman & Abreu, 2015). However, whether companies address the needs of their different stakeholders is another question to be raised. The fact that different companies have different stakeholders indicate that stakeholder's needs are different depending on the industry that they fall into and therefore a one size fits all approach may not be applied by companies in addressing stakeholder's needs. Stakeholder theory is most frequently used by researchers in social, environmental and

sustainability management (Eurosif, 2012; Hörisch, Freeman & Schaltegger, 2014; Eurosif, 2014). Hence the use of stakeholder theory is appropriate as it covers social and environmental issues to be addressed under this study. Companies have various stakeholders with diverse needs that should not be ignored in business operations (Freeman, 1984). This indicates that it is crucial for companies to identify their key stakeholders whose needs should be incorporated in their business operations. According to Harrison and Wicks (2013), stakeholders are identified as those groups that are affected by the activities of the company and the company has an obligation towards them to promote sustainable business practice. These stakeholders include among others, customers, communities, employees and suppliers.

Stakeholder theory is associated with creating value over time, and companies with few stakeholders focus such as shareholders and customers result in less value being created (Harrison *et al*., 2015). This may be due to the company not generating value from those stakeholders that are ignored. It is argued that companies that are dedicated to serving the interest of the different stakeholders (more stakeholder focus) will create more value over time (Freeman, 1984; Harrison *et al*., 2015). This may be due to different stakeholders satisfaction and therefore giving back to the company. The stakeholder theory is relevant for this study because it covers factors such as environmental, social, and governance issues that affect companies' sustainability practices. While financial performance is important to many companies survival, it is not the only aspect of value that is important to the stakeholders (Harrison & Wicks, 2013). This means that for companies to create value for its stakeholder, it may have to balance both financial and non-financial aspects. Notwithstanding, companies that have healthy relationships with their stakeholders tend to have sustainable financial performance and contribute to long term value creation (Jo, Song & Tsang, 2016).

This indicates that companies cannot operate in isolation, but require meeting the needs of its stakeholders to achieve sustainable financial and non-financial returns. Companies that take care of the needs of their stakeholders benefit in the sense that the same stakeholders also take care of the company by for instance spreading good information about the company (all stakeholders), investing more in the company (shareholders), motivated to work hard and stay with the company (employees) even at the tough times (Harrison *et al*., 2015). This may indicate that companies that address the needs of their stakeholders may achieve a good reputation, attract lots of investments, retain good skills and obtain low employee turnover while those that ignore their stakeholder's needs may result in bad reputation, lack of investments and losing key employees resulting in high employee turnover. In the study by Eccles, Ioannou and Serafeim (2014), high sustainability companies are described as those that adopted policies to ensure sustainable practices, while low sustainability is those that do not have any policies regarding sustainability. It may be difficult for companies that do not have policies and procedure in place about sustainability to address sustainability issues because there is no clear guideline on where to start if such issues arise. Some of the aspects that companies try to create value on include among others improving their relationships with various stakeholders, providing a safe working environment and not harming the environment (Harrison *et al*., 2015). This indicates that consideration of ESG issues is important for value creation. High sustainability companies are likely to have procedures in place for stakeholder's engagement (Eccles *et al*., 2014). It is important for companies to engage their stakeholders in order to understand their needs better (Freeman, 1984; Eccles *et al*., 2014). This is important because companies that do not understand the needs of the stakeholders may have a different perception which may not be consistent with what the stakeholder

needs. Companies should always place their stakeholder's needs at the forefront because they contribute to the success of their operations (Nwanji & Howell, 2004). Some authors are of the view that profits generated by the company should belong to the shareholders only because the higher the profits, the higher the taxes to be paid by the company and the tax is used to fulfil the needs of different stakeholders (Friedman, 1970; Shim, 2014).This is referred to as shareholder theory. The shareholder theory is only concerned about the economic value, where profits are maximised, while the stakeholder theory is concerned about the economic, social, political and environmental issues. Stakeholder engagement procedure includes among others, identifying the key stakeholders, risk and opportunities, training managers and obtaining feedback and allowing the stakeholders to raise their concerns (Eccles *et al*., 2014). This indicates that stakeholder engagement requires commitment from the company since it is a rigorous process. Sometimes companies tend to focus more on addressing the needs of other different stakeholders and investors while neglecting a key stakeholder in employees' interest (Pagalung, 2016). This supports the idea that if key stakeholders are not identified and documented in the company strategic documents, they are likely to be ignored. Happy stakeholders are likely to work together with the company to achieve its goal (Harrison *et al*., 2015). This may be due to the stakeholders acknowledging and appreciating the company commitment towards them.Companies which have a good relationship with their stakeholders are likely to identify stakeholders that are important for the long term running of the business and reduce agency cost (Eccles *et al*., 2014). This indicates that it is also important for companies to differentiate between short and long term stakeholders to achieve long term sustainability. The key stakeholders identified in this study include the employees. The study determined whether companies invest in the

employee's health and safety and whether such investment affects financial performance. Other stakeholders in this study include board of directors whereby female representation on companies boards is assessed to determine whether gender diversity exists on boards and the effect thereof on financial performance. The effect of companies operations to the environment will also be assessed in terms of water usage. Other types of stakeholders such as suppliers, customers, unions, community are of importance. However, they are not discussed further because they fall outside the scope of this study.

2.2.3 Agency theory

Agency theory emphasises the conflict of interest that may arise between the principal (shareholders) and the agent (investment managers) arising from the separation of ownership and control in companies (Jo *et al*., 2016). Conflict of interest arises when the investment managers are making an investment decision on behalf of their shareholders by putting their self-interest first resulting in agency theory. Shareholders delegate the responsibility to manage the companies' operations to the board of directors or management with the expectation that managers will pursue the shareholder's interest. Companies should not turn a blind eye on agency problem because different companies get affected by this in different ways or forms (Panda & Leepsa, 2017). This indicates that every company that is not owner-managed may be affected by this agency problem. In a study by Bebchuk, Cohen and Hirst (2017) in the United States (US), there is an indication that the largest 200 companies that were listed on the US Stock Exchange are controlled by employed managers rather the owners (Bebchuk *et al*., 2017). In this study, investment managers may be considered as agents acting on behalf of their investing clients. Since investment managers make

investment decisions on behalf of other parties, one can always question whether they will exercise same care that they would exercise if they were investing on their behalf (Bebchuk *et al.,* 2017). This indicates that there is the risk that investment managers may act based on their interest to the detriment of the shareholders or owners that employed them (Namazi, 2013). The conflict of interest between shareholders and managers interest may be escalated by factors such as the short period of involvement in the company and unsatisfactory compensation (Panda & Leepsa, 2017). The short employment period and unsatisfactory compensation may result in affected managers doing whatever it takes to benefit as far as possible during the period of employment (Panda & Leepsa, 2017). Therefore, agency problem may be likely to increase due to short employment period and unsatisfactory pay and is likely to reduce during long employment periods and where good salaries are paid. Therefore, companies should carefully plan the employment period and the amount they pay to their agents. Managers should be mindful that their self-interest can only be achieved if the company under their management continue operating, and therefore their decisions and actions taken should be in line with long-term survival of the company (Panda & Leepsa, 2017). Investment managers are therefore tasked with a responsibility to satisfy the interest of their shareholders and other stakeholders when making investment decisions. Investment managers should incorporate environmental issues in their investment policies so that investments made can be sustainable (Ali, 2017). This indicates that investment managers may be required to move from the conventional approach of focusing only on profit-making for the benefit of shareholders and consider the needs of other stakeholders. According to Liu *et al*. (2014), one way of solving the agency problem is to improve the monitoring role by the various company boards. This indicates that if managers are aware that their actions are

monitored, they are likely to act in the company's best interest because unethical business practices can be easily identified and get exposed. The board of directors that is gender balanced (females adequately represented) should, therefore, act at the best interest of the investors by approving investment decisions that consider ESG issues to ensure that sustainable value is created for the investors and other stakeholders.

2.3 The United Nations principles for responsible investment (UN PRI) and the OECD guidelines for multinational enterprises.

The UN PRI guidelines are one of the leading companies' responsibility document developed by the financial sector while the OECD guidelines for multinational enterprises (MNEs) is the most comprehensive voluntary corporate responsibility instrument addressed by governments to multinational companies. The UN PRI and OECD guidelines share a common objective of promoting responsible investment by consideration of ESG issues in investment decision-making (Principle for Responsible Investment, 2007).

2.3.1 The UN PRI guidelines

The UN PRI guidelines for responsible investment is a joint initiative of the UN environmental programme finance initiative and UN Global Compact to encourage companies to incorporate ESG issues in their Investment decision-making and ownership practices. The UN PRI encourage institutional investors and asset managers to consider ESG issues in investment decision-making with a view of achieving sustainable development. According to the PRI core principles institutional investors are required among other things to consider incorporating ESG issues into

the companies' policies and practices, investment analysis and decision-making processes (Principle for responsible investment, 2007). This may be achieved in the form of development of ESG-related tools and measures and implementation and compliance with ESG policies and engaging various stakeholders about ESG issues. A mutual fund as an institutional investor needs to comply with the PRI principle. Guideline for implementation of this principle is available to all types of institutional investors regardless of size or location. This indicates that SA mutual funds companies can also be able to access this document which can from time to time be referred to when making an investment decision. It is believed that consideration of ESG issues can affect the performance of the investment portfolio and address some of the environmental and societal issues. Academics and other researchers are also encouraged to pursue research in this area.

2.3.2 The OECD Guidelines for Multinational Enterprises

This document aims to ensure that investment companies comply with policies relevant to their country of operation and also consider ESG issues and societal expectations. Part of its general policies is to encourage good corporate governance practices and principles by companies. This study indicates that good corporate governance may also be achieved by having gender diversified boards whereby women are well represented. The general policies of this guideline also encourage companies to protect the environment, public health and safety and conduct their operations in such a way that it will result in sustainable value creation. It is considered that, if this principle is adhered to, environmental and social sustainability may be achieved. Companies are encouraged to regularly monitor the progress towards the set targets of achieving environmental, health and safety issues with the actual results.

If companies monitor environmental and health and safety performance, it is likely that challenges may be identified and addressed accordingly. This principle also encourages timely engagement with all relevant stakeholders that are affected by the environmental and health and safety issues caused by the company operations. (Principle for responsible investment, 2007)

Mutual funds companies as the agents of the investors are therefore tasked with the responsibility to invest responsibly and also consider the needs of other stakeholders other than the investors in investment decision-making to ensure sustainable value creation.

2.4 Environmental sustainability investment (water usage)

The influence of sustainability practices on financial performance has received growing attention in research, although the results remain inconclusive. The study by Alshehhi, Nobanee and Khare (2018) confirmed the inconclusiveness of research results by reviewing 132 different journal articles that were already published between 2002-2017 to determine the relationship between sustainability practices and company financial performance. The results indicated that 78 per cent of the 132 journal articles reported a positive relationship, 7 per cent reported no impact, 6 per cent reported both positive and negative relationship, 2 per cent reported no impact and 2 per cent reported mixed results of positive, negative and no impact (Alshehhi *et al*., 2018). Sustainability practices were assessed in terms of consideration of a combination of economic, social and environmental in companies operations (Alshehhi *et al*., 2018). Although the majority of the studies reported a positive relationship, other studies still reported no impact, negative or mixed results which make the results to remain inconclusive. It is assumed that companies that are

dedicated to addressing environmental challenges may also ensure that environmental issues that require urgent attention are not left unattended. Water scarcity is one of the key environmental issues that require the attention of all stakeholders and therefore companies are expected to be at the forefront of coming with initiatives that will result in a reduction of water usage. As such, the study analysed the relationship between environmental sustainability represented by amount invested in water reduction and financial performance.

Environmental sustainability is among topics that draw the attention of many scholars. This is because environmental issues are regarded as fundamental by a variety of stakeholders such as local community, employers, employees and customers (Nikolaou & Matrakoukas, 2016). Therefore researches in this area maybe some of the stakeholders that are interested as to whether companies are addressing the negative impact of their operations that pollute the environment and consequently affect human beings, animals, plants and cause diseases that threaten lives. According to Nikolaou and Matrakoukas (2016), some benefits will accrue to companies that address environmental issues while those that ignore environmental issues will face some threats. Most studies on sustainability issues were performed in developed countries other than in developing countries (Alshehhi *et al*., 2018). Therefore, more research is required to be performed in developing countries such as South Africa. Alshehhi *et al*. (2018) confirmed that literature is slowly replacing sustainability issues with corporate social responsibility (CSR) which considers little or no environmental issues at all. Therefore companies that practices CSR may not automatically be regarded as addressing sustainability issues because their focus may be to narrow. Concerns about the company's environmental impact have increased in recent years (Mokhtar, Jusoh & Zulkifli, 2016). Consequently, companies are now

starting to incorporate environmental issues into their business strategy (Mokhtar *et al*., 2016). This may indicate that environmental issues are taken seriously by some companies. However, most companies have not yet realised the economic and financial benefit of addressing environmental issues (Severo *et al*., 2015). This may result in companies not recognising the need to address those issues. One of the ways of reducing environmental challenges about water includes water efficiency (Eccles *et al*., 2014). Financial performance of companies can be improved through resource efficiency initiatives (Edwards, 2015). This indicates that resource efficiency may be one of the key elements of sustainable business practices. South Africa has begun to experience more water shortages during the latter part of the 19th century (Statistics South Africa, 2006). The loss of natural resources hampers economic development and creates poverty, hunger and diseases (Statistics South Africa, 2006). This indicates that some of the economic challenges may be addressed through resource efficiency. The sustainability of these natural resources like water depends among other things on the choices of investments made (Statistics South Africa, 2006). This may mean that some investment decisions made by investment fund managers about which company to invest (the company's operations) might be detrimental to the ecosystem. Factors such as tough regulations, greater public awareness, accurate costing of environmental impact may force companies to take action on environmental problems (Edwards, 2015). This may result in a reduction of environmental problems. Small, medium and large companies are often addressing environmental challenges in order to comply with legislation and improve their reputation (Severo *et al*., 2015). This indicates that companies are likely to behave responsibly if they know that there are consequences for non-compliance with legislation and may also mean that companies may be at the forefront of ignoring environmental issues if they are aware

that they will not be accountable for their actions. The wastefulness of natural resources such as water may result in decreased company profitability over time (Bassi, Tan & Mbi, 2012). Unprofitable companies may not be sustainable over time. Water pricing strategy has been established to set various water use charges which include promoting efficient use of water and wastage (Department of Water and Sanitation, 2015). Despite this action to promote sustainable water use, water scarcity has continued to plague South Africa due to other reasons like climate change effect. Water usage is regarded as a crucial environmental issue that requires efficient usage (Bichueti, Gomes, Kruglianskas, Kneipp & Barbieri da Rosa, 2014; Nikolaou & Matrakoukas, 2016). Investment in equipment that promotes water efficiency and more recycling of water may result in reduced water stress level and improved competitiveness especially in developing countries with the scarcity of fresh water (Bassi *et al*., 2012), improve company reputation and attract new customers that are environmentally friendly (Severo *et al*., 2015). Therefore, companies are required to save water in order to achieve environmental sustainability. Companies that are transparent regarding environmental performance leads to improved stakeholders' relations (Edwards, 2015). This indicates that companies that address environmental challenges may benefit a variety of stakeholders including the company itself.

Companies that seek to reduce the operational impact on the environment may be required to implement environmental management procedures. Environmental management is regarded as one of the methods which can be used to improve company financial performance (Albertini, 2013). Environmental management includes significant investment in the company processes to minimise the use of renewable sources (Albertini, 2013). Efficient use of renewable resources includes factors such as a reduction in water usage. Companies that incorporate environmental

issues in their strategies, policies and procedures and when are implemented are regarded as environmentally responsible (Schultze & Trommer, 2012; Albertini, 2013). Therefore, the implementation of the policies and procedures regarding environmental management is more important than just having a mere policy for compliance purposes without implementation. Companies must have policies in place that indicate how to deal with environmental problems caused by their operations (Shrivastava & Kennelly, 2013). Therefore, companies that have policies and procedures in place regarding environmental management are likely to achieve environmental sustainability because there is a clear guideline on how to address environmental problems.

As part of environmental management systems, most companies that are concerned about the future operations of their companies started to look at their investment strategy in order to select socially and environmentally responsible investment opportunities (Edwards, 2015). This indicates that companies are moving away from the blanket way of investing and started to embrace companies that are socially and environmentally responsible. Companies often face severe conditions that may tempt them to focus on short-term activities and ignore the long-term sustainability initiatives, which may eventually result in loss of customer (Singal, 2014). The focus on short-term initiative may not be sustainable business practice because the loss of customers may result in a decrease in financial performance. Environmental protection is traditionally regarded as a general cost without a clear benefit (Song *et al*., 2017). This may be because environmental protection requires additional investment from companies. The benefits of being environmentally active are often not directly achieved (Song *et al*., 2017). The lack of direct benefits may result in companies being reluctant to invest in the processes that may improve the environment. Companies will

not be interested in protecting the environment if they are aware that there will be no benefit to be received from being environmentally responsible (Song *et al*., 2017). Therefore, companies are likely to protect the environment if they are likely to generate higher returns for their investors. Companies that protect the environment can be rewarded in the form of government subsidies, tax reduction and tax rebates. Contrary, companies that do not protect the environment can incur fines, penalties or stoppage of operations (Song *et al*., 2017). However, fines and penalties for non-compliance with environmental regulations may force the company to comply. Some of the investors regard environmental issues as most important in deciding which company to invest in (Berry & Junkus, 2013). Therefore, companies that do not address their environmental impact may not attract such investors.

A study by Lin, Tan and Geng (2013) conducted in Vietnam using 208 valid questionnaires that were distributed to four (one local and three foreign) leading motorcycle companies between January and July 2011 found a positive relationship between environmental performance and company's performance. The study by Severo, de Gumaraes, Dorion and Nodari (2015) in Brazil surveyed 950 companies between April and December 2012 in the automotive metal-mechanic cluster (AMMC) of Serra Gaùcha found a positive relationship between environmental sustainability and financial performance. Reduction in the consumption of natural resources such as water is seen to have a positive impact on environmental sustainability and companies performance (Severo *et al*., 2015). In the study by Baik, Chae, Choi and Farber (2013) performed using a large sample of observations of companies listed on the COMPUSTAT XPF files for the period between 1976 to 2008 to determine the relationship between operational efficiency and company's performance, they found that companies that improve resource efficiency have a higher chance of being

profitable in current and future years. Hence, the high consumption of scarce resources like water might result in an increased cost that depletes the company's profits. The study by Singal (2014) in hospitality and tourism industries in the US using MSCI's ESG indices and credit ratings where 16325 companies where sampled for the period 1991 to 2011 found that good environmental performance enhances future financial performance. This indicates that companies that practice good environmental practices are likely to result in sustainable financial performance. Edwards (2015) found that more than two-thirds of environmentally friendly companies perform better than the non-environmentally friendly companies and therefore concluded that there is a positive relationship between environmental sustainability and financial performance. Albertini (2013) conducted a meta-analysis of 52 studies around the world in various industries for a period between 1972 and 2008 and also found a positive relationship between environmental management and financial performance. The study by Song, Zhao and Zeng (2017) in Chinese listed companies for the period between 2007 and 2011 found that the implementation of environmental management practices requires the use of companies' capital and other resources and therefore does not improve financial performance in the year that it was implemented. Therefore there is a negative relationship between environmental sustainability initiatives and financial performance in the period that environmental management practices were implemented.

Similarly, environmental management is likely to improve the financial performance of the following year and therefore can be associated with future profitability and not current profitability. Companies that require sustainable businesses are likely to implement environmental management initiatives if they are aware that losses will not be maintained to the future. A study by Severo *et al*. (2015) found that there is a

positive relationship between environmental sustainability and company performance. Based on the inconclusiveness of results from researchers, this study examines the relationship between environmental sustainability and firm performance of selected JSE listed companies that mutual funds have invested. Hence, the study considers the following hypothesis:

H1: There is no correlation between environmental sustainability investment (amount invested in water reduction) and ROE.

2.5 Social sustainability investment (employee health and safety cost)

Health and safety of employees remain an essential aspect of the successful running of business operations. While in many instances, technological innovations and automation can be used to replace employees; however, employees remain critical assets in companies since employees may still operate machines. Employees are regarded as the key assets of the company (Bedarkar & Pandita, 2014). Moreover, employees are among the vital company's stakeholders and should, therefore, be taken care of by companies. If an employee's health and safety are not taken care of, many things can go wrong in the company, which may affect the future operation of that company. Working conditions can affect the health condition and performance of employees (Sobhani *et al*., 2015) which may either positively or negatively. Working conditions should, therefore, be designed in a way that supports good health and safety. Moreover, companies that do not invest in health and safety of employees result in poor employee's health which results in a decline in employee productivity and increased absenteeism which consequently decrease the financial performance of the company (Loeppke *et al*., 2015). Such companies also incur high medical or pharmacy cost (Loeppke *et al*., 2015). The increase in medical costs may deplete the

income of the company resulting in financial losses being reported and therefore unsustainable business. Companies with better employee relationship by addressing key social issues such as health and safety experiences improved employee health, increased efficiency and productivity (Fabius *et al*., 2013; Estebn-Sanchez, 2017). Therefore, it is plausible that improved employee health may result in saving in medical cost which may improve the profitability and of the company.

The study by Shkura (2017) conducted in Ukraine found that most senior managers still believe that social issues should be left in the hands of government to address and that companies should focus primarily on profit making. As a result, most companies in Ukraine were found not to be engaging in SRI. This indicates that some senior managers still embrace the traditional way of doing business by focusing on shareholders returns only, without considering other stakeholders needs. Issues hindering the implementation of SRI include lack of financial resources, the difficulty in pinpointing the economic benefit that accrues from engaging in SRI, lack of incentives to companies that embrace SRI (Shkura, 2017). Lack of benefits for engaging in SRI may discourage companies to be involved in projects that cater to SRI.

2.5.1 Occupational Health and Safety Act (OHSA)

According to Section 8 (1) of the Occupational Health and Safety Act (1993) under the general duties of an employer to employee states that employer should ensure a safe work environment for its employees. Section 8 (2) of the OHSA indicates that a safe and healthy working environment can be achieved when issues bothering employees' health and safety are considered (Occupational Health and Safety Act, 1993). Such issues include the provision of automated plant and machinery, mitigating against the

potential hazard, provision of information, and training and necessary supervision. This indicates that it is a legislative requirement for companies in ensuring that employees lives are not a risk. The big question to be asked is whether the employers adhere to the OHSA.

The issues of health and safety are interrelated in the sense that health activities impact safety and safety activities impact health (Loeppke, Hohn, Baase, Bunn, Burton, Eisenberg, Ennis, Fabius, Hawkins, Hudson & Hymel, 2015). Companies may, therefore, be required to address health and safety issues simultaneously and both issues are equally important. According to the Occupational Health and Safety Act (1993) being healthy is described as free from illness or injury attributable to occupational causes and being safe means free from any hazard. Healthy and safe working environment are associated with the good physical and mental health of employees (Haslam *et al*., 2016). Therefore, companies should note the importance of health and safety measures and not wait for incidents to occur before taking health and safety a priority.

Nearly three million work-related injuries were reported by private companies in the United States in 2014 (Probst, Jiang & Graso, 2016). As such, it is essential for companies to put measures in place to ensure that employees have safe working conditions. One of the critical needs of employees is for companies to improve their health and safety (Eccles *et al*., 2014). The statistics performed on work-related health and safety in the United Kingdom (UK) indicates that companies in 2011/12 lost 27 million days due to work-related ill-health or injury (Health and Safety Executive, 2014 & Haslam *et al*., 2016). Loss of working days might result in loss or reduced production which might result in decreased profits. Many companies do not give health and safety

a priority despite their importance (Haslam *et al*., 2016). This may be because the health and safety of employees come at a cost to the companies. Work-related illness may reduce the overall employee performance (Sobhani, Wahab & Neuman, 2015). If employees are not performing at their best level due to a poor working environment, this may negatively impact the profitability of the company. Sometimes management is forced to reduce costs that should be spent in order to generate additional value due to lack of resources which turn to have negative consequences against the company (Harrison *et al*., 2015). For instance, a company that reduces the amount invested in health and safety of employees to minimise cost may find itself with more injuries on duty, employees getting sick due to safety issues, lots of absenteeism due to ill health which may negatively affect the productivity of the company and consequently financial performance. The study by Haslam *et al*. (2016) confirms that companies of different sizes and sectors that address health and safety issues in their workplace achieve lower accident rates and results in employee commitment and job satisfaction. The good profit margins may be achieved due to saving in medical expenses and other claims that may be made by an employee due to injuries on duty. In addressing the challenges relating to health and safety, many large companies have established medical clinics and pharmacies on site to ensure that they are readily available to their employees (Loeppke *et al*., 2015). This indicates that employees that need urgent medical attention may be assisted without any hassle. The study conducted in Poland found that 70 to 80 per cent of managers of the 25 sampled companies indicated their willingness to incur additional costs on various activities in order to address the health and safety issues of employees with the view that this actions will result in improvement in profits (Pecillo *et al*., 2012).

Notwithstanding, there is an enormous cost incurred by companies to install and implement occupational health and safety measures (Wang *et al*., 2016). The occupational health and safety cost include among others, purchase of safety equipment, training of employees and development of a safe working environment (Wang *et al*., 2016). This indicates that the health and safety of employees come at a considerable cost which may deplete the profits of the company. Costs incurred by companies for health and safety of employees should be viewed as an investment rather than an expense (Fabius *et al*., 2013). This may be because healthy employees may become more productive and generate the company more returns. The study by Abad, Lafuente and Vilajosana (2013) found that safety standards can also be used to achieve long term strategic goals such as improving overall companies performance. Examples of standards that can be implemented by companies to ensure a healthy environment may include programs to educate employees about potential hazards at the worksite including equipping them with ways to avoid them. Regular communication with all affected stakeholders about hazardous chemicals identified and measures taken by the company to ensure that the public is not harmed, company programs that focus on reducing the impact of the company operations to the community and the environment is essential (Loeppke *et al*., 2015). Companies focusing on their employees' health and safety are generating good returns for their investors (Fabius, Thayer, Konicki, Yarborough, Peterson, Isaac, Loeppke, Eisenberg, Dreger & Met, 2013). Health and safety of employees can also be enhanced by regular inspection of the worksite by occupational health and safety (OHS) professionals to identify potential health and safety hazards before employees start performing their duties, thorough evaluations of employee health by health professionals and thoroughly explaining the results thereof to the employees while

maintaining confidentiality (Loeppke *et al*., 2015). Since some of the health issues affecting employees are very sensitive, it is essential that confidentiality is maintained so that employees can feel free to open up without doubting that the employer can disclose the personal information provided. Permanent relationship between employer and employees can promote sustainability (Fabius *et al*., 2013). This indicates that trust is also a key for the successful running of a business.

One of the ways that can be used to improve the health and safety of employees is to report the performance of companies about health and safety. Health and safety performance reports will enable investors to review the status of the company in terms of health and safety when making investment decisions (Loeppke *et al*., 2015). Companies are therefore expected to consider health and safety issues in their business strategies (Loeppke *et al*., 2015). Some investors are likely to invest in companies that have affirmative policies regarding how to deal with social issues that affect their operations (Berry & Junkus, 2013). Therefore, companies that do not have affirmative policies on how to deal with social issues affecting their operations may not attract these investors. Companies are therefore likely to invest in health and safety if they are aware that there are benefits. As a result, the study determined the relationship between health and safety cost and financial performance measured using ROE.

The effect of health and safety on financial performance have attracted the interest of many researchers. However many of these studies have been conducted in countries other than SA. Previous studies have been conducted in countries such as US (Fan and Lo 2012), Spain (Abad *et al*., 2013), Portugal (Santos *et al*., 2013). This study

contributes to the literature by examining the impact of health and safety cost in South African companies which has different economic and legislative requirements.

In the study by Auer and Schuhmacher (2016) to determine whether adopting SRI is beneficial, the result showed that there is no significant difference between investment in socially responsible investments and non-social investments when looking at a mutual fund. The lack of difference between SRI and non-SRI may make many companies reluctant to adopt SRI as it comes at a cost which may not turn into any benefit. Studies in other countries that are based on the ESG criterion indicates that investors would pay the price for companies that invest responsibly though they may not have substantial benefit for making such investments (Auer & Schuhmacher, 2016). Socially responsible investments can assist companies in reducing costs relating to injuries on duty (Wang *et al*., 2016). Injuries on duty by employees might result in stoppages of business by the regulators, strikes by employees and community which may result in losses being suffered by the company.

In the study by Fan and Lo (2012) in the US using a sample of 44 companies that obtained occupation health and safety assessment series (OHSAS) 18001 certification to determine the impact of voluntary occupational health and safety management system (OHSMS) on companies' financial performance in the fashion and textiles industries found that companies that adhere to health and safety standards experience increase in sales. However, such an increase did not result in an improvement in the companies' financial performance measured using ROA. In the study by Abad *et al*. (2013) using a sample of 149 Spanish companies for the period 2006 to 2009 to determine the effect of safety in performance and productivity. They found that companies that adopted the OHSAS 18001 have more significant

improvement in safety performance and labour productivity and decreased the rate of work accidents. Increase in labour productivity may also increase financial performance for the company. The study by Santos, Barros, Mendes and Lopes (2013) analysed companies that have OHSMS certification and those that are not certificated to determine what encourages certification and non-certification by using a sample of 300 SMEs in Portuguese using a survey questionnaire. The analysis of those companies that are certified indicated that the benefits related to OHSMS certified companies include compliance with legislation, enhancement of working conditions and therefore decrease in the number of incidents, diseases, absenteeism and their related costs, which improve the company reputation as well as profitability. Therefore, there could be a positive relationship between OHSMS certification and financial performance. Compliance with legislation may results in avoidance of fines and penalties by the regulator that may result in force stoppages which may negatively affect companies operations. The non-certified companies indicated that their non-certification is affected by factors such as difficulty in changing the existing culture, high certification costs and the complicated process of certification that management must undergo (Santos *et al*., 2013). This indicates that OHSMS is not an easy process and therefore it requires companies commitment and some additional funds to be invested in the process which some of the companies may regard as a burden of costs which may decrease their profitability. The study by Haslam *et al*. (2016) found that companies that priorities the health and safety of their employees report higher profit margins. The study by Barnett and Salomon (2012) done in the USA compared companies with low, moderate and high social performance and found that companies with low social performance have higher financial performance than companies with moderate financial performance. However, companies with high social performance

have the highest financial performance. The results of this study are mixed in the sense that companies that do not address social issues resulted in better financial performance as compared to the moderate companies. This may be due to saving in social costs in companies with low social performance. The study also confirmed that negative or positive relationships between social sustainability were found in some of the companies studied.

Based on the inconclusiveness of results from researchers the study examines the relationship between social sustainability (employee health and safety cost) and financial performance of selected JSE listed companies that mutual funds have invested in. Hence, this study considers the following hypothesis:

H_2: There is no correlation between social sustainability investment (employee health and safety cost) ROE.

2.6 Gender diversity- Percentage of female representative on companies' boards

Female representation on the board of directors is likely to influence the way the board is managed and may have implications on its investment decisions and financial performance. The collapse of big companies such as Enron resulted in a question as to whether the situation would have been prevented if women were in leadership positions (Liu, Wei & Xie, 2014). The big questions are, can women have a different leadership style as compared to men? The board of directors should ensure that the company's corporate governance is effective and maintained at all times (Fauzi & Locke, 2012). The board of directors that is gender balanced is likely to function effectively due to the combination of perceptions from both genders. The board should

comprise the appropriate knowledge, skills, experience, diversity and independence for it to discharge its governance role and responsibilities objectively and effectively (Institute of Directors in Southern Africa, 2016). This indicates that diversity is one of the tools that can be used by companies to improve corporate governance. Diversity is further described in terms of King IV as a combination of individuals in terms of knowledge, skills and experience as well as age, culture, race and gender. This indicates that diversity is broad and consists of many characteristics and gender diversity is one of those characteristics. The board should set targets for gender representation in its membership (Institute of Directors in Southern Africa, 2016). This indicates that the board composition should be balanced in terms of men and women. This study only focused on one characteristic of diversity (gender diversity) for the following reasons: South African (SA) women were previously disadvantaged by culture and legislation, or companies policies were favouring male appointment in managerial and leadership positions. The new constitution of South Africa that was adopted in 1996 realised the importance of gender equality for its people (Morrel, Jewes & Lindegger, 2012). As such, the SA government came up with legislation to ensure equal work opportunities for both men and women because of specific work opportunities or positions that were previously considered only suitable for men. Gender equality results in an expectation that the representation of women in leadership positions must increase in male-dominated industries. Women representation on the board is directly linked to components of corporate governance (Lückerath-Rovers, 2013). Therefore, it is essential to determine whether the number of women representations on boards could drive good corporate governance and its impact on financial performance.

The correlation between gender diversity on the board of directors and the impact thereof on financial performance have attracted the interest of many researchers in the past years. However, the results of the studies remain contradictory and inconclusive. Many of the studies have been conducted in many other countries other than South Africa. Previous studies have been conducted in countries such as Asia (Low *et al*., 2015), Australia (Chapple and Humphrey, 2014), China (Liu *et al*., 2014), Norway (Ahern & Dittmarr, 2012), Indonesia (Darmadi, 2013). Few studies have been conducted in SA (Mans-Kemp & Viviers, 2015). Therefore, this study will contribute to the existing literature by examining the relationship between gender diversity and financial performance among South African companies which has a different economic and cultural environment other than those prevalent in the countries already studied.

A diverse board may be one of the tools that a company can use to solve complex societal issues and to meet different stakeholder needs (Lückerath-Rovers, 2013; Chapple & Humphrey, 2014 and Şener & Karaye, 2014). This indicates that different stakeholder needs may be satisfied when there is gender balance in the board structure. However, companies and stakeholders should not expect gender diversified board to be automatically linked with financial performance (Chapple & Humphrey, 2014). This indicates that some studies found a negative relationship between gender diverse board and performance. It is claimed that women contribute to well functioning of the board because they are interested in all economic and social issues (Handajani, Subroto, Sutrisco & Saraswati, 2014; Nekhili, Nagati, Chtioui & Nekhili, 2017). This indicates that a balance between economic and social issues is likely to be achieved when women are part of the board. Boards that are well represented in terms of women are therefore likely to address economic and social issues. Men have a habit of focusing only on economic matters (Arun, Almahrog & Aribi, 2015). This indicates

that men and women value different things in life. The focus on only the economic factors in a company may be to the detriment of other stakeholders. Boards that are men dominated are therefore likely to ignore societal issues when making investment decisions. Women are regarded as more ethical because they pay more attention to societal issues (Isidro & Sobral, 2015). Ethical people are likely to make ethical decisions, and therefore women on boards are likely to pursue investment decisions that address the needs of the society. Female directors are more cautious than male directors in making relevant companies' decisions (Huang & Kisgen, 2013). A high number of women representation on companies' boards is therefore likely to contribute positively to the company financial performance as a result of sound decisions taken that may benefit a variety of stakeholders. Despite the vital role that women play in a leadership position, the study by Şener and Karaye (2014) where gender diversity was compared between Turkish and Nigerian companies, found that Turkish companies still have fewer women or no woman at all in their board.

Of the 102 sampled companies from Turkish more than half were found to have no women representation on the board and in Nigeria of the 94 sampled companies, 32 per cent were found not appoint women directors at all in their board. This is supported by the study done in France that found that women directors are not employed except in specific cases (Nekhili & Gatfaoui, 2013). The study by Lückerath-Rovers (2013) found that women representation on board structures is still low in the Netherlands because of the total sample of 99.69 per cent of that have been found to have no women representation at all and that 31 per cent have either one or more women representation. Based on these findings, the majority of the companies in the Netherlands have no women representation on their board structure. This indicates that most board of directors are still male-dominated despite the need for gender

diversified boards. Levi, Li and Zhang (2014) found that women assist in generating shareholder value. However, these results are contradicted by Darmadi (2013) that indicate that women representation on board structure does not automatically improve shareholder value. Based on the contradictoriness of research results, this study measured gender diversity in terms of the percentage of female directors representations on companies' board of directors.

The question as to whether gender diversity is related to financial performance, prior studies show inconsistent results. Some studies have found a positive relationship between gender diversity and firm performance, while others found a negative relationship or no relationship at all. The study by Liu, Wei and Xie (2014) conducted in China-listed firms from 1999 to 2011 found that percentage of women directors has a significant and positive impact on firm performance measured by return on sales and return on assets. In the same study, it was found that boards with three or four female directors have a much stronger impact on financial performance than boards with two or fewer. Lastly, it was found that the impact of female directors on financial performance is significant on private companies and insignificant in the state-owned companies. Likewise, the study done in different Asian companies (Hong Kong, South Korea, Malaysia and Singapore) shows that greater women representation on board structure has a positive effect on financial performance as measured by means on ROE (Low, Roberts & Whiting, 2015). However, it was found in the same study that the positive effect reduces in countries where the government already empower women in general and allow them to participate in economic decisions. The study by Chapple and Humphrey (2014) conducted in Australia where all listed Australian companies were sampled found that there is weak evidence associated with having one woman on board to higher or lower companies' returns. It was found that larger

companies with more women than men on board have a lower risk. This indicates that company risk may reduce with a more gender diversified board. Ahern and Dittmarr (2012) used a panel of 248 Norwegian listed companies from 2001 to 2009 and found that greater representation of women in the board structure results in negative firm performance. Likewise, Darmadi (2013) also found that the percentage of women in top management structure is negatively related to the financial performance by using all Indonesian listed companies as at 31 December 2007. The study by Lückerath-Rovers (2013) where 99 Dutch companies were examined for the period between 2005 and 2007 was inconclusive as to whether women representation on boards has an impact of financial performance due to the mixed results obtained using different performance measures. According to Jin (2014), woman directors on the company's boards are associated with contributing a positive impact on sustainability. This indicates that sustainability issues can be addressed by ensuring that companies have gender diversified boards. The percentage of women on the company's board is also positively related to water productivity (Jin, 2014). This indicates that measures to ensure water efficiency can be quickly addressed if women are well represented on the board of directors. The study conducted by Mans-Kemp and Viviers (2015) using JSE listed companies for the period between 2002 and 2014 found a positive and insignificant relationship between board gender diversity and financial performance measured using ROE. However, a negative relationship was found in the same study between gender diversity and financial performance using a market-based measure of total shareholder return (Mans-Kemp & Viviers, 2015). This indicates that the results relating to the relationship between gender diversity and financial performance are still inconclusive.

Based on the inconclusiveness of results from researchers, this study examines the relationship between gender diversity and firm performance of selected JSE listed companies that mutual funds companies have invested their funds. Hence, this study considered the following hypothesis:

H3: There is no correlation between and gender diversity and ROE.

2.7 Firm size – Market capitalisation

Firm size may be among many factors that may influence the financial performance of the company. Firm size can be divided into small, medium and large companies. Company size can be measured in terms of resources owned by a specific company, which may be in the form of total assets and total sales it generates (Wuryani, 2013). Companies that have more assets are more likely to use those assets to generate more sales, which may later improve the financial performance of the company. Large companies have easy access to capital markets and this result in the ability to attract outside parties such as investors (John & Adebayo, 2013; Abbasi & Malik, 2015). This may be due to the investors viewing the company as having good growth prospects which may result in the value of their investment increasing over some time.

A study conducted in Nigerian manufacturing companies found that there is a positive relationship between firm size and profitability using both total assets and total sales as measures (John & Adebayo, 2013). Likewise, a study conducted in Croatian manufacturing industry also found a positive relationship between firm size and profitability (Pervan & Višić, 2012). A study performed in Pakistan using companies listed in Karachi Stock Exchange also found a weak and positive relationship between firm size and financial performance (Abbasi & Malik, 2015). Contrary to these findings,

a study performed on listed manufacturing firms in Sri Lanka found that there is no indication of the relationship between firm size and profitability (Niresh & Thirunavukkarasu, 2014). Hence the study considers the following hypothesis:

H_4: There is no correlation between firm size (market capitalisation) and ROE.

2.8 Sustainable value creation

Sustainable value creation is also addressed under (Institute for Family Business, 2012). The Institute of Family Business (2012) defines sustainable value creation as "the behaviours and actions of an organisation across multiple financial and non-financial dimensions to manage the risks and opportunities associated with economic, environmental and social developments". Companies that seek to create sustainable long-term value are encouraged to follow the four key factors which are ensuring operating efficiency (for improved performance), attract right employees (best employees want to work for the best company), engage in public forums and government initiatives (may improve sustainability) and balance short and long-term goals. The report also suggests that companies can measure their performance because it is not easy to manage what cannot be measured. Long term economic value creation may be generated by incorporating ESG issues into company strategies. Sustainability is associated with dealing with long-term issues that often have no financial benefit, but which can have a huge impact on the company's ability to create long-term value (Institute for Family Business, 2012). Companies that incorporate ESG issues in their business strategies to ensure sustainable business practices are likely to attract investors. In SA, large companies are required to produce integrated reports where sustainability reports should be produced on top of the financial reports (Johannesburg Stock Exchange, 2007). An integrated report should

indicate the link between the company's strategy, governance and financial performance, and the social, environmental and economic context in which it operates. As a result, companies should consider ESG factors in their investment decision to create sustainable value.

2.8.1 Creating sustainable value for operating efficiency

This suggests that companies should strive towards using scarce natural resources effectively (Institute for Family Business, 2012). This may include investment in resources that will ensure water efficiency. Companies that put measures in place to ensure that available resources are not depleted, environmental impact is maximised will result in improved performance due to efficiency gains and benefits arising from addressing environmental and social issues (Institute for Family Business, 2012). Resource efficiency is a key factor in achieving sustainability (Bakshi, 2016). This may indicate that operating efficiency may result in sustainable value creation. Resource efficiency can also result in reduced environmental impact (Bakshi, 2016). This indicates that one of the ways to achieve environmental sustainability may be through resource efficiency. Resource efficiency is a positive factor to good health through, for example, the provision of clean water (Bakshi, 2016). The consumption of clean water in the workplace may result in healthy employees. Therefore, the study questions whether the number of resources invested in ensuring water efficiency improve financial performance and sustainable business practices.

2.8.2 Attracting right employees through sustainable value creation

Employees will strive to do better if they realise that the company is engaged in sustainable business practices (Institute for Family Business, 2012). Employees are

not likely to operate optimally if they are aware that their company is to shut down shortly and they will be facing retrenchment. Employees that focus their attention on achieving the companies' objectives are assets or valuable resources to the company (Sinkovics, Sinkovics & Yamin, 2014). Employees of sustainable companies understand how the company operates (Institute for Family Business, 2012). This may be because companies that are long-term driven are likely to involve employees as part of achieving the company's strategy and therefore employees may feel like they are the part of the company. Best employees want to work for the best companies that are going to operate for longer-term (Institute for Family Business, 2012). This may be because they will be aware that their employment is secured. Companies financial performance can be improved through employees' empowerment by incorporating practices such as training, motivating and retaining hard working employees (Florea, Cheung & Herndon, 2013). Human resource practices may also include investment in the health and safety of employees. According to Florea *et al*. (2013) companies that implement human resource practices without taking into account the needs and concerns of employees may not achieve sustainability. This indicates that employees should be engaged regularly to ensure that the company and the employees work towards achieving the same goal. Therefore, there is always a question as to whether those companies that implement human resource practices such as providing a safe and healthy working environment to employees result in improved financial performance and sustainable business practices.

2.9 Financial performance (ROE)

Almost all companies operate to generate returns greater than the cost of capital provided by the equity and debt providers and therefore make a profit. As a result, it is important for companies to measure their financial performance. The financial

performance of a company can be measured in various ways depending on what the study aims to achieve. Companies often use accounting-based measures such as return on sales (ROS), return on investment (ROI), return on assets (ROA) and return on equity (ROE) to measure the financial performance (Albertini, 2013). ROS measures the number of sales that is turned into profit and not the return to shareholders based on invested funds and therefore is not appropriate for this study. ROI is not used for this study because the investments used are scattered in various companies. According to Albertini (2013), ROA and ROE are appropriate measures of a company's financial performance. ROA measures management ability to efficiently use the company assets to generate profits (Ujunwa, 2012; Siew *et al*., 2013; Lassala *et al*., 2017). ROA measure is not appropriate for this study because the purpose is not to determine the performance of managers. The study used ROE because it is aligned to the return on shareholders' fund following the investment that they have made. ROE is described as one of the accounting profitability measures that can also be used to measure the internal efficiency of companies (Wang, Lu, Ye, Chau & Zang, 2016). ROE is also described as an accounting measure that indicates the profitability of companies compared to the investments made by shareholders (Siew, Balatbat & Carmichael, 2013; Nikolaou & Matrakoukas, 2016). ROE ratio is calculated by dividing net profit of companies with the total shareholder's equity to determine how much profit the company is making with the invested shareholders funds (Siew *et al*., 2013; Lassala, Apetrei & Sapena, 2017). This indicates that ROE measured returns that go to equity providers based on the investment made. The use of ROE as a measure of the financial performance of the company is consistent with other previous studies (Siew *et al*., 2013; Eccles *et al*., 2014; Nikolaou & Matrakoukas, 2016; Lassala *et al*., 2017). The study by Alshehhi *et al*. (2018) was 132 different published journal articles

were reviewed found that financial based measure such as ROE was used in more than 20 studies to measure financial performance. Other studies used market-based measures such as price-earnings per share and price per share to measure the financial performance of companies (Albertini, 2013; Alshehhi *et al*., 2018). Factors influence Market-based indicators that are beyond the control of management (Albertini, 2013). It may not be appropriate to measure management performance with factors beyond their control. Therefore this study does not use market indicators.

This study measured the financial performance of companies in terms of ROE which is the return to the shareholders based on the amount they have invested in the companies. As such, this study examined the investments made by mutual funds on behalf of public investors to determine whether choosing investments based on ESG criterion may improve financial performance and also result in long-term sustainable business. Moreover, it is difficult to examine whether individual investors consider ESG issues in making investment decisions.

2.10 Summary of the chapter

This chapter discussed the theories followed under this study and detailed literature review about the hypothesis. The literature revealed that there is still inconclusive results regarding the relationship between environmental sustainability, social sustainability and governance issues selected under this study and financial performance. The next chapter discusses in detail the methodology adopted under this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Chapter Two reviewed relevant literature related to the relationship between environmental sustainability (water usage), social sustainability (employee health and safety cost), gender diversity (percentage of female representation on companies' boards) and financial performance and sustainable value creation of companies measured by accounting-based measure represented by ROE. This section discussed the overall research approach followed to arrive at the research results. Section 3.2 discussed the research design adopted, Section 3.3 discussed the research paradigm, Section 3.4 discussed the research method adopted, Section 3.5 discussed the data collection approach followed, and Section 3.6 discussed the population from which sample will be selected. Section 3.7 discussed the sample size and how it was selected including the period of analysis, Section 3.8 discussed data analysis approach, and Section 3.9 discussed significance of this study. Section 3.10 discussed reliability and validity of data, time scale, methodology, sample size and how subjectivity is minimised, Section 3.11 discussed limitations of this study and Section 3.12 discussed ethical considerations to be taken into account in the study. The objective of this chapter is to follow an appropriate research approach that enabled the generation of appropriate research results that can be repeatedly generated by different researchers if the same approach is followed.

3.2 Research design

This study adopts the correlational research design. A correlation is a relationship between two variables. A correlational research design is a quantitative research study

in which there are two or more variables to determine if any relationship exists between the variables (Rovai, Baker & Ponton, 2013). A positive correlation refers to a situation whereby for instance when variable A increase, variable B also increases. A negative correlation refers to a situation whereby when variable A increase, variable B does not increase. The correlation research design was used because this study seeks to determine the relationship between the dependent and independent variables of selected JSE listed companies that mutual funds have invested their funds. Under this study, the independent variables were represented by water usage, employee health and safety cost and gender diversity, while financial performance measured using ROE represented the dependent variable. The correlational research design is adopted because it enabled the researcher to observe two or more variables at a point in time and as it is useful to describe the relationship between two or more variables (Mertler, 2008; Rovai *et al*., 2013). The use of correlational research design to determine relationships between variables is therefore consistent with other previous studies such as (Darmadi, 2013; Bichueti *et al*., 2014; Liu *et al*., 2014; Bauer & Smeets, 2015; Low *et al*., 2015; Rahman, Uddin, Ibrahim, 2015; Severo *et al*., 2015; Saeidi *et al*., 2015; Wang *et al*., 2016; Esteban-Sanchez, de la Cuesta-Gonzalez & Paredes-Gazquez, 2017).

3.3 Research paradigm

Some of the paradigms adopted in previous studies include positivism, post-positivism, interpretivism, constructivism, critical theory, postmodernism and pragmatism (Taylor & Medina, 2013; O'Neil & Koekemoer, 2016). Paradigm often refers to scientific paradigms, philosophical paradigms or research paradigms

(Sefotho, 2015). This study adopts postpositivism and outline its difference to positivism because post-positivism is derived from positivism.

3.3.1 Positivism

Quantitative research approaches generally adopt a positivist research paradigm and involve hypotheses generation and testing (Cohen & Crabtree, 2006; Taylor & Medina, 2013; Willig, 2013; O'Neil & Koekemoer, 2016; Major, 2017). The positivist paradigm is associated with reality and objectivity and the goal of revealing a single truth (O'Neil & Koekemoer, 2016; Major, 2017). As such, the veracity may be revealed if the researcher may provide objective throughout the research process. The researcher can be objective if an appropriate method is selected and applied correctly. According to Cohen and Crabtree (2006), positivist research paradigm is grounded around realist ontology and representational epistemology. Realistic ontology assumes that there are real-world objects apart from the human knower while representational epistemology assumes people can know this reality and use symbols to accurately describe and explain this objective reality (Cohen & Crabtree, 2006). Epistemology is described as the goal of the researcher to produce results that are not influenced by personal feelings or vested interest (Willig, 2013). This indicates that it is important for the researcher to remain unbiased throughout the research process. Positivists believe that scientists can reveal the truth using their scientific methods (Willig, 2013; O'Neil & Koekemoer, 2016). However, the positivist approach has been criticised of simplifying and reducing reality through quantification and formulation of the hypothesis that contribute to producing findings which are descriptive only and lack insights (Major, 2017). This criticism relating to positivism paradigm was addressed by

adopting a paradigm that is less descriptive and allow for insights such as post-positivism.

3.3.2 Post-positivism

Post-positivism is adopted in this studies because it addresses some of the limitations of positivism paradigm. Post-positivism paradigm does not aim to discredit the scientific nature of positivist in a research study, rather emphasise understanding the research results better (Christ, 2014; Panhwar, Ansari & Shah, 2017). Positivists are known for rejection of the existence of individual perspective whereby status quo is maintained based on scientifically proven methods (Panhwar *et al*., 2017). This may indicate why there was a need for positivism to be relooked at by coming up with a paradigm that is questioning the research results other than just accepting what is presented. Post-positivists believe that background, knowledge and values can influence what is observed and unlike positivist approach, absolute truth is nowhere to be found (Levers, 2013; Panhwar *et al*., 2017). The may likely to be true, in the sense that if absolute truth is known, this may call for rejection of new information that disapproves what is regarded as absolute truth and therefore further research may be discouraged. Post-positivism acknowledges that fact that there is no scientific method that can generate perfect results which cannot be questioned (Levers, 2013; Christ, 2014; Panhwar *et al*., 2017). Perfect results can create a danger whereby new ways of exploring things is closed out. Research findings could be used to generate knowledge and information can be modified or withdrawn in the light of further investigation (Levers, 2013; Christ, 2014). This indicate that post-positivism acknowledge the fact that it is unlikely that knowledge will stay the same as the world is changing. Postpositivism embrace realistic ontology of positivism that believes on

approximates reality and add an element that new findings can assist in understanding of reality (Christ, 2014). Postpositivism allow different approaches to be used to interpret research results (Panhwar *et al*., 2017). This study used a statistical analysis (MLR analysis) to analyse data which is supported by post positivism approach. The statistical approaches applied allowed for a large volume of data to be analysed within a short time interval, and therefore the relationships between different variables can be tested (Taylor & Medina, 2013; Major, 2017). Therefore, the adoption of the postpositivist research paradigm is appropriate for this study because the relationship between different hypothesis were tested for 28 companies for the period 2007 and 2017.

3.4 Research method

This study adopted a quantitative research method. The quantitative research method is adopted because it is an approach which examines the relationships between independent and dependent variables (Rovai *et al*., 2013). As such, this study also examined relationships between independent and dependent variables. Therefore, the quantitative research method is appropriate for this study. Relationships between variables can be hypothesised and tested under the quantitative research method (Rovai *et al*., 2013). The hypothesis tested under this study are H_1: there is no correlation between environmental sustainability investment (water usage) and ROE; H_2: there is no correlation between social sustainability investment (employee health and safety cost); H_3: there is no correlation between gender diversity (percentage of female representation on corporate' boards) and ROE; and H_4: there is no correlation between firm size (market capitalisation) and ROE. ESG factors can be used to measure the company sustainability performance, and it consists of the environment,

social and governance factors (Husted & Milton de Sousa-Filho, 2017). This study also used ESG factors to measure the sustainability performance of companies that mutual funds companies have invested their funds. Under this study, the environmental factor was represented by water usage, the social factor by the employee health and safety cost and the governance factor by gender diversity. ROE is regarded as the appropriate financial performance variable that can be used to measure the financial performance of a company (Saeidi, Sofian, Saeidi, Saeidi & Saaeidi, 2015). A study in the US by Shrivastav & Kalsie (2016), used ROE as accounting base measure to determine the relationship between CEO duality (independent variable) and firm performance (dependent variable). The use of ROE as a measure of financial performance in this study is therefore consistent with other previous studies. This study used quantitative research design to determine relationships between water usage and ROE, employee health and safety and ROE and gender diversity and ROE and is consistent with other previous studies such as (Darmadi, 2013; Bichueti *et al*., 2014; Liu *et al*., 2014; Bauer & Smeets, 2015; Low *et al*., 2015; Rahman, Uddin, Ibrahim, 2015; Severo *et al*., 2015; Saeidi *et al*., 2015; Wang *et al*., 2016) that used quantitative research method to determine relationships between different variables.

3.5 Data collection approach

Secondary data analysis has become a popular method of collecting data (Cheng & Phillips, 2014). According to Cheng and Phillips (2014), the use of secondary data is cost-efficient because the researcher uses data that is already available to address the potential new research question. Therefore, the researcher will save cost as compared to collecting raw data (Crossman, 2017). The most sources of quantitative data include surveys, such as observations and secondary data such as companies

accounts (SkillsYouNeed, 2017). The study used secondary data using companies accounts to support the hypotheses. The secondary data provided online is prepared by professionals and therefore, assist the researcher in spending time in analysis the hypothesis rather than focusing on primary data collection (Cheng & Phillips, 2014). Analysis of data by professionals may result in user-friendly data. This study used data from selected companies' websites because it is available for public use. Shortfalls of using secondary data include but not limited to available data not addressing the research questions; some variables may not be available, deletion of some of the information to protect the confidentiality of respondents (Cheng & Phillips, 2014). Unavailability of information to address the hypothesis may negatively affect the researcher whereby the research questions can end up being changed resulting in extra-work to be performed.

Information relating to water usage, employee health and safety, female representation on companies' board were extracted from the annual, integrated and sustainability reports of companies listed on the JSE that top 20 SA mutual funds companies have invested their funds and analysed for the period between 2007 and 2017. Annual reports of companies can be useful for collecting accurate information to estimate the financial value of companies (Nikolaou & Matrakoukas, 2016). Other studies have previously used different companies listed in stock exchanges as the population for data collection (Ahern & Dittmarr, 2012; Chapple & Humphrey, 2014; Liu *et al*., 2014; Erragragui & Revelli, 2016). Hence, the use of data from listed companies is consistent with other previous studies.

This study used annual, integrated, and sustainability reports of companies that top 20 South African mutual funds (asset managers) companies listed on the JSE invested

their funds in 2017 to determine whether mutual funds investors consider ESG factors in investment decisions to ensure sustainable value creation by following their investments. The mutual fund companies' equity funds fact sheets for the 2017 financial year end were extracted from the mutual fund websites to identify the top 10 companies that they invested their funds. The 2017 mutual funds companies' equity funds fact sheets were used because it represents recent investments made. This study selected only those companies listed on the JSE in which mutual funds invested their funds in which there are physical activities and excluded unlisted companies and companies that provide service only. Industries selected in this study include sectors such as basic materials, chemicals, consumer goods, general industries, health care, mining, tobacco, pharmaceuticals and properties. Industries excluded from the study include investment in banks, financial services, insurance companies, media, mobile telecommunications, technology. After selection of the specific companies in which mutual funds companies listed on the JSE have invested their funds, the annual, integrated and sustainability reports of those companies were extracted from the selected companies' websites for the period between 2007 and 2017. The 2018 financial year information was not used because at the time of collection of data most companies' financial statements were still at the interim stage, and therefore the final report was not yet published.

3.5.1 Extracting water usage data

The amount of water used was collected from selected companies using a measure that is used by that company each year, such as litres, hectolitres, megalitres, kilolitres. The data collected for water usage were later converted to megalitres so that a consistent measure can be used for water usage. Water usage data include only

water that is used for the first time and excludes water recycled because water recycling is regarded as the re-use of water used before. The study is aimed at determining whether new or freshwater use is increasing or decreasing in the selected companies.

3.5.2 Extracting employee health and safety cost data

In reviewing the annual, integrated and sustainability reports of selected companies, it was found that the amount invested in employee health and safety were not reported consistently or not reported at all by the selected companies. In instances where the total amount invested in health and safety were reported, the amount was not consistent throughout the years, and therefore there was a lot of missing information. As a result of this challenge, there was a need to find another measure that can be used to represent an investment in the health and safety of employees. Thorough review of the selected companies' reports indicated that, while there is no absolute amount reported, the employee health and safety were measured by different companies using different measures such as occupational diseases, lost time injury frequency rate, disabling injury frequency rate, number of lost days due to injuries and number of work-related fatalities. This study used several work-related fatalities to measure employee health and safety because it was a consistent measure that was used by most companies, even though few companies did not report their employee fatalities. It is assumed that employee fatalities may increase if a company is not investing in the health and safety of their employees and the reduction in fatalities may mean that investment in health and safety of employees is a priority.

3.5.3 Extracting percentage of women on corporate's boards

The number of women on the board of directors was counted based on the pictures reflected in the annual and integrated reports of selected companies, and the total number of board members were counted. The total number of women in each year were then divided by the total number of board members to arrive at percentage representation of women.

3.5.4 Extracting ROE and Market capitalisation (total assets)

ROE and market capitalisation were extracted from IRESS website. Total assets represented the market capitalisation.

3.6 Population

The population for this study was JSE listed companies that SA mutual funds companies have invested their funds. Companies that mutual funds have invested their funds have been chosen because mutual funds pool money from many public investors for investing in different securities. The study seeks to determine whether mutual funds companies incorporate ESG factors in investment decisions when investing on behalf of public investors to ensure sustainable value creation. The study covered a period between 2007 and 2017 to come with an informed conclusion.

3.7 Sample size

Sampling should be considered in both qualitative and quantitative research studies (Wilson, 2014). This may be because it is too expensive and sometimes even impractical to include the total population in a research study. Sampling is described as the selected of a proportion of the population rather than the whole (Wilson, 2014;

Etikan, Musa & Alkassim, 2016). Probability sampling was used in this study whereby the participants had an equal chance of being selected (Acharya, Prakash, Saxena and Nigam, 2013; Wilson, 2014). Therefore, companies listed on the JSE that mutual funds have been invested in have an equal chance of being selected. Probability sampling is described as a deliberate choice of participants based on the characteristics they possess (Acharya *et al*., 2013). Under this study, mutual funds companies were deliberately chosen and analysed to determine whether care is exercised when using investors funds in making an investment decision. The population does not mean the number of people only; it can also refer to the total quantity of things under research (Etikan *et al*., 2016). Population for this study was not represented in terms of the number of people, but all companies listed on the JSE that mutual funds have invested. This study selected 28 companies that SA mutual funds companies have invested their funds using probability sampling and analysed them for a period between 2007 and 2017. Probability sampling is appropriate for the generalisation of study results to the selected population (Acharya *et al*., 2013). Therefore, the results obtained using the sampled population was generalised to all companies listed on the JSE that mutual funds have invested their funds.

3.8 Data analysis approach

Data were analysed using the statistical analysis method of multiple linear regression analysis (MLR). MLR is performed to determine the correlation between the independent variable and the dependent variable (Uyanik & Güler, 2013). MLR is therefore appropriate because this study seeks to determine the relationship between the independent variables which is water usage, employee health and safety cost and percentage of women representation on corporate's boards and dependent variable

which is ROE of selected JSE listed companies. The Stata 15 software was used to perform the analysis. Bebchuk *et al*. (2017) used a statistical approach to determine the relationship between water use management and company performance. Hence, this study adopted the following model:

$$ROE_{it} = \alpha_{it} + \beta_1 WRC_{it} + \beta_2 EHSC_{it} + \beta_3 GENDIVERS_{it} + \beta_4 FIRMSIZE_{it} + \varepsilon \quad (1)$$

Where:

ROE_{it}=Return on equity; βWRC_{it1}= Water reduction cost; $\beta EHSC_{it2}$= Employee health and safety cost; $\beta GENDIVERS_{it3}$=gender diversity; $\beta FIRMSIZE_{it4}$= company size; αi=intercept, β= gradient/slope, ε=error. ROE is the dependent variable while water usage, employee health and safety cost and percentage of women representation on corporate' boards are the independent variables.

3.9 Control variable – Firm size

Control variables are an important component of research design in a research study (Nielsen & Raswant, 2018). Hence, this study also considered the use of control variables. Researchers have a choice to account for these variables before or after data collection (Nielsen & Raswant, 2018). This study considered the use of control variables before data collection. Control variables are used to confirm whether there is a real relationship between two variables, or the relationship is as a result of other incidental connection with other associated variables (Chen, Wu, Chen & Teng, 2018). Since this study also sought to determine the relationship between independent and dependent variables, control variables were used to determine the existence of the

real relationship. If control variables are not selected carefully, they may distort results and produce misleading findings (Nielsen & Raswant, 2018). This study selected a control variable that was considered to have a major effect on the dependent variable other than the independent variables selected under this study. Company size is assumed to influence company financial performance (Wuryani, 2013). Large companies have an advantage over smaller companies in securing investment opportunities, having bigger market share and having access to capital which in turn improve the profitability of the company (Wuryani, 2013). In a study conducted in Turkey, the authors found a positive relationship between firm size and firm profitability (Doğan, 2013). This indicates that company size can be one of the leading factors that increase or decreases the company financial performance. Another study conducted on Spanish companies in the sports sector found that firm size is not necessarily a condition that contributes to the high or low financial performance of companies (Núñez-Pomar, Prado-Gascó, Sanz, Hervás & Moreno, 2016). This indicates that company size may not be the only factor that contributes to the company financial performance. However, this study seeks to determine whether company size has any influence on the companies' performance other than the main independent variables selected for analysis. Hence, this study used company size as a control variable measured using market capitalisation.

3.10 Significance of the study

The society, environment and the economy may substantially benefit if companies are investing responsibly. This study may enable the society in which the companies operates to realise the importance of water saving. Companies may also realise the importance of using natural resources effectively so that future generations can also

benefit from the same kind of resources. Saving in water may also result in a good environment in which society is happy to leave in because water is a source of life. Increased lifespan, healthy and happy society if the company is taking health and safety issues of employees seriously. The society may also benefit if management is diversified in a way that investments are made in projects that will ensure a safe environment for the community. Other investment companies in the same line of industry might also recognise the benefits of incorporating ESG factors in their investment decisions. The study will also result in the generation of new knowledge for academia.

3.11 Reliability and validity of data

3.11.1 Reliability

Reliability of the data used, and research results should be considered in every research study (Zohrabi, 2013). Reliability relates to the consistency of a measure (Chakrabartty, 2013; Venkatesh, Brown & Bala, 2013; Zohrabi, 2013; Heale & Twycross, 2015). Same results should be achieved if the information obtained is used on a repeated basis and at different times (Heale & Twycross, 2015; Mohamad, Sulaiman, Sern & Salleh, 2015). Achieving similar research results on a repeated basis is much easier in a quantitative study because the data is recorded in a numeric format as compared to qualitative research whose results are most often narrative and therefore subjective (Zohrabi, 2013). As such, subjectivity is minimised in quantitative research studies. This study used secondary data (annual, integrated and sustainability reports) from JSE listed companies that mutual funds have invested their funds on behalf of public investors and therefore, subjectivity is reduced as there is no physical conduct with participants. Independent auditors audit the annual, integrated

and sustainability reports of JSE listed companies, and therefore, the results published in the reports may be considered reliable. Assessing the reliability of research results requires researchers to make a judgement about the appropriateness of the research methods in arriving at the research results (Noble & Smith, 2015). The research method used in this study is regarded as appropriate because quantitative research method was used to analyse the relationship between independent and dependent variables which was recorded in numeric format. Under the quantitative research approach, data that was collected very carefully and analysed correctly is reliable (Zohrabi, 2013). Data was collected very carefully using probability sampling and was analysed using Stata 15 software. Therefore, if the same information, the time frame is extracted from JSE listed companies that SA mutual funds have invested their funds and the same method of obtaining data and same statistical analysis is used, the same results obtained in this study can be achieved by a different researcher. The results of this study are therefore considered to be reliable.

3.11.2 Validity

The validity of the data used, and the research results must be considered in every research study. Validity is defined as the extent to which a concept is accurately measured in a quantitative study (Heale & Twycross, 2015). According to Mohajan (2018), validity can be split into two important elements which are internal (credibility) and external (transferability). Internal validity measures whether the results of the study are legitimate because of the way the research was conducted such as the way sample were selected, data recorded, or analysis was performed (Mohajan, 2018). Measures of validity in research include, but not limited to factors such as selecting appropriate time scale, selecting appropriate methodology based on the

characteristics of the study, selecting most suitable sample method, and ensuring that the respondents are not pressured to respond in a certain way (Mohajan, 2018). The research results for this study are valid because an appropriate time frame, methodology and sample method was selected. Companies information were analysed for the period between 2007 and 2017. The period was chosen to determine whether SA mutual funds companies follow a specific trend or there is no trend at all in making investing decisions. It is argued that ten years is a long period enough to identify if there is any trend or not and therefore the time frame chosen is considered appropriate. A positive trend was identified in periods where ESG factors are considered in making investment decisions while a negative trend is whereby no ESG factors are considered. This study adopted a quantitative research method which used correlational research to analyse data to identify the relationship between independent and dependent variables and therefore the method chosen is appropriate. Quantitative research approach can be used to determine relationships between variables and results (Choy, 2014). This study analysed the relationship between the independent variables which are water usage and ROE, employee health and safety cost and ROE and gender diversity (percentage of female representations on companies' boards) and ROE using MLR statistical analysis. According to Noble and Smith (2015), a quantitative research method is associated with the application of statistical research methods to ensure validity and reliability of results. MLR statistical analysis is used because it is appropriate to analyse relationships between dependent and independent variables. This study used MLR to analyse data because the statistical analysis can deliver more valid data that can be used to confirm the present and future trends (McCusker & Gunaydin, 2014). Statistical analysis as compared to real life scenarios tends to remove the researcher from being influenced by personal feelings

of participants which is more common in qualitative research (McCusker & Gunaydin, 2014). Therefore, information and data may be interpreted without the influence of participants. Qualitative research findings are often criticised of being a collection of personal feelings subject to the researcher biases (Noble & Smith, 2015). The use of MRL to determine the relationship between dependent and independent variable is consistent with other researchers such as (Pilar & Ballester, 2015). Probability sampling was also used to select companies that were analysed because it is a sampling method where participants are chosen based on characteristics they possess whereby all participants have an equal chance of being selected (Acharya *et al*., 2013). Respondents are also not pressured in any way because there will no physical conduct with individual investors. Secondary data was used to collect data because it is publicly available and there is no pressure to get a response from individual investors. The study does not interview individual investors but selected companies that mutual funds have invested in on behalf of the investors to get an idea of where investors placed their money. The results of this study are therefore considered valid because an appropriate time frame, methodology, sample method has been chosen and the participants affected are not forced to respond in a certain way.

3.12 Limitation of the study

The study focused on JSE listed companies that SA mutual funds companies have invested their funds. This is because information for JSE listed company is available for public use and it is difficult to obtain data for unlisted companies. A sample of 28 JSE listed companies that SA mutual funds companies have invested in was selected from a period between 2007 and 2017. The sample selected may not be representative of the entire population. The findings for this study were limited to

companies listed on the JSE that mutual funds have invested their funds. The study also covers one component of each ESG factor (water usage, employee health and safety cost, percentage of women representation on corporate' boards). However, many other ESG factors inform responsible investment such as climate change, GHG emissions, waste and pollution, deforestation, working conditions, local community, bribery and corruption). All these factors would need to be considered to come to a deeper understanding of responsible investment. However, some of these components cannot be easily quantified. Hence, this study only focuses on one component per ESG factor that can be quantified.

3.13 Ethical considerations

The study does not require any physical conduct with participants or institutions because secondary data was collected from websites of companies listed on JSE that SA mutual funds have invested in which is publicly available. This study chose to use secondary data for analysis because it is difficult to interview individual investors about which companies they prefer to place their investments. Therefore, this study does not require an ethical clearance from the Turfloop Research and Ethics Committee (TREC).

3.14 Summary of the chapter

This section detailed the research design adopted in this study. Research paradigm and research method were discussed. The population, sample size and period, data collection and analysis approach for this study were discussed in detail. Furthermore, the reliability and validity of the data and the instruments were also discussed. Again,

the limitations of the study and issues of ethical clearance were also addressed. The next chapter analysis the study results and interpret them based on the hypothesis.

CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

The previous chapter discussed the comprehensive methodological approach adopted in this study. It provided a detailed explanation of the research design, research paradigm, research method, data collection approach, population, sample size, data analysis approach, validity and reliability. This chapter analyses the research results based on the hypotheses and problem statement. The chapter outline is as follows; Section 4.2: data management and analysis, Section 4.3: panel data analysis, Section 4.4: diagnostic test results, Section 4.5: specification tests, Section 4.6: Interpretation of the fixed model, Section 4.7: discussion of research results and Section 4.8: summary of the chapter.

4.2 Data management and analysis

This study used the multiple linear regression analysis to determine the relationship between selected ESG factors and financial performance of selected JSE listed companies where mutual fund companies invest their funds. The study sample comprised 28 JSE-listed companies from whose annual reports, integrated reports and sustainability reports provide data for 2007 to 2017.

4.3 Panel data analysis

The panel data analysis technique was used to analyse the data. Raw data was extracted from annual reports, integrated reports and sustainability reports of the selected companies. Data were entered into a Microsoft Excel spreadsheet and imported into the Stata 15 software to analyse the relationship between selected ESG factors and financial

performance. This study has one dependent variable (ROE) and three independent variables (water usage, employee health and safety cost and women representation on corporate boards). Market capitalisation measured through total assets was used as a control variable.

The researcher indicated a zero value on missing data (see Appendix A) and because the Stata software could not provide the results, the missing values were modified by converting the zero variables to a value 0,001.

4.3.1 Descriptive statistics

Descriptive statistics are presented in Table 4.1.

Table 4. 1: Descriptive statistics of study variables

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE (%)	297	16.8201	33.52105	-422.65	126.4
Water usage	297	274226	2136925	0	2.6807
No. of work-related fatalities	297	3.341818	7.021731	0	73
Women on corporate' boards (%)	297	19.22101	10.83107	0	50
Market capitalisation	297	10.22953	23.37689	-91.22	214.96

Source: Authors' results Stata 15 (2019)

As shown in Table 4.1, the ROE has a mean of 16.82% and a standard deviation of 33.5 meaning that data is slightly inconsistent and affected by outliers as the maximum observation is 126.4%. Water usage has the highest mean of 274 226 showing that most of the companies that mutual funds have invested in use water excessively. In terms of the number of work-related fatalities, the mean is 3.34 and a standard deviation of 7,02 which is consistent. Whereas, percentage of women on board has a mean of 10,22% and the maximum observation representing the percentage of women

in a board of a particular company is 50% implying that few companies are complying with gender equity requirements in their board structures.

4.3.2 One- sample t-test

A one-sample t-test is used to determine whether the null hypothesis that indicates that there is no correlation between variables should be rejected and the alternative hypothesis that indicates that there is correlation be accepted. The degree of freedom is always one less than the sample size.

Table 4. 2: One-sample t-test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
market~s	297	10.22953	1.356464	23.37689	7.559992	12.89907

mean = mean (market capitalisation t = 7.5413
Ho: mean = 0 degrees of freedom = 296
Ha: mean < 0 Ha: mean!= 0 Ha: mean > 0
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0

Source: Authors' results Stata 15 (2019)

The results in Table 4.2 shows that the variables under this study may be correlated with each other as indicated by a positive coefficient. Moreover, the p-value is significant ($Pr(|T| > |t|) = 0.0000$) which indicate that the null hypothesis that indicates that there is no correlation between the independent variables under this study will be rejected and the alternative hypothesis accepted.

4.3.3 Regression test

Table 4.3 presents the regression test for the study.

Table 4. 3: Regression test

Source	SS	Df	MS
Model	5078.90632	4	1269.72658
Residual	327524.681	292	1121.65987
Total	332603.588	296	1123.66077

Number of obs	=	**297**
F(4, 292)	=	1.13
Prob > F	=	0.3415
R-squared	=	0.0153
Adj R-squared	=	0.0018
Root MSE	=	33.491

ROE	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Water usage	0.000000332	0.000000922	0.36	0.719	-0.00000148	0.00000215
No. of work-related fatalities	-0.07689	0.277958	-0.28	0.782	-0.62394	0.470167
Women on corporate' boards (%)	0.206348	0.181792	1.14	0.257	-0.15144	0.564136
Market capitalisation	0.149035	0.083475	1.79	0.075	-0.01525	0.313323
_cons	11.49531	4.2063	2.73	0.007	3.216799	19.77382

Source: Authors' results using Stata 15 (2019)

The results in Table 4.3 shows that F-stats in insignificant (Prob > F = 0.3415). This indicates that the selected ESG factors under this study do not jointly influence the ROE. This is an indication that South African mutual fund investors do not consider the UN PRI factors when making investment decisions. This result supports the literature that indicates that some investors are motivated by quick financial returns and may not invest in companies that focus on long term sustainable value creation (Eccles *et al*., 2014). Therefore, the result supports the null hypothesis that indicates that there is no correlation between ESG issues and ROE. Results in Table 4.3 indicate a positive and insignificant correlation between water usage and ROE. This

means that an attempt to reduce water usage insignificant among the selected companies to generate higher returns. This could be explained to suggests that SA mutual fund companies are investing in companies that do not necessarily consider environmental responsiveness in their operations. Moreover, there is a negative and insignificant relationship between no of work-related fatalities and ROE. Moreover, this could be explained to suggest that SA mutual fund companies are investing in companies that do not necessarily consider employee's social issues in their operations. Once more, the result shows a positive and insignificant relationship between the percentage of women on corporate boards and ROE. This indicates that women are underrepresented in corporate boards and this is ignored by SA mutual fund companies when making investment decisions. Lastly, there is a positive and insignificant relationship between market capitalisation and ROE. This suggests that companies which have large assets may make more profits than companies with a small asset base.

4.3.4 Durbin-Watson test

Durban-Watson test is a statistical test used to detect autocorrelation in multiple regression analysis is presented in Table 4.4. This test will always have a value between 0 and 4. A value of 2 and indicate that there is no autocorrelation, while a value of 0 and less than 2 indicate that there is a positive autocorrelation. Lastly, a value between 2 and 4 indicate that there is a negative autocorrelation.

Table 4. 4: Durbin-Watson test

Durbin-Watson d-statistic (5, 297) = 1.78613

Source: Authors' results Stata 15 (2019)

The results of Table 4.4 indicate that there is a positive autocorrelation in the regression analysis because the Durban-Watson test results are between a value of 0 and 2 (1.78613).

4.3.5 Covariance matrix of coefficients

Covariance matrix may be used by researchers to determine the correlation between variables. The correlation between the variables can either be positive or negative. However, the covariance matrix does not test the strength of the relationship. The covariance matrix test is shown in Table 4.5.

Table 4. 5: Covariance matrix of coefficients of the regress model

e(V)	water usage	No of work-related fatalities	women on Corporate boards	market capitalisation	_cons
Water usage	0.0000000000008497				
No. of work-related fatalities	-0.00000001653	0.077261			
Women on corporate boards (%)	-0.00000002307	0.00017	0.033048		
Market capitalisation	0.000000000831	-0.00077	0.000891	0.006968	
_cons	0.0000002571	-0.24905	-0.63858	-0.08607	17.69296

Source: Authors' results Stata 15 (2019)

4.3.6 Correlation matrix

The correlation matrix is a table indicating the correlation coefficient between sets of variables. This enables the researcher to determine whether variables are correlated and the extent thereof. The correlation matrix is presented in Table 4.6.

Table 4. 6: Correlation matrix of the study variables

e(V)	water usage	work-related fatalities	women on boards	market cap	_cons
Water usage	1				
No. of work-related fatalities	-0.0645	1			
Women on corporate' boards (%)	-0.1376	0.0034	1		
market cap	0.0108	-0.0332	0.0587	1	
_cons	0.0663	-0.213	-0.8351	-0.2451	1

Source: Authors' results Stata 15 (2019)

As indicated in Table 4.6, work-related fatalities and women on boards are negatively correlated with water usage (-0.0645 and -0.1376 respectively). While, market capitalisation has a positive link (**0.0108)** with water usage, implying that large companies are using more water, and this is consistent with the volume of activities undertaken by the larger companies about their smaller counterparts. Work-related fatalities show a positive relationship (**0.0034)** with the percentage of women on boards, implying that more women in the management structure may influence in reducing fatalities in the work environment. Concerning market capitalisation, there is a negative correlation with work-related fatalities. Lastly, there is a positive correlation (**0.0587)** between the percentage of women on corporate boards and market capitalisation, meaning that the presence of a significant number of women on boards attract investments.

4.3.7 Scatter Plots

The scatter plot determines the direction, form, strength and identification of outliers between the dependent and independent variable. The direction can either be positive, negative or no correlation, the form can either be linear or non-linear, the strength of the correlation can either be weak, moderate or strong and outliers should also be identified so that they do not distort the R-value.

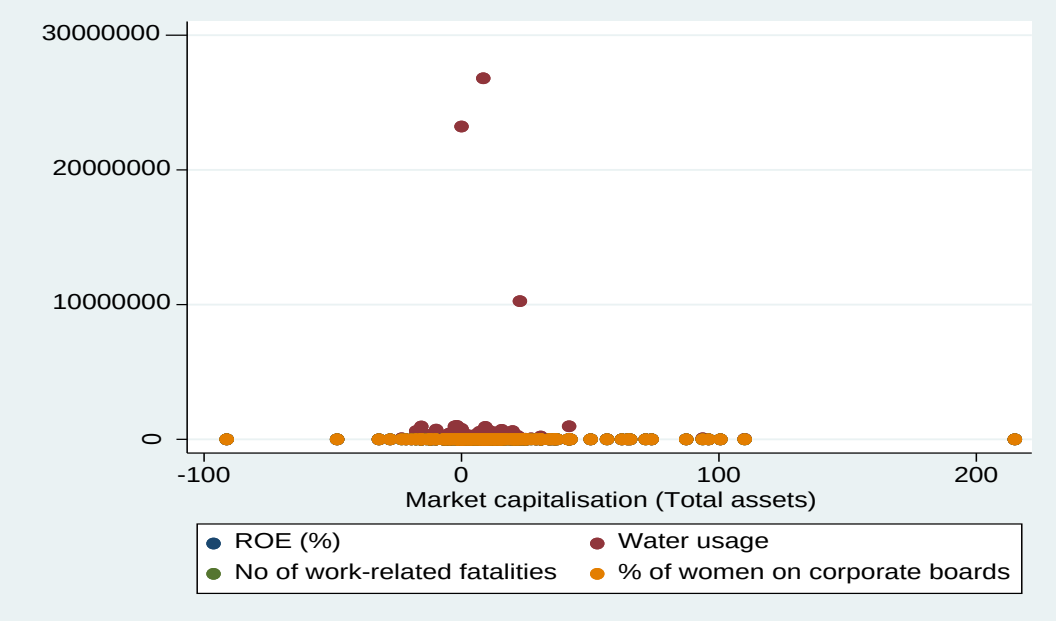

Figure 4. 1: Scatter plot of study variables

Source: Authors' results Stata 15 (2019)

The result of Figure 4.1 does not show any correlation between water usage and ROE, and there are massive outliers. Secondly, it appears that there is no correlation between women on corporate boards and ROE. Thirdly no of work-related fatalities is not visible on the scatter plot which may also suggest that there is no correlation. The accurateness of these results will be confirmed by performing more tests, as the

scatter plot appears to be congested by much information that was used to plot the graph.

4.4 Diagnostic test results

4.4.1 Normality

Data used by the researcher should be normally distributed in order to avoid distorting the assumptions that apply to regression analysis. If the data is not normally distributed, that can result in unreliable and invalid research results. Hence, the researcher used the *Shapiro-Wilk W* test to test for normality.

Table 4. 7: Shapiro-Wilk W test for normality

Variable	Obs	W	V	z	Prob>z
EU	**297**	**0.50401**	**104.732**	**10.913**	**0.0000**

Source: Authors' results Stata 15 (2019)

Based on the information shown in Table 4.7, the study data is normally distributed as indicated by p-value (0.000). As such, it is clear that the regression of assumption relating to normality is not violated at all. Therefore, the statistical tests are not distorted and furthermore; this confirms the validity and reliability of the results.

4.4.2 Heteroscedasticity

The researcher performs heteroscedasticity test because of the panel data analysis used to ensure that the study's result is not distorted. Breusch-Pagan tests are conducted to test for heteroscedasticity, and the result is shown in Table 4.9. The null hypothesis assumes that panel data have heteroscedasticity, while the alternative assumes that panel data have homoscedasticity.

Table 4. 8: Heteroscedasticity result

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of roe

$chi^{2(1)}$ = 1.12

Prob > chi^2 = 0.2896

Source: Authors' results Stata 15 (2019)

According to the results in Table 4.8, the data has homoscedasticity as evidenced by the p-value (0.2896) which is higher than the significant level of 0.05. This implies that the results of the study are not subjected to distortion and therefore the null hypothesis is rejected, and the alternative is accepted.

4.4.3 Serial correlation

Serial correlation may be a problem in a study when panel data is used which tends to affect the fitness of the regression model. This study used panel data, and therefore the presence of serial correlation was tested. Serial correlation may be a problem if the panel data uses a long time series and the challenge may be avoided where short-term series is used. The presence of serial correlation may result in a standard error coefficient that is smaller than expected and higher R-squared value. This assumption of regression has been tested by performing the Breusch-Godfrey (Table 4.9) and Durbin alternative (Table 4.10) tests in Stata respectively.

Table 4. 9: Breusch-Godfrey LM test for autocorrelation

lags(p)	chi^2	Df	Prob > chi^2
1	3.456	1	0.0630

H0: no serial correlation

Source: Authors' results Stata 15 (2019)

Table 4. 10: Durbin's alternative test for autocorrelation

lags(p)	chi^2	Df	Prob > chi^2
1	3.426	1	0.0642

H0: no serial correlation

Source: Authors' results Stata 15 (2019)

In Table 4.9, the result depicts no serial correlation between the variables as the p-value (0.0630) is greater than 0.05. Likewise, the same is confirmed in the Durbin's alternative test (see Table 4.10) as indicated by an insignificant p-value (0.0642). This strongly suggests that the validity of test results is not compromised.

4.4.4 Multicollinearity test

It is essential to find out whether there is a close relationship between the predictor variables. In this case, the study variables indicate that there is no strong correlation as shown in results from the Spearman Rank correlation matrix (see Table 4.2). However, in confirming whether multicollinearity exists between the variables, variance inflation factor (VIF) tests were conducted as shown in Table 4.11.

Table 4. 11: Multicollinearity test

Variable	VIF	1/VIF
Water usage	1.02	0.976668
Women on corporate' boards (%)	1.02	0.977414
No. of work-related fatalities	1.01	0.99477
Market capitalisation	1	0.995151
Mean VIF	1.01	

Source: Authors' results Stata 15 (2019)

The mean VIF (1.01) shown in Table 4.11 indicates that the multicollinearity score among the variables is not significant to distort the results as the population coefficient can be precisely predicted. Therefore, the research results are acceptable.

4.5 Specification tests

The two techniques that can be used to analyse panel data include fixed effects model and the random effects model. The choice of an appropriate technique between the fixed effects and random effects model is conducted using a Hausman test. The results from FEM and REM are shown in Table 4.12 and Table 4.13 respectively.

4.5.1The fixed effect model (FEM)

The fixed model of data analysis can be used by the researcher to examine variables and causes of variation in results within a given data over a given period. The FEM controls the time-invariant variables that are omitted from the research study and therefore removes bias in research results (Nwakuya & Ijomah, 2017). The p-value of 0.05 is considered significant, and any amount less than the significance level will

result in acceptance of the model while any amount higher than the significance level will be rejected.

Table 4. 12: Fixed effects model

Fixed-effects (within) regression	Number of obs	= 297
Group variable: cocode	Number of groups	= 27
R-sq: within = 0.0047	Obs per group: min	= 11
between = 0.0718	avg	= 11.0
overall = 0.0019	max	= 11
corr(u i, Xb) = -0.2619	F(4,266)	=0.31
	Prob > F	= 0.8701

ROE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Water usage	0.000000125	0.000000988	0.13	0.899	-0.00000182	0.00000207
No. of work-related fatalities	0.234484	0.343406	0.68	0.495	-0.44166	0.910623
Women on corporate boards (%)	-0.20758	0.265664	0.78	0.435	-0.73065	0.315492
Market capitalisation	0.012718	0.08505	0.15	0.881	-0.15474	0.180176
_cons	19.86195	5.690887	3.49	0.001	8.657037	31.06686
sigma_u	16.64903					
sigma_e	31.1509					
Rho	0.222184		(fraction of variance due to u_i)			

F test that all u_i=0: F (26, 267) = 2.77; Prob > F = 0.0000

Source: Authors' results Stata 15 (2019)

The results in Table 4.12 shows a significant probability (Prob > F = 0.0000) which is less than the significance value of 0.05. Moreover, the result in Table 4.12 shows a positive and insignificant correlation between water usage, no of work-related fatalities, market capitalisation and ROE, whereas the percentage of women on corporate boards shows a negative correlation with ROE. The results will be discussed

further if this model is selected after the Hausman test is conducted to determine the appropriate model between FEM and the random effect model.4.5.2 The random effect model (REM). The REM estimate the impact of variables that do not change over time. However the estimates may be subject to bias because omitted variables are not controlled.

Table 4. 13: Random effects model

Random-effects GLS	Number of obs = 297
Group variable: cocode	Number of groups = 27
R-sq: within = 0.0004	obs per group: min = 11
Between = 0.2084	avq = 11.0
Overall = 0.0124	max = 11
Corr(u_i, x) = 0 (assumed)	Wald $chi^{2(4)}$ = 1.12
	Prob > chi^2 = 0.8904

Source: Authors' results Stata 15 (2019)

ROE	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Water usage	0.000000288	0.000000933	0.31	0.757	-0.00000154	0.00000212
No. of work-related fatalities	0.059501	0.302208	0.20	0.844	-0.53282	0.651816
Women on corporate' boards (%)	0.053389	0.2112	0.25	0.800	-0.36056	0.467334
Market capitalisation	0.078339	0.082287	0.95	0.341	-0.08294	0.239618
_cons	14.71462	5.174767	2.84	0.004	4.57226	24.85697
sigma_u	11.38814					
sigma_e	31.1509					
Rho	0.117892		(fraction of variance due to u_i)			

The results in Table 4.14 shows an insignificant p-value (Prob > chi^2 = 0.8904) which is -more than the significance level. Moreover, the result in Table 4.14 shows a positive and insignificant correlation between water usage, no of work-related fatalities, percentage of women on corporate' boards, market capitalisation and ROE. However, the results will be discussed further is that this model is selected after the Hausman test is conducted to determine the appropriate model between FEM and REM.

4.5.3 Hausman tests

In deciding the appropriate model between FEM and REM, a Hausman test was conducted. This was done by first running the fixed effects test on STATA and saving the results and secondly running the random effects and saving the results. After that, the appropriateness of the models between FEM and REM was confirmed through performing the Hausman test as shown in Table 4.14.

Table 4. 14: Hausman test

	(b)	**(B)**	**(b-B)**	**sqrt(diag(V_b-V_B)) S.E.**
	Fixed	Random	Difference	
Water usage	0.000000125	0.000000288	-0.000000163	0.000000324
No of work-related fatalities	0.2344835	0.0595006	0.1749829	0.1630898
Women on corporate' boards (%)	-0.2075804	0.0533893	-0.2609697	0.1611584
Market capitalisation	.0127183	0. .078339	-0.0656208	0.0215045

b = consistent under Ho and Ha; obtained from xtreg; B = inconsistent under Ha, efficient under Ho; obtained from xtreg; Test: Ho: difference in coefficients not systematic

$chi^{2(3)}$ = (b-B)'[(V_b-V_B) ^(-1)](b-B)

= 10.32

$Prob>chi^2$ = 0.0161

Source: Authors' results Stata 15 (2019)

The results in Table 4.14 shows that FEM is more appropriate as compared to REM as the Haussmann test results (as shown by the p-value of 0,0161) confirms that alternative hypothesis cannot be rejected which says FEM is appropriate.

4.5.4 Review of diagnostic test results

Based on the results of the diagnostic test conducted, normality, serial correlation, multicollinearity, heteroscedasticity and autocorrelation were found not to be a major challenge to the research data. Hence, the researcher reliably confirms the reliability and validity of the FEM results.

4.6 Interpretation of fixed effect model results

Given the previous tests conducted on panel data, the researcher decided to establish the correlation between the variables through the use of FEM model results as the level of validity and reliability of statistical tests performed could not be doubted. The results of FEM are shown in Table 4.12.

4.7 Discussion

Based on the results in Table 4.12, two of the independent variables show a positive relationship with firm performance, while one of them shows a negative correlation with firm performance. The control variable (market capitalisation) also shows a positive relationship with firm performance.

Hypothesis 1: There is no correlation between environmental sustainability investment (water usage) and ROE.

A positive correlation exists between water usage and ROE as indicated by a positive coefficient variance (0.000000125). The p-value higher than 5 per cent indicates that the correlation is insignificant. However, the correlation is insignificant given a p-value (0.899). This indicates that more water is used by companies to generate higher returns and water saving measures does not contribute to good financial performance.

High water usage can be linked to higher production by companies which in turn improves sales that can later improve its profitability. This result is consistent with previous studies that proved that environmental sustainability measures do not improve the financial performance of companies (Song *et al.*, 2017). However, the results contradict with other previous studies that found a positive relationship between environmental sustainability measures and firm performance (Baik *et al.* 2013; Albertini, 2013; Signal, 2014; Edwards, 2015; Severo *et al.*, 2015; Severo *et al.*, 2017; Alshehhi *et al.*, 2018).

The results of this study show that most companies to which mutual funds have invested in are still using a massive amount of water despite the dire need to save water due to environmental challenges, and this is overlooked by mutual funds when selecting investment opportunities. Therefore, it can be explained that mutual fund investors do not consider environmental issues in totality when making investment decisions. This could mean that companies, where these mutual fund companies invest, do not bother to address ESG issues because of the benefits that will accrue to them, irrespective of whether these challenges are addressed or not. Lack of measures to address environmental issues may result in inefficient use of natural resources that may in un result in depletion of those resource and unsustainable business practices. (Manzhynsi *et al*., 2015).

The results do not support the sustainability theory which indicates that companies should integrate financial performance measures with social and environmental factors in a broader strategy in order to achieve sustainable business practices. This view is shared by O'Connor (2007) and Ali (2017). High water usage by companies to achieve higher financial performance as evident from the results could result in

depletion of this natural resource and consequently unsustainable business practices. Once more, the study results do not support the stakeholder theory that encourages companies to take care of the needs of different stakeholder that affect or are affected by the companies' operations to result in sustainable businesses (Freeman, 1984; Harrison & Wicks, 2013; Harrison *et al*., 2015). Companies operate within an environment which should be maintained for the benefit of different stakeholders. Inefficient use of natural resources such as water could indicate that companies do not care much for the environment and as a result sustainability cannot be achieved. This is supported by previous studies that found that few stakeholders focus result in less value been created over time (Freeman, 1984; Harrison & Wicks, 2013; Harrison *et al*., 2015; Jo *et al*., 2016). However, the results are consistent with previous studies that indicate that the primary objective of companies is to make a profit and not to consider the needs of different stakeholders (Friedman, 1970; Shim, 2014).

Moreover, the agency problem appears to be a problem within companies where investments are concerned. The research results indicate that mutual fund investment managers do not act in the best interest of all stakeholders because they invest in companies that do not appear to prioritise environmental issues such as water saving. The mutual fund managers appear to be following the traditional way of selecting investments that are yield higher financial return to the detriment of other stakeholders.

Therefore, the null hypothesis that indicates that there is no correlation between the environmental sustainability investment (water usage) and ROE is rejected, and the alternative hypothesis that indicates that there is a correlation is accepted.

Hypothesis 2: There is no correlation between social sustainability investment (employee health and safety cost) and ROE.

Moreover, there is a positive correlation between work-related fatalities and ROE as shown by a positive coefficient variance (0.234484). Likewise, the correlation is insignificant indicated by a p-value of 0.435. This may indicate that companies are not investing in the health and safety of their employees resulting in increased fatalities. Companies continue to report good profits even in cases of higher fatalities may be an indication that fatal employees can be easily replaced with new employees. Therefore, the results are consistent with previous studies that found that investing in social sustainability does not improve financial performance (Fan & Lo, 2012; Fabius *et al.*, 2013). Once more, this result contradicts with previous studies that found a positive relationship between social sustainability measures and financial performance (Barnett *et al.*, 2012; Santos *et al.*, 2013; Haslam *et al.*, 2016).

The results show that most companies do not prioritise in investing in the health and safety of their employees resulting in increased fatalities. The results are consistent with the previous study that indicated that companies do not prioritise in investing in the health and safety of employees despite its significance (Haslam *et al*., 2016; Pagalung, 2016; Probst e*t al*., 2016). Furthermore, it can be explained that mutual funds investors do not consider social sustainability issues in totality when making an investment decision.

The results do not support the sustainability theory that request that companies should address social issues in order to be sustainable (O'Connor, 2007). Companies that are unable to take care of their employees may be seen as neglecting the most critical social issues. The study results indicate that the financial performance of companies' increase, despite an increase in fatalities. The results of this study are supported by the results found in Ukraine that indicated that most senior managers still embrace the

traditional way of doing business which involves focusing on financial returns only and shifting the social issues in the hands of government (Shkura, 2017). This could mean that the companies may not be sustainable if there is no change in their strategy to address these social issues.

Furthermore, the stakeholder theory is not supported by the study results which calls for companies to address the needs of different stakeholders (Friedman, 1970; Shim, 2014). Employees are regarded as part of the key stakeholders of the company (Pagalung, 2016). If more focus is not placed on employee's health and safety, the companies could experience enormous challenges such as bad reputation, litigations, strikes and forceful closure by authorities that could hamper future company operations.

Therefore, the null hypothesis that indicates that there is no correlation between social sustainability investment (employee health and safety cost) and ROE is rejected, and the alternative hypothesis that indicates that there is correlation is accepted. *Hypothesis 3: There is no correlation between gender diversity (percentage of female representations on corporate boards) and ROE.*

Contrary to the results discussed, a negative and insignificant relationship exists between women on corporate boards and ROE. This is indicated by negative coefficient variance (-0.20758) and the p-value (0.881) more than the significant level. This result coincides with previous studies that found that women on board structures are negatively related to financial performance (Ahern & Dittmarr, 2012; Darmadi 2013; Mans-Kemp & Viviers, 2015). However, most of the previous studies found a positive correlation between women on board structures and financial performance (Liu *et al.*, 2014; Levi *et al.*, 2014; Low *et al.*, 2015).

The negative correlation found in this study could be because women are still underrepresented in the board structures and therefore their impact on the company cannot be seen. This is evident from the research data that indicated that the majority board structures are still male-dominated with few women or no women at all. The research results coincide with previous studies that found that women are still underrepresented in the company board structures (Nekhili & Gatfaoui, 2013; Şener & Karaye, 2014). This could further mean that mutual fund companies do not thoroughly scrutinise governance issues in making investment decisions. Lack of improvement regarding women representations on the companies board of directors could indicate that women are still undermined and not seen as having the power to improve companies results.

Addressing governance challenges is regarded as one of the tools that can be used by companies to achieve sustainable business practices. The board of directors is responsible to governance, and good corporate governance could be achieved if women are adequately represented because women, in general, contribute to the healthy functioning of the board (Handajani *et al*., 2014; Nekhili *et al*., 2017). A male-dominated the board of directors could not be seen as a way to achieve sustainable business practices because the same kind of thinking may be applied all the time when investment decisions are made whereas most women are more cautious and pay attention to societal issues (Huang & Kisgen, 2013; Arun et al., 2015).

The research results do not support the sustainability and stakeholder theory that recommends that governance issues be incorporated into the companies' strategies to address environmental and social issues. The under-representation of women of corporate boards could result in them be suppressed at their voice not be heard when

coming to the choice of investments. Men tend to focus on economic matters only (Arun *et al*. 2015). This could result in the same style of choosing investment decisions being adopted by those who have power without looking at the impact of those investment decisions towards the society and environment. Based on this study results, it appears that the choice of investments is still based on whether an excellent financial return will be made and not that it is socially or environmentally friendly. Therefore, ESG issues are still not considered by investment fund managers when making investment decisions. This could be encouraged by the fact that mutual fund companies do not consider ESG issues in totality when making investment decisions and therefore companies do not see the necessity to do things differently.

Therefore, the null hypothesis that indicates that there is no correlation between the gender diversity (female representation on corporate boards) and ROE is rejected, and the alternative hypothesis that indicates that there is correlation is accepted.

Hypothesis 4: There is no correlation between firm size (market capitalisation) and ROE.

Once more, there is a positive correlation between market capitalisation and ROE indicated by a positive coefficient (0.012718). The results are insignificant given the p-value (0.881) which is higher than significant p-value (0.05). The positive correlation is consistent with previous studies (Pervan & Višić, 2012; John & Adebayo, 2013; (Abbasi & Malik, 2015). However, the results contradict with a study that found that there is no indication of a correlation between firm size and financial performance (Niresh & Thirunavukkarasu, 2014).

Therefore, the null hypothesis that indicates that there is no correlation between the firm size (market capitalisation) and ROE is rejected, and the alternative hypothesis that indicates that there is a correlation is accepted.

4.8 Summary of this chapter

In this chapter, panel data analysis techniques where discussed which include descriptive statistics, correlation matrix, scatter plots. Moreover, diagnostic test results were performed were normality, heteroscedasticity, serial correlation and multicollinearity were tested. The validity of the panel data was confirmed because it was found that the panel data is normally distributed; there is no heteroscedasticity, no serial correlation and no multicollinearity between the independent variables. The FEM and REM were performed on STATA and Hausman test was used to choose an appropriate model whereby FEM was chosen due to the significance p-value of less than 0.05 threshold. The relationship between the independent and dependent variables under this study was discussed in detail.

The next chapter provides the summary, conclusions and recommendation of the study.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The previous chapter discussed the study results in terms of the hypothesis and relevant theories. This chapter provides the summary, conclusion and recommendation under this study. Section 5.2 restate the research objectives and explain the research process followed; Section 5.3 discusses the summary of the study; Section 5.4 discusses contributions of the study; Section 5.5 provides recommendations and 5.6 overall conclusions.

5.2 Research objectives and research process restated

The study objectives seek to determine whether SA mutual funds companies listed on JSE consider ESG factors in making their investment decisions to create sustainable value and the subsequent impact on their financial performance. In determining whether SA mutual fund companies consider ESG issues when investing their funds, the researcher extracted information from the investee companies integrated, annual and sustainability reports to determine their practices about significant sustainability issues identified under the study. One factor that is considered significant is selected to represent each of the ESG factor and the correlation thereof with financial performance measured using ROE was examined. Sustainability conscious companies that are concerned about their sustainable business practices are likely to address significant sustainability issues in their operations. Hence, the study considered the following hypothesis:

H_1: There is no correlation between environmental sustainability investment (water usage) and return on equity (ROE).

H_2: There is no correlation between social sustainability investment (employee health and safety cost) and ROE.

H_3: There is no correlation between gender diversity (percentage of female representations on corporate boards) and ROE.

H_4: There is no correlation between firm size (market capitalisation) and ROE.

In tackling these research objectives, this study reviewed extensive literature that found contradicting and inconclusive results. The quantitative research approach was adopted under this study because the data analysed were secondary. The data was collected from integrated reports, annual reports and sustainability reports of selected companies and captured on Microsoft Excel before imported into the Stata 15 software. A diagnostic test was conducted that shows that the regression assumptions were not contravened. FEM and REM were conducted, and the Hausman test was also performed to determine the appropriate model between the two for discussing the study result. The result of the Hausman test supported the use of FEM, and the model was subsequently selected to discuss the study results. Firm size represented by market capitalisation was used as a control variable in this study.

5.3 Summary of the study

The study examined the relationship between selected ESG factors of companies that SA mutual fund companies listed on the JSE have invested their funds and the subsequent effect thereof on financial performance represented by ROE to determine whether responsible investing is practised by asset managers. The study found that there is a positive and insignificant relationship between water usage and ROE, which imply that companies are still using vast amount of water irrespective of the dire need

to save water and this issue are still ignored when investment decisions are made. Moreover, a positive and insignificant relationship was found between the number of work-related fatalities and ROE. Companies continue to make huge profits despite the number of fatalities that occur within companies. This indicates that social issues of employees are still not adequately addressed by most companies where mutual fund managers are investing their funds. A negative and insignificant relationship was found between the percentage of women on corporate' boards and ROE. This indicates that most board of directors are still male-dominated, and the effect of women cannot be seen due to under-representation. The study also found a positive and insignificant relationship between firm size and ROE. This indicates that larger companies still have an advantage over smaller companies in terms of ability to generate higher returns. However, one can attribute this relationship to mean that firm size or the size of funds available to these mutual fund managers is a significant driver of ROE rather than ESG factors. This indicates that investment decisions are still made through the conventional approach of looking at whether good returns can be made without looking at the impact thereof on the society and environment. South Africa mutual fund companies listed on the JSE can be said not fully to consider ESG factors when making investment decisions. Hence, key stakeholders affected by companies' operations are unsatisfied with loss in sustainable value created by the selected companies.

5.4 Contribution to the study

Sustainability has recently become a topic that got the attention of many different stakeholders especially scholars. Almost everyone is asking whether actions of particular business practices will lead to a sustainable world because the

consequences of unsustainable business practices affect nearly all stakeholder groups. This study contributes to literature from a South African context that SA mutual fund companies listed on the JSE still rely on conventional investment approach rather than integrating ESG issues in making investment decisions. The study results indicated that companies sampled are unlikely to achieve sustainability through responsible investment as advocated by the UN PRI because they use more resources to generate more returns (ROE) for investors. Sustainability requires companies to do more with less which is linked to efficient use of resources. Once more, the study results indicate that the health and safety of employees is still a challenge in many companies as indicated by an increase in several work-related fatalities. Sustainable business practices may not be achieved as high fatalities may draw negative consequences, such as strikes and forced closure to the company. Moreover, the study results showed that females are still underrepresented on corporate' boards.

Contribution to society

The society will be aware of how businesses in South Africa especially the mutual fund managers conduct their practices in terms of their regard or consideration for being environmentally and socially responsible. Companies that are not environmentally or socially friendly directly impact the society surrounding their operations negatively. If water is used to the extent of depletion, fatalities may arise because water is the source of life. Lack of measures to improve health and safety may result in employees' unrest and protests that can bring the company operations to a halt leading to financial loss.

5.5 Recommendations

The results of the study have implications on many stakeholders which include but not limited to SA mutual fund companies, companies that mutual funds invested their funds, potential companies seeking investments, existing and potential investors, government, society and academia. Recommendations are addressed to those stakeholders are considered to be significantly affected by the research results.

5.5.1 SA mutual fund companies

Mutual fund companies are regarded as asset managers because they invest and manages funds on behalf of different investors and are therefore tasked with making decisions that are in the best interest of their principals, the trustees. The study results show that investment managers are still investing in projects that provide a higher return, without incorporating significant ESG factors in investment decisions. This may be because the investors they are representing are still motivated by short-term financial gain and may not be willing to wait for the long-term financial gain where sustainability issues are factored into investment decisions. Investment managers should, therefore, consider educating the investors, especially in the African continent about the importance of incorporating ESG issues in investment decisions and the benefit that accrue for such kind of investments. If investors are at the forefront of sustainability, it may force the investees to start taking ESG issues seriously by being conscious of losing investments.

5.5.2 Companies

Companies that are dedicated to addressing environmental issues may save themselves from incurring huge fines and penalties from regulators. In SA, many

companies including individuals have previously incurred fines and penalties by using water excessively. Companies should come up with new ways that will ensure that less amount of water is used in their business operations. While addressing social issues can result in the companies been seen corporate citizenship, it may also save it from strikes and possible litigations from the employees and community at large. Moreover, paying attention to governance issues may also help companies to reduce fraud and corruption that sometimes cripple the financial performance of many companies. Companies are, therefore encouraged, to put measures in place to ensure efficient use of scarce resources such as water, prioritise the health and safety of their employees by aiming for zero harm and fatalities to achieve sustainable business practices. Companies should also consider gender balance in their board structure because it could assist in bridging the gap between men and women in decision making and minimise fraud and corruption.

5.5.3 Investors

Most companies' survival depends on capital injection by investors so that they can be able to run a business operation successfully. However, most investors prefer capital appreciation than consider issues of ESG. This indicates that investors' confidence investments are important for companies' survival and continued operations. Investors are, therefore, encouraged to consider long-term benefits and survival of companies by encouraging responsible investments whereby they only invest in companies that are dedicated to addressing ESG issues in their business operations.

5.5.4 Academia

Incorporating ESG factors in investment decisions received the attention of many stakeholders and researchers. The study results indicate that some of the ESG factors are not considered in investment decisions by SA mutual fund companies listed on the JSE when making investment decisions. Future studies should consider incorporating other ESG indicators other than the ones examined in this study.

5.5.5 Government or regulators

The study results can be useful to the regulators in the sense that it can be used to review and strengthen the existing policies about water usage, health and safety issues and governance issues. Regarding water usage, the regulators can consider introducing water tax for exceeding a certain threshold of water usage. This may encourage companies to look at ways to run their operations successfully without excessive water use. In terms of issues relating to health and safety of employees, it is suggested that regular review of working environment and conditions be conducted by respective government entities responsible for health and strict measures be taken where working environment and conditions are found not be satisfactory to minimise occupational health diseases, injuries and fatalities. Companies are likely to address health and safety concerns if they are aware that there are consequences for non-compliance. Moreover, governments should consider regulating the percentage of women that corporate boards should have as a minimum because the best practice as recommended by King IV is not followed by many of the companies examined in this study. The lack of regulation that can be enforced on companies' is the reason many corporate boards remain male-dominated and therefore no changes in the way their operations are conducted. Furthermore, the regulators can also consider

providing incentives for companies that are dedicated to addressing the environmental and social challenges in order to draw the attention of many companies that are still trapped in bad business practices.

5.6 Overall conclusion

South Africa mutual fund companies do not fully utilise responsible investment measures. This is evident from the study results that showed that companies in which SA mutual fund companies have already invested their funds conduct their business in a way that is not environmentally and socially friendly. Companies that do not have measures in place to address key ESG issues may not create sustainable business value over time which may consequently result in unsustainable business practices that may cripple most of the stakeholders.

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APPENDIX A: ADDITIONAL TABLE-Raw data on study variables

Company code	Years	Water usage (Megalitres)	No of work-related fatalities	% of women on corporate boards	ROE (%)	Market capitalisation (Total assets)
AGL	2007	-	40	9,00	43,45	16,71
AGL	2008	73 770	28	16,67	49,01	27,05
AGL	2009	78 665	20	15,38	9,29	10,42
AGL	2010	67 544	15	25,00	18,25	10,52
AGL	2011	72 743	17	30,77	6,37	4,15
AGL	2012	69 725	13	18,18	-13,4	-1,53
AGL	2013	67 947	15	17,65	-2,73	3,58
AGL	2014	54 249	6	25,00	1,23	1,09
AGL	2015	66 604	6	16,67	-29,99	-17,82
AGL	2016	65 382	11	16,67	1,58	5,05
AGL	2017	53 067	9	16,67	4,68	4,01
IMP	2007	33 278	13	23,08	21,94	109,99
IMP	2008	45 115	12	30,77	40,53	24,8
IMP	2009	37 434	11	23,08	14,7	-7,25
IMP	2010	37 060	15	33,33	10,77	8,63
IMP	2011	41 868	7	23,08	13,96	8,18
IMP	2012	27 254	12	30,77	8,33	7,54
IMP	2013	25 978	9	31,25	1,96	12,72
IMP	2014	17 502	4	30,77	0,02	-1,06
IMP	2015	22 401	7	35,71	-7,31	-3,32
IMP	2016	23 828	9	33,33	-0,13	10,1
IMP	2017	25 744	9	18,18	-17,56	-13,57
KIO	2007	8 324	0	11,11	116,8	41,75
KIO	2008	8 019	1	20,00	105,09	71,54
KIO	2009	9 700	1	22,22	95,78	6,61
KIO	2010	8 778	3	20,00	99,9	56,54
KIO	2011	9 116	0	20,00	107,64	23,45
KIO	2012	10 035	2	36,36	81,61	6,17

KIO	2013	10 648	0	36,36	74,15	21,9
KIO	2014	10 361	1	36,36	51,65	14,28
KIO	2015	33 101	0	36,36	2,43	-4,69
KIO	2016	24 148	2	40,00	30,96	17,94
KIO	2017	33 234	0	38,46	35,48	9,18
SOL	2007	140 722	4	33,33	27,64	15,84
SOL	2008	154 602	3	35,71	29,31	17,23
SOL	2009	152 318	4	26,67	16,28	4,17
SOL	2010	151 391	9	26,67	16,83	7,37
SOL	2011	152 526	15	40,00	18,39	13,91
SOL	2012	148 372	4	23,08	18,83	14,66
SOL	2013	147 001	2	16,67	17,56	22,48
SOL	2014	149 552	3	21,43	17,3	12,17
SOL	2015	135 458	0	23,08	15,51	15,3
SOL	2016	138 622	2	18,75	6,39	21,42
SOL	2017	137 061	4	26,67	9,62	2,2
LHC	2007	0	0	0,00	0,00	0,00
LHC	2008	0	0	0,00	0,00	0,00
LHC	2009	0	0	0,00	0,00	0,00
LHC	2010	1 194	0	21,43	23,32	0,00
LHC	2011	1 566	0	16,67	36,59	9,19
LHC	2012	1 529	0	16,67	37,96	14,63
LHC	2013	1 812	0	15,38	38,92	11,46
LHC	2014	2 572	0	23,08	57,89	20,4
LHC	2015	2 239	0	27,27	36,11	36,61
LHC	2016	2 111	0	27,27	29,46	10,25
LHC	2017	1 246	0	36,36	5,66	42,35
NTC	2007	1 682	0	15,38	22,43	2,51
NTC	2008	1 815	0	15,38	17,83	8,38
NTC	2009	1 467	0	15,38	37,74	-15,33
NTC	2010	1 682	0	9,09	29,66	-1,23
NTC	2011	1 175	0	18,18	36,46	14,17
NTC	2012	2 340	0	20,00	-422,65	10,02

NTC	2013	1 679	0	20,00	71,13	-48,33
NTC	2014	1 536	0	30,00	24,37	11,75
NTC	2015	1 917	0	36,36	23,39	19,57
NTC	2016	1 830	0	36,36	16,38	-1,43
NTC	2017	1 723	0	30,00	-6,63	-1,24
APN	2007	0	0	16,67	32,3	100,58
APN	2008	0	0	16,67	27,87	2,24
APN	2009	0	0	20,00	33,34	22,71
APN	2010	326	0	20,00	18,65	33,85
APN	2011	484	0	20,00	19,73	23,47
APN	2012	534	10	20,00	16,2	9,44
APN	2013	450	1	20,00	15,44	41,44
APN	2014	444	0	27,27	17,34	95,98
APN	2015	1 833	0	27,27	15,14	6,62
APN	2016	1 789	0	27,27	10,12	14,77
APN	2017	1 635	0	30,00	11,83	2,44
REM	2007	0	0	12,50	15,2	20,65
REM	2008	0	0	11,76	17,29	24,2
REM	2009	0	0	6,67	119,06	-32,07
REM	2010	8 257	0	11,11	7,07	14,32
REM	2011	8 308	0	11,11	16,82	16,69
REM	2012	8 257	0	11,11	17,37	3,61
REM	2013	8 730	0	0,00	7,51	16,05
REM	2014	8 933	0	0,00	10,47	10,11
REM	2015	8 708	0	7,14	11,92	20,74
REM	2016	8 565	0	7,14	6,83	17,07
REM	2017	6 735	0	14,29	9,12	9,56
SABM	2007	98 496	3	7,69	0	0
SABM	2008	99 424	2	12,50	0	0
SABM	2009	94 710	3	13,33	0	0
SABM	2010	91 590	4	11,76	0	0
SABM	2011	91 560	7	16,67	0	0
SABM	2012	91 600	0	16,67	0	0

SABM	2013	89 540	14	17,65	0	0
SABM	2014	85 750	0	20,00	0	0
SABM	2015	81 147	29	18,75	16,12	0
SABM	2016	79 680	27	18,75	1,87	93,7
SABM	2017	80 158	0	31,25	11,86	-23,25
DST	2007	0	0	14,29	0	0
DST	2008	0	0	12,50	0	0
DST	2009	4 228	0	13,33	0	0
DST	2010	4 428	0	17,65	0	0
DST	2011	4 141	0	18,75	0	0
DST	2012	4 004	0	21,43	0	0
DST	2013	3 760	0	18,75	0	0
DST	2014	3 919	0	21,43	0	0
DST	2015	3 686	0	21,43	0	0
DST	2016	4 166	0	25,00	0	0
DST	2017	3 604	0	29,41	0	0
BTI	2007	4 850	0	25,00		
BTI	2008	4 730	3	27,27	- 39,18	-
BTI	2009	4 410	3	27,27	39,17	- -5,59
BTI	2010	4 150	73	23,08	34,39	7,09
BTI	2011	3 890	7	25,00	34,07	-1,79
BTI	2012	3 770	12	23,08	48,7	3,24
BTI	2013	3 700	6	25,00	51,14	0,38
BTI	2014	3 690	8	18,18	55,94	-2
BTI	2015	3 560	0	25,00	75,08	37,21
BTI	2016	3 430	2	20,00	67,11	31,2
BTI	2017	3 270	1	25,00	63,43	-15,92
WBO	2007	0	3	28,57	27,54	41,94
WBO	2008	0	0	25,00	41,35	87,3
WBO	2009	0	3	40,00	37,32	20,57
WBO	2010	0	4	33,33	31,71	-3,58

WBO	2011	0	2	40,00	21,75	0,4
WBO	2012	0	3	40,00	16,4	18,51
WBO	2013	0	0	44,44	13,83	8,98
WBO	2014	0	1	37,50	9,21	8,48
WBO	2015	0	1	37,50	12,33	8,78
WBO	2016	0	1	37,50	13,37	6,83
WBO	2017	0	4	33,33	13,62	6,02
RLO	2007	0	0	16,67	0	-16,06
RLO	2008	0	0	7,69	0	62,3
RLO	2009	314	0	13,33	47,56	-0,42
RLO	2010	219	0	15,38	29,01	2,93
RLO	2011	290	0	33,33	8,85	-27,73
RLO	2012	310	0	27,27	23,21	8,15
RLO	2013	339	0	7,69	8,37	13,1
RLO	2014	369	0	36,36	2,25	35,02
RLO	2015	341	0	38,46	17,42	-2,03
RLO	2016	340	1	38,46	3,57	4,4
RLO	2017	294	0	38,46	12,5	-1,04
AVI	2007	0	0	9,09	18,33	12,06
AVI	2008	0	0	16,67	19,39	13,51
AVI	2009	0	0	9,09	18,97	7,13
AVI	2010	0	0	9,09	15,85	2,25
AVI	2011	0	0	16,67	23,91	-1,51
AVI	2012	0	0	16,67	26,85	3,41
AVI	2013	4 648	0	20,00	29,52	13,43
AVI	2014	2 789	0	18,18	31,21	9,82
AVI	2015	1 859	0	18,18	33,81	15,64
AVI	2016	930	0	18,18	32,99	14,49
AVI	2017	930	0	20,00	32,01	4,9
BIL	2007	187 600	8	16,67	46,8	20,32
BIL	2008	209 900	11	14,29	35,45	30,77
BIL	2009	231 200	7	14,29	16,82	3,78
BIL	2010	204 700	5	16,67	29,12	12,87

BIL	2011	226 200	2	25,00	36,4	15,68
BIL	2012	260 000	3	23,08	22,73	21,74
BIL	2013	560 700	3	21,43	14,23	7,02
BIL	2014	562 550	0	20,00	16,48	9,85
BIL	2015	617 600	5	27,27	2,42	-17,6
BIL	2016	449 800	0	33,33	-12,63	-4,53
BIL	2017	507 000	1	25,00	11,07	-1,56
GLN	2007	168 700	9	0,00	0	0
GLN	2008	170 000	6	0,00	0	0
GLN	2009	0	0	0,00	0	0
GLN	2010	413 000	18	0,00	0	0
GLN	2011	779 000	24	0,00	0	0
GLN	2012	670 000	27	0,00	3,12	0
GLN	2013	969 000	26	0,00	-13,69	41,8
GLN	2014	996 000	16	12,50	4,48	-1,74
GLN	2015	954 000	10	11,11	-9,88	-15,61
GLN	2016	970 000	16	16,67	3,35	-2,55
GLN	2017	924 000	9	20,00	12,5	9,27
AFE	2007	0	2	7,69	12,01	7,29
AFE	2008	0	1	18,18	9,99	36
AFE	2009	0	1	9,09	10,69	-9,79
AFE	2010	0	0	10,00	13,91	3,5
AFE	2011	0	1	18,18	15,55	21,8
AFE	2012	0	0	18,18	11,02	3,77
AFE	2013	1 025	0	15,38	13,87	11,93
AFE	2014	1 046	0	15,38	14,19	0,93
AFE	2015	1 065	2	20,00	11,27	20,36
AFE	2016	1 096	0	16,67	8,72	-11,78
AFE	2017	930	1	16,67	10,29	1,36
TON	2007	0	2	38,46	126,4	-15,98
TON	2008	0	3	31,25	21,22	24,7
TON	2009	0	0	0,00	0	0
TON	2010	23 222 688	11	33,33	50,7	0

TON	2011	26 803 489	4	33,33	17,35	8,46
TON	2012	10 258 167	2	38,46	13,25	22,69
TON	2013	613 047	3	41,67	12,77	19,85
TON	2014	514 232	1	45,45	10,94	12,64
TON	2015	634 488	2	50,00	8,32	10,76
TON	2016	704 399	5	45,45	6,13	15,62
TON	2017	720 713	0	45,45	9,12	-9,85
SNH	2007	0	0	8,33	17,76	12,92
SNH	2008	0	0	7,69	15,44	30,7
SNH	2009	0	0	13,33	15,51	2,03
SNH	2010	0	0	11,11	14,76	8,5
SNH	2011	0	0	14,29	14,95	64,5
SNH	2012	0	0	14,29	12,26	28,72
SNH	2013	0	0	13,64	12,39	24,56
SNH	2014	0	0	14,29	11,99	30,71
SNH	2015	0	0	14,29	7,41	31,03
SNH	2016	0	0	14,29	9,75	-91,22
SNH	2017	0	0		0	0
TSH	2007	0	0	0,00	6,01	73,85
TSH	2008	0	0	7,69	14,84	7,12
TSH	2009	0	0	9,09	13,7	1,11
TSH	2010	0	0	0,00	10,21	-0,85
TSH	2011	0	0	0,00	8,56	214,96
TSH	2012	0	0	0,00	22,24	7,98
TSH	2013	2 900	0	0,00	19,61	0,61
TSH	2014	2 800	0	11,11	19,17	25,65
TSH	2015	2 600	0	11,11	23,71	29,32
TSH	2016	2 800	0	11,11	21,56	5,66
TSH	2017	2 800	0	11,11	23,28	36,26
PFG	2007	0	0	11,76	0	0
PFG	2008	0	0	11,76	10,62	0
PFG	2009	0	0	11,76	12,11	1,24
PFG	2010	0	0	9,09	4,94	9,86

PFG	2011	0	0	8,33	13,28	11,51
PFG	2012	5 400	1	8,33	10	8,1
PFG	2013	4 700	0	9,09	7,55	13,19
PFG	2014	3 100	2	18,18	15,82	9,49
PFG	2015	3 500	5	20,00	16,24	-6,22
PFG	2016	2 400	4	11,76	21,48	11,13
PFG	2017	1 900	3	12,50	9,04	-4,63
BAW	2007	710	3	0,00	20,38	-12,35
BAW	2008	775	2	13,33	9,59	10,57
BAW	2009	843	3	14,29	5,66	-12,24
BAW	2010	731	1	13,33	-0,07	-15,21
BAW	2011	767	2	13,33	8,21	21,89
BAW	2012	799	1	26,67	12,12	16,13
BAW	2013	832	3	28,57	11	13,67
BAW	2014	785	3	25,00	12,69	9,2
BAW	2015	745	0	26,67	8,82	9,64
BAW	2016	755	1	28,57	9,94	-5,84
BAW	2017	674	3	41,67	8,1	1,17
SAP	2007	41,28	0	0,00	11,51	15,03
SAP	2008	39,95	0	0,00	5,61	-3,7
SAP	2009	40,48	9	15,38	-11,98	19,06
SAP	2010	36,94	4	13,33	3,87	-1,49
SAP	2011	35,70	4	13,33	-13,72	-12,21
SAP	2012	36,13	0	13,33	6,62	-2,18
SAP	2013	35,88	1	14,29	-13,01	-7,14
SAP	2014	35,41	0	12,50	12,12	-4,54
SAP	2015	34,77	1	13,33	14,29	-10,17
SAP	2016	34,94	1	16,67	24,94	5,44
SAP	2017	33,74	3	14,29	19,1	0,93
ARL	2007	0	0	20,00	41,79	34,32
ARL	2008	838		25,00	25,12	10,73
ARL	2009	907	- 0	22,22	25,6	0,67

ARL	2010	3 823	0	20,00	25,11	-1,38
ARL	2011	0	0	20,00	27,27	7,85
ARL	2012	5 004	0	18,18	20,78	5,49
ARL	2013	4 845	2	25,00	14,24	11,18
ARL	2014	5 618	0	27,27	17,49	11,27
ARL	2015	6 169	2	25,00	32,96	10,5
ARL	2016	6 633	6	30,00	15,79	3,03
ARL	2017	5 644	6	25,00	24,96	7,49
MNP	2007	0	0	20,00	7,57	0
MNP	2008	0	0	22,22	-8,39	-6,3
MNP	2009	306 000	0	22,22	-1,52	-0,64
MNP	2010	309 000	1	22,22	8,91	4,96
MNP	2011	330 000	1	22,22	11,84	-12,52
MNP	2012	328 000	1	22,22	8,98	9,47
MNP	2013	318 000	4	22,22	13,24	-5,98
MNP	2014	328 000	0	12,50	18,44	2,25
MNP	2015	316 000	1	22,22	17,42	1,48
MNP	2016	320 000	0	30,00	21,19	12,73
MNP	2017	328 000	2	25,00	18,32	-1,67
SHP	2007	0	0	0,00	29,57	19,53
SHP	2008	0	0	0,00	33	25,28
SHP	2009	0	0	0,00	40,29	12,73
SHP	2010	0	0	0,00	38,38	6,08
SHP	2011	0	0	0,00	35,43	14,98
SHP	2012	0	0	5,56	23,75	50,17
SHP	2013	0	0	5,56	23,69	8,13
SHP	2014	0	0	5,56	21,66	21,13
SHP	2015	0	0	5,56	21,6	8,02
SHP	2016	0	0	5,88	22,69	9,3
SHP	2017	0	0	6,67	19,63	14,99
MUR	2007	0	11	13,33	19,31	25,17
MUR	2008	0	16	13,33	35,24	65,5
MUR	2009	1 600	9	18,75	36,15	8,89

MUR	2010	1 200	9	18,75	17,71	-7,05
MUR	2011	1 000	12	18,75	-41,11	-11,25
MUR	2012	630	4	28,57	-12,49	15,24
MUR	2013	1 160	2	27,27	14,26	9,32
MUR	2014	549	4	22,22	21,36	-19,46
MUR	2015	274	4	18,18	13,56	-6,49
MUR	2016	399	1	16,67	10,45	-4,87
MUR	2017	419	0	30,77	0,73	-21,55