# THE EFFECT OF SOCIAL SCREENING ON PORTFOLIO PERFORMANCE AT THE NAIROBI SECURITIES EXCHANGE

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# DECLARATION

This research project report is my original work and has not been presented for award of a degree in this or any other university.

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This research project report has been submitted with my approval as the University Supervisor

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# DEDICATION

I dedicate this report to my family members for their love, moral support, patience and understanding during the times I had to be away from them to concentrate on this research.

# ACKNOWLEDGEMENT

I would like to acknowledge the support, advice and tireless efforts of my supervisor Dr Fredrick Ogilo during my research work and in writing of this research report. It was through his great encouragement, devotion and stimulating suggestions that motivated me in bringing this study to this level.

I would also like to acknowledge the assistance provided by the Librarians at Capital markets Authority and Nairobi Securities Exchange in securing the data for the firms under study. I am also indebted to lecturers, students and non teaching staff of the University of Nairobi, for it is through their support and encouragement that this study was a success.

# ABSTRACT

This study sought to determine whether applying social screens to a portfolio would affect the portfolio's performance. Two portfolios were formulated each comprised of 20 firms. One comprised of the NSE 20-share index firms and the second comprised 20 firms that passed the negative screening criterion that was employed. The causal research design approach was used. The target population was all the 58 firms listed at the NSE. The risk and risk-free returns were computed using the Sharpe indices approach. Monthly and annual returns were calculated for years 2007 - 2011. The standard deviation and beta were the chosen risk measures. T-tests were used to determine whether there was significant difference between the risk and returns of the two portfolios. In terms of monthly and annual raw returns, the socially screened portfolio was seen to outperform the conventional portfolio. The conventional portfolio had a higher average Sharpe ratio than the socially screened portfolio hence it outperformed the socially screened portfolio when compared in terms of returns and total risk. The findings of this study revealed mixed results in the portfolio performance. The socially screened portfolio outperformed the conventional portfolio in relation to total risk but in relation to systematic risk and performance, the conventional portfolio outperformed the socially screened portfolio. The results showed that social screening has no significant impact in influencing investors' decision on which firm to invest in or not. The study recommends formulation of an additional index to capture the periodic performance of socially screened top-20 companies; and utilization of alternate performance measures such as the Treynor and Jensen portfolio performance measures to reinforce the findings of the present study.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| CAPM | Capital Assets Pricing Model |
| CBK | Central Bank of Kenya |
| DSJ | Domini Social Index |
| ESG | Environment, Social and Corporate governance |
| KLM | Kinder, Lydenberg and Domini |
| KSIF | Kenya Social Investment Forum |
| KSIX | Kenya Social Investment Exchange |
| NASI | NSE All Share Index |
| NSE | Nairobi Securities Exchange |
| SIF | Social Investment Forum |
| SGI | Social Guideline Investing |
| SML | Security Market Line |
| USA | United States of America |

# CHAPTER ONE: INTRODUCTION

## 1.1. Background of the Study

Dunfee (2003) defines social screening as the consideration of an investor's social, ethical or religious concerns in an investment decision making process while Diltz (1995) adds that social screening involves prohibiting investments in the securities of companies or industries that an investor perceives to be engaged in socially negative behaviour.

The growth of social screening has a long history. The Quakers in the United States of America (USA) in the 18th Century were the first investors to screen their investments for moral acceptability. They refused to do business with firms involved in the slave trade, tobacco or alcohol (Mandala, 2003). Other Religious investors such as Catholics and Mormons also have a history in practising social screening. A broadened, active interest in social screening also arose from exclusions of companies involved in apartheid in South Africa. The ranks of socially concerned investors in South Africa grew dramatically through the 1980s as millions of people, churches, universities, cities and states focused investment strategies on pressuring the white minority government to dismantle the racist system of apartheid. Social screening then moved on to other social exclusions including defense, gambling, guns, nuclear, pornography and environment pollution (Grossman and Sharpe, 1986).

An important social screening milestone was the creation of the Domini 400 index in 1991 by first applying social screens to the S&P 500 index to exclude approximately 250

companies and then adding back 150 companies not in the S&P 500: 100 large companies selected for size and industry and 50 smaller companies selected for positive social attributes. By 2000, more than 20% of institutional funds were socially focused with the major focus being social screening (Stone, Guerard, Mustafa and Adam, 2001).

Social screening is one of the three broad approaches to socially responsible investing (SRI). The other two approaches are: Shareholder Advocacy which seeks to use shareholder votes to influence corporate behaviour towards socially responsible goals; and Community Investment that plays the role of making capital available to communities and or individuals that may otherwise not receive financing from mainstream corporate finance sources (Statman, 2000).

### 1.1.1. Social Screening

Social screening typically takes three forms which include: positive screening, negative screening and the best- in -class screening. Positive screens set criteria which investments must satisfy in order to be included in a portfolio. Examples include community diversity, employee relations, human rights, product quality, health, safety standards and environmental protection measures. Investors then choose from the companies with the highest ratings. Negative screening excludes all companies from the investment opportunity set if they are involved in controversial business areas such as alcohol, tobacco, gambling, military, firearms, or nuclear power business. The best-in-class screening includes the best performers from each sector in order to avoid eliminating entire sectors. Minimum criteria are established which any company must meet. Of those

that satisfy this minimum threshold, those with the highest level of performance in each sector are selected for inclusion in the portfolio (Yaron, 2005).

Barnett and Solomon (2006) noted that The Social Investment Forum lists 12 types of social screens that SRI funds may use to filter firms from their investment portfolios. Potential screening criteria include excluding firms based upon their affiliation with the following 12 industries or issues: alcohol, tobacco, gambling, defense/weapons, animal testing, product or service quality, environment, human rights, labor relations, employment equality, community investment, and community relations. Screening intensity varies from 1 to 12. If a fund's screening intensity is given a value of 12, this indicates that the fund employs all 12 of the above-listed screens, whereas a value of 1 indicates that the fund uses only 1 of the 12 available screens. The Financial Times Stock Exchange Social World Indixes have 7 social screens which are: alcohol, tobacco, firearms, gambling, nuclear power, military weapons and environment pollution. The Dow Jones Social World Indixes on the other hand have 9 social screens and they include: tobacco, alcohol, gambling, armaments, firearms, adult entertainment, human rights abuse, catastrophic disaster and labour relations (Hussein, 2004).

### 1.1.2. Portfolio Performance

Portfolio performance is viewed as a feedback and a control mechanism that can make an investment process more effective. The measurement of portfolio performance is crucial to the investment manager in identifying sources of strengths and weaknesses as well as determining whether past performance was superior or inferior and thereafter determine

whether such performance was due to skill or luck. The essential idea behind portfolio performance measurement is to compare returns obtained in comparison with what could have been obtained if one or more appropriate alternative portfolios had been chosen for investment (Sharpe, 2001).

The key risk-adjusted measures of portfolio performance are three. The first is the Sharpe's measure which measures returns relative to the total risk of the portfolio, where total risk is the standard deviation of portfolio returns. The second is the Treynor measure which evaluates the risk premium per unit of risk and it uses the portfolio beta to measure risk. The third is the Jensen measure which calculates the portfolio's excess returns and the amount by which the portfolio's actual return deviates from its required return which is determined using beta and CAPM (Gitman, 1999).

### 1.1.3. Impact of Social Screening on Portfolio Performance

There are three alternative hypotheses about the performance of socially screened portfolios and conventional portfolios. The first hypothesis is that the risk-adjusted expected returns of socially screened portfolios are equal to the risk-adjusted expected returns of conventional portfolios. The second hypothesis is that the expected returns of socially screened portfolios are lower than the expected returns of conventional portfolios. The third and last hypothesis is that the expected returns of stocks of socially screened portfolios are higher than the expected returns of conventional portfolios. This involves doing well while doing good (Hamilton, Jo and Statman, 1993).

Studies on the impact of social screening have given different results. For example, some studies have shown that social screening yields superior returns. Statman (2006) performed a study to compare the performance of the S&P 500 index to the Domini Social Index (DSI). He concluded based on his research using Fama and French's 3-factor model that returns of socially screened indexes were generally higher than those of the S&P 500 Index. However, another group of researchers found different results. Hong and Kacperzcyk (2009) report lower returns for screened portfolios and higher expected returns for sinful stocks that are usually excluded from a portfolio because of negative ethical issues. On the contrary, other studies show that there is no significant difference in the performance of screened portfolios and the unscreened portfolios. For example, Diltz (1995) and Guerard (1997) compared the performance of socially screened portfolios and conventional portfolios and they both found that there were no significant differences between the risk-adjusted returns of portfolios composed of socially screened firms and portfolios selected without social screening.

### 1.1.4. The Nairobi Securities Exchange

The Nairobi Securities Exchange (NSE), formerly Nairobi Stock Exchange, is the principal stock exchange of Kenya. It began in 1954 as an overseas stock exchange while Kenya was still a British colony with permission of the London Stock Exchange. The NSE is a member of the African Securities Exchanges Association. It is Africa's fourth largest stock exchange in terms of trading volumes, and fifth in terms of market capitalization as a percentage of GDP. The Exchange works in cooperation with the

**Uganda** Securities Exchange and the Dar es Salaam Stock Exchange, including the cross **listing** of various equities (NSE, 2012).

NSE is reorganized into ten independent market sectors including: Agricultural, Commercial and Services, Telecommunication and Technology, Manufacturing and Allied, Banking, Automobiles and Accessories, Insurance, Energy and Petroleum, Construction and Allied and Investment. Two indices are popularly used to measure performance. The NSE 20-Share Index has been in use since 1964 and measures the performance of 20 blue-chip companies with strong fundamentals and which have consistently returned positive financial results. The other index is the NSE All Share Index (NASI) which was introduced as an alternative index. Its measure is an overall indicator of market performance. The Index incorporates all the traded shares of the day (NSE, 2012).

## 1.2. Research Problem

Aligning the objectives of investors with those of the society is crucial for the success of an investment. Chandler (2001) noted that the moral argument for doing good should be reason enough for companies to behave responsibly. Social screening offers investors an opportunity to invest their money without having to compromise their beliefs, principles and moral standards. It also enhances equality of gender and race, promotes good business ethics and good employment practices and aids in protection of the environment. Scholtens (2008) argues that issues like climate change, safety at work places, diseases, human rights, and community investing will have a negative impact on the global

**economy,** and therefore organizations cannot afford to ignore social screening. **Knowledge of** social screening is important and this is what this study embarks on.

Social screening in Kenya is at early stages of development which was marked by the launch of a bond issue on the stock market on behalf of microfinance NGO, Faulu; formation of the Kenya Social Investment Forum (KSIF); and the establishment of Kenya Social Investment Exchange (KSIX). There is only one ethical fund in Kenya known as First Ethical Fund licensed in 2011 and is now listed at the NSE (Alliance, 2006). Some companies' activities in Kenya have an extensive impact on the environment and the society at large, unless such companies take account of the environment, social and ethical issues in their businesses decision making, the future social and economic welfare would be at risk. There is need; therefore to avail more information on social screening to investors in Kenya, this information will guide in making appropriate portfolio choices.

Studies conducted at the US and UK have given mixed results. Some show that socially screened portfolios can perform as well as conventional portfolios (Diltz, 1995), others show that screened portfolios perform better than conventional portfolios (statman, 2000), yet others show that socially screened funds perform worse than unscreened funds (Rudd, 1979). Clearly, these results are mixed and therefore not conclusive. Similar studies can be replicated in Kenya because Kenya is an emerging economy given that most of these studies have been conducted in developed countries. Also, Kenya has a unique environment and a diverse culture. Some of the studies conducted in Kenya include: Kamanda (2001) who observed that majority of the insurance companies'

maintained poorly diversified portfolios and the market portfolio outperformed the **insurance** industry portfolio. Aziza (2010) evaluated the performance of an Islamically **screened** portfolio at the NSE and found that there is no significant difference between **the** risk and returns of an Islamic portfolio and that of a conventional portfolio. These **studies** have not addressed the impact of social screening at the NSE and this therefore raises the following questions: Can a socially screened portfolio be established from the **NSE?** Does the performance of a socially screened portfolio differ significantly from that of a conventional portfolio? Does a socially screened portfolio carry more risk than a conventional portfolio?

### 1.3. Research Objectives

The overall objective of this study was to determine whether applying social screens to a portfolio would affect the portfolio's performance. The specific objectives were:

(i) To establish a socially screened portfolio in the NSE

(ii) To compare the performance of a socially screened portfolio with that of a conventional portfolio

(iii) To determine whether a socially screened portfolio carries more risk than a conventional portfolio.

### 1.4. Value of the Study

This study will contribute to theory by providing guidance on how best to construct investment portfolios across market sectors considering both financial and social return.

**In addition** to this, it will also establish crucial information about the risk and return of **portfolios** which will in turn provide insight to portfolio managers and clients in their **decisions on** investment risks and return preferences.

This study will also contribute to practice by increasing the SRI awareness of the business community in Kenya and will shed more light to investors on the importance of pursuing social welfare concerns. It will also be important to academicians and researchers by playing a key role in the addition to knowledge base and therefore stimulate further research on social screening.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1. Introduction

This chapter reviewed the theoretical foundation upon which the study was based, the empirical evidence from related studies that had applied social screens, the critical review and concludes by summarizing various aspects discussed in the entire section.

## 2.2. Theoretical Review

The theories that lay foundation to this study are: modern portfolio theory, the stakeholder theory and the institutional theory.

### 2.2.1. Modern Portfolio Theory

Markowitz (1952) developed the modern portfolio theory. He formulated the portfolio problem as a choice of the mean and variance of a portfolio of assets. He proved the fundamental theorem of mean variance portfolio theory, namely holding constant variance while maximizing expected return, and holding constant expected return while minimizing variance. These two principles led to the formulation of an efficient frontier from which the investor could choose his or her preferred portfolio, depending on individual risk-return preferences.

Social screening may involve the exclusion of not merely certain firms, but entire industries and even economic sectors from the portfolios of screened funds. This may

fl'ct with mutual funds aS they see^ to maximize performance across a portfolio of **firms,** no within a single fi rrn- Classman (1999) contends that while the screening **rocess will** decrease the choi ce set' the reduction may not be substantial enough to cause **inadequate** diversification **B^rnett** anc* Solomon (2006) examine this notion further and **find that SRI** funds with fewer screens have a larger universe to select from and are more likely **to be** diversified and achieve a high risk-adjusted return.

### 2.2.2. The Stakeholder Theory

Freeman (1984) developed the stakeholder theory. He argued that instead of serving only the interests of shareholders, corporations should be operated for the benefit of all those who have a stake in the enterprise including employees, customers, suppliers and the local community. This **means** that all the stakeholders are integral in the operation of a corporation in accordance with ethical investing. Social screening proponents argue that because social relationships matter to financial performance, social screening is not merely a cost, but a wise investment. This basic rationale is supported by stakeholder theory, which suggests that the better a firm manages its relationships with the myriad groups that have some **interest,** or stake, in the firm, the better its financial performance over time (Donaldson and Preston, 1995).

Fombrun, Gardberg, and **Burnett** (2000) assert that a favorable social agenda builds valuable goodwill that can buffer a firm from unforeseen problems and even provide valuable new opportunities not available to socially unscreened firms. Hillman and Keim's (2001) also noted that even though socially screened funds must draw from a

j- 'ted pool of firms, they draw from a richer pool, one that is more likely to contain well-run, stable firms that outperform the broader market over the long run. The com etitive advantages that these firms possess result into superior financial returns at the portfolio level.

### 2.2.3. Institutional Theory

Institutional theory adopts a sociological perspective to explain organizational structures and behaviour. It draws attention to the social and cultural factors that influence organizational decision-making (Scott, 2001). In particular, it explains how rationalized meanings or myths are adopted by organizations. These myths become taken for granted and so are followed in a rule-like fashion when making decisions. They become the institutionalized logic that guides organizational behavior (Meyer and Rowan, 1977).

Social screened funds develop a rationalized logic that uses environmental, social and governance factors in selecting and managing their investments. These social screening criteria become the technical means for choosing their investments. They become the rationalized investment-making perceptions of a socially screened fund. This is consistent with Meyer and Rowan's (1977) definition of rationalized myths as rationalized and impersonal prescriptions that identify various social purposes as technical ones and specify the appropriate means to pursue these technical purposes rationally. For these mutual funds, social screening factors are taken as legitimate criteria, and they become part of the normal evaluation process for identifying potential investments.

## 2 3 The Concept of Social Screening and Portfolio Performance

**Kinder and Domini** (1997) observed that a social screen is the expression of an investor's **social** ethical **or** religious concern in a form that permits an investment manager to apply **it in an investment.** A socially screened investment seeks to meet certain baseline **standards of** social and environmental responsibility, actively engaging companies to **become better, more** responsible corporate citizens, and dedicating a portion of assets to **community** economic development.in the investment decision making process.

In order to argue that social screening affects social outcomes and leads to a better world it is necessary to show that social screening changes for the better the performance of firms. SRI proponents claim that social screening affects share prices of firms for example, if the share prices of good firms respond positively when these firms are screened in by SRI investors, or if the share prices of bad firms respond negatively when these firms are screened out, then it follows that firms that care about their share price will also care about being screened in or screened out of SRI portfolios. It would then be reasonable to expect that managers will wish to be screened in as good firms and will therefore have an incentive to be a good firm. Likewise, if bad firms are punished by a falling share price when they are screened out, these firms would have an incentive to improve their behaviour to avoid divestment (Statman, 2006).

Langbein and Posner (1980) argue that social screening may eliminate large firms from the investment universe and as a result remaining firms tend to be smaller and have more volatile returns. Further, diversification may be hindered to the extent that the screening

**criteria eliminates or** favors certain industries. Socially screened investment may involve **higher risk but should** not yield significantly worse returns since ethical investors do not **invest in clearly** unprofitable stock.

### 2.4. Empirical Review

The first group of studies shows that social screening yields higher returns. For example, Kempf and Osthoff (2007) investigated the impact of various socially responsible criteria on the performance of screened stock portfolios. They further analyzed whether investors can increase their performance by buying stocks with high social screening ratings and selling stocks with low social screening ratings. The researchers employed negative, positive, and best-in-class screens. The results of the study indicated that investing in socially screened portfolios can earn remarkable high abnormal returns.

Einolf (2007) also found similar results. He examined the effects of ESG screening by assembling a stock universe of 978 US equities. The aim of the study was to examine how a restrictive ESG screen affects a universe of potential stocks from which an investor would select from. The companies were evaluated across a spectrum of ESG issues. He also measured the risk adjusted annual returns, alpha, generated by these stocks. The results indicated that building a socially screened portfolio increases potential returns. He further found that restrictive ESG screen is more likely to select stocks with greater performance potential and that a portfolio put together using the best-in-class approach has greater potential that has no industry sector bias.

Abramson and Chung (2000) too show that social screening can provide competitive **returns** relative to benchmarks using both value and growth style investment strategies. Orlitzky, Schmidt, and Rynes (2003) concur with these results. They conducted a meta-analysis study and the results showed that there is a strong positive correlation between a company**'s** social performance and its financial performance. The second group of scholars found quite the opposite. Barnett and Salomon (2006) did a research to measure how variation in the intensity and type of social screening employed by SRI funds affects their financial performance. They developed a set of hypotheses, grounded in modern portfolio theory (Markowitz, 1952) and stakeholder theory (Freeman, 1984) that predict how variation in both the intensity and type of social screening influences risk-adjusted financial performance. They then tested these hypotheses on a panel of 61 socially screened funds and found out that the relationship between financial and social performance is neither strictly negative nor strictly positive. Rather, it is curvilinear. However, the results also showed that unscreened portfolios outperformed socially screened portfolios when the intensity of social screens is increased. Hong and Kacperczyk (2005) also show that companies involved in producing alcohol, tobacco and gambling outperformed the market by 9.1% per annum.

There is another group of studies that show that social screening leads to no significant difference in financial returns. For example, Stone, Guerard, Mustafa and Adams (1997) did a study on social screening to determine whether there is any significant cost for socially screened, actively managed and value focused portfolios. The Kinder, Lydenberg and Domini (KLM) social screens were used in this study. They found out that there was

**no significant cost** as a result of applying social screens for major sub periods: 1984-88, **1989-93 and 1994-97-** The conclusion of no significant cost or benefit was consistent **both in the short** run and in the long-run. Myers and Anderson **(2007)** used over forty **investment screens** and compared the risk-adjusted returns of various socially screened **mutual funds** to that of conventional funds and found no significant difference between **them.**

A **study** carried out here in Kenya by Aziza (2010) also showed no significant difference in financial returns between an Islamic portfolio and a conventional portfolio. The study **aimed** at forming an Islamic portfolio from the NSE and also to determine whether there **exists** any significant difference between the risk and returns of an Islamic portfolio and a conventional portfolio at the NSE. The results showed that it is possible to create a shariah compliant portfolio at the NSE and further showed that there was no significant difference between the risk and raw returns of the conventional portfolio and Islamic portfolio. The results for risk adjusted returns were mixed. This paper expands on this literature by building a socially screened portfolio at the NSE and by examining prospective performance using publicly available data. This involved elimination of stocks from consideration using categorical exclusions with a restrictive environment, social and governance screen to establish both a screened portfolio and a conventional portfolio and comparing their performance.

## 2.5. Critical Review

**Many** scholars outside Kenya have compared the financial performance of socially **screened** funds to those of unscreened funds; however, the results of the performance **comparisons** have not been conclusive as they have given mixed outcomes. Most **empirical** studies also have not addressed the issue of heterogeneity of social screens. Social screening critics have suggested that the strong financial performance of some SRI **funds may** be the result of a decrease in the stringency of their social screening criteria that is, they contend that SRI funds lower their social screening criteria in order to raise their financial performance (Glassman, 1999). As suggested by Barnett and Salomon (2006) stronger financial performance of SRI funds could actually serve as evidence that financial and social performances are not negatively or positively related but could be as **a result** of the type and intensity of social screens applied to the investments.

Critics of social screening also claim that adding a social constraint to the investment process necessarily leads to a sub-optimal result. Blodget (2007) argues that screening will reduce the size of an investor's stock universe and will undoubtedly eliminate high performing stocks. Temper (1991) noted that unscreened benchmarks may outperform ethical investment since using ethical investing criteria may cause additional screening and monitoring costs, availability of a smaller investment universe, and restricted potential for diversification.

### 2.6. Summary

**The literature** review has established a strong theoretical framework that this study is **founded on.** The studies that have been analyzed in this section have shown that social **screening** is likely to affect portfolio performance; however, the results obtained have **been mixed.** The analysis has shown that socially screened portfolios may result in higher **returns,** lower returns or in no significant difference in returns when compared with **conventional** portfolios. The extensive impact that organization activities have on the **environment** and the society at large is quite clear and cannot be ignored.

Social screening is becoming an important segment of capital markets today, as it enables an individual to invest without having to compromise his or her moral standard. This calls for more studies in order to establish the impact of social screening in the Kenyan market and also to address the needs of investors who do not want to prioritize financial returns over social returns.

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1. Introduction

**This chapter outlined** the research design that was used for the study, the population of **interest, the sampling** techniques, data to be collected, and the data analysis techniques to **be used.**

## 3.2. Research Design

The research was carried out through a causal research design. According to Mugenda and Mugenda (2003), a causal design explores the relationship between variables, that is, the effect of one thing on another and more specifically, the effect of one variable on another. He further contends that causal-comparative research has the advantage of being cheap. This design was appropriate because the study sought to investigate the effect of social screening on portfolio performance at the Nairobi Securities Exchange.

## 3.3. Population of the Study

The population of interest consisted of a census of all the 58 companies listed in the NSE as at 31st December 2011. The period of study was five years, ranging from 1st January 2007 to 31st December 2011. Social screening was carried out on these companies using the social screen criteria indicated in Appendix A.

### 3.4. Data Collection

The study made use of secondary data. The data collected from the NSE included share prices and dividend payments. The data to measure performance of the portfolio included; the share prices at the beginning of every month ($P_0$), the share prices at the end of every month (Pi) and the amount of dividend issued (Di). Social screening was carried out by eliminating companies with no commitment to community investing, those with poor records on employment equality, poor labour relations records and those with human rights law suits. The data available at the Kenya National Bureau of Statistics was used in the screening exercise. Other companies that were screened out are those involved in the manufacture of alcohol, manufacture of cigarettes, environment pollution for example industrial pollution, global warming, and depletion of natural resources. The airline industry, the oil companies, motor vehicle industry, the cement industry and the mining industry were screened out on the basis of environment pollution.

### 3.5. Data analysis

The returns on the screened portfolio in this study were calculated every month for the period of five years. The total annual returns of each share were measured as the sum of cash received (dividend) and the change in the portfolio's market value (capital gain or loss) divided by the market value of the portfolio (Shahid, 2007). The annual returns of the portfolio were calculated using the mean of the individual securities returns in the portfolios.

The formula for calculating the rate of return is given as:

$$= \frac{PQ + D_x}{Po}$$

Where;

R is the return on stock

Pi is the share price at the end of the period

Po is the share price at the beginning of the period

Di is the annual dividend per share for the period.

The portfolio performance for this study was evaluated using the Sharpe's measure. This is because Sharpe's ratio is a composite measure of risk-adjusted portfolio returns. It measures the return of a portfolio in excess risk free rate relative to its total risk where the total risk is the standard deviation of portfolio returns. This measure is the most appropriate for this study as it considers both systematic and unsystematic risks. It also establishes whether a portfolio's returns are due to smart investment or as a result of excess risk. The Sharpe measure is given by:

Where:

$S_t$ is the Sharpe Index

$R_p$ is the average return on portfolio p

$R_r$f is the risk free rate of return

$<j_p$ is the standard deviation of the return of portfolio p

The higher the Sharpe measure the better the performance because each unit of total risk or standard deviation is rewarded with greater excess return. The risk was measured using standard deviation, variance and beta. Beta was derived by regressing the socially screened portfolio returns against the returns from the market portfolio over the period of five years. The data was analyzed using z tests to test whether there is significant difference between the returns of the conventional portfolio, which consisted of the NSE 20 share index and that of the socially screened portfolio arrived at after social screening. The analysis of quantitative data was carried out using SPSS (Statistical Package for Social Science).

# CHAPTER FOUR: DATA ANALYSIS

## 4.1. Introduction

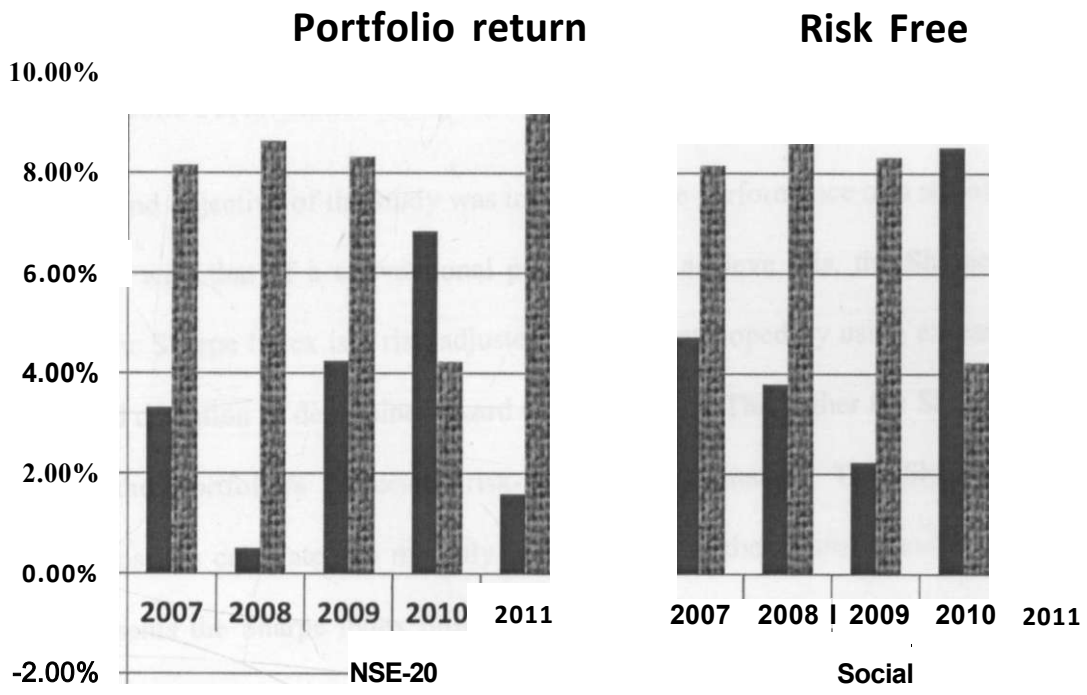
This chapter presents the data analysis using the approaches described earlier in Chapter three. The chapter has examined, categorized, and tabulated the evidence to address the initial objective of the study. The study sought to investigate the effect of social screening on portfolio performance at the Nairobi Securities Exchange. The chapter captures the sample profiles as well as the statistical tests to establish the relationship between social screening and portfolio performance. The first objective of the study sought to establish a socially screened portfolio in the NSE. This is shown in Appendix D.

## 4.2. Risks and Risk-Free Returns Trend Curves

The monthly returns and risk for the years 2007, 2008, 2009, 2010, and 2011 were calculated. The results are presented in Figure 4.1 below. The findings indicate that for the NSE-20 portfolio, the returns exhibited a sinusoidal pattern over the sample period with the returns falling from 3.3% to 0.5% over the 2007-2008 years then rising steadily to touch a high of 6.84% in 2010 before falling back to 1.59% in 2011. On the other hand, the social screen portfolio returns exhibited a volatile parabolic trend over the sample period with the portfolio return falling steadily over the first three years before rising to a high of 8.52% in 2010 then declining sharply to -0.02% in 2011. The figure shows that somewhat the returns for the two portfolios move in the same direction though in different magnitudes year after year. However there are mixed results where in certain years (2007, 2008, and 2010) the social screened portfolio has a higher risk return

compared to the NSE-20 portfolio and the NSE-20 portfolio having a higher risk return in other years (2009 and 2011). The NSE-20 portfolio recorded the highest risk return of 6.84% (year 2010) and the social screened portfolio reported the highest return of 8.52% (year 2010). The NSE-20 portfolio recorded the lowest risk return of 0.5% (year 2008) and the social screened portfolio reported the lowest return of -0.02% (year 2011). From Figure 4.1, it is clearly evident that the social screen portfolio carries more risk compared to the NSE-20 portfolio.

**Figure 4.1: Risk and Risk-Free Returns Averages for NSE-20 and Socially screened Portfolios**




**Source: Research Data**

Using regression analysis (Table 4.1 below), the beta of the social screened portfolio was found to be -0.007 while that of the NSE-20 portfolio was found to be 0.061. The standard deviation of the social screened portfolio is higher thus the portfolio carries more risk compared to the NSE-20 portfolio. Both portfolios have a beta less than one meaning that the portfolios have low volatility rates.

**Table 4.1: Risk Measures**

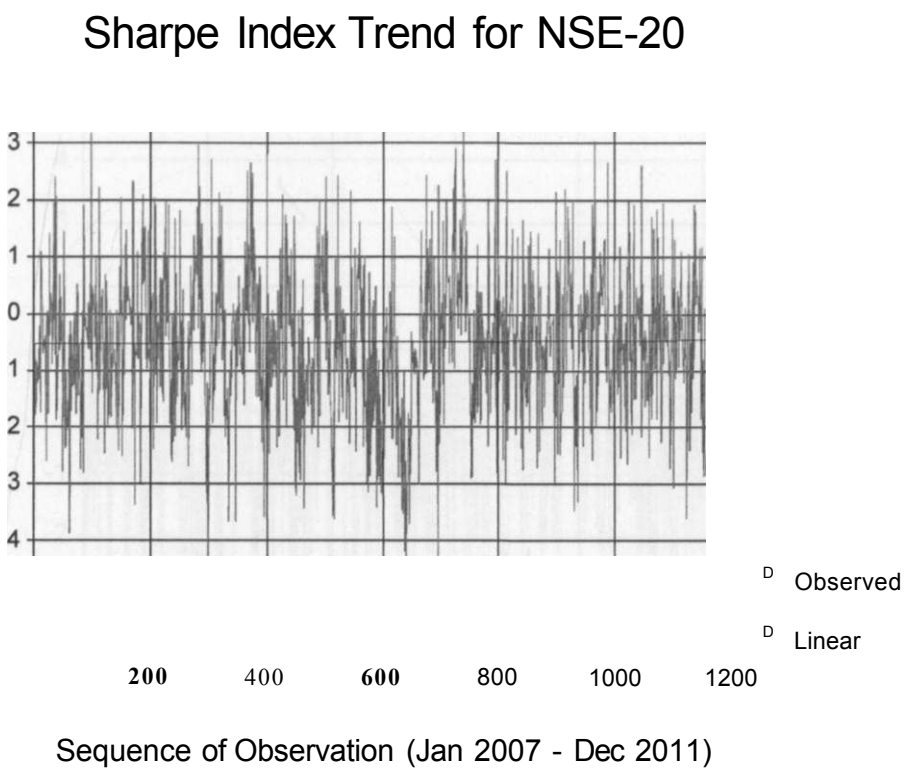
| Risk Measure | NSE -20 Portfolio | Social Screened Portfolio |
|---|---|---|
| Standard Deviation | -0.288 | 0.300 |
| Beta | 0.061 | -0.007 |

**Source: Research Data**

### 4.3. Portfolio Performance Using the Sharpe's Index

The second objective of the study was to compare the performance of a socially screened portfolio with that of a conventional portfolio. To achieve this, the Sharpe index was used. The Sharpe Index is a risk-adjusted measure developed by using excess return and standard deviation to determine reward per unit of risk. The higher the Sharpe index, the better the portfolio's historical risk-adjusted performance. The Sharpe index for portfolios was calculated on monthly basis for each of the portfolio under study. Figure 4.2 presents the Sharpe index observed trend as well as the trend line for the NSE-20 portfolio.

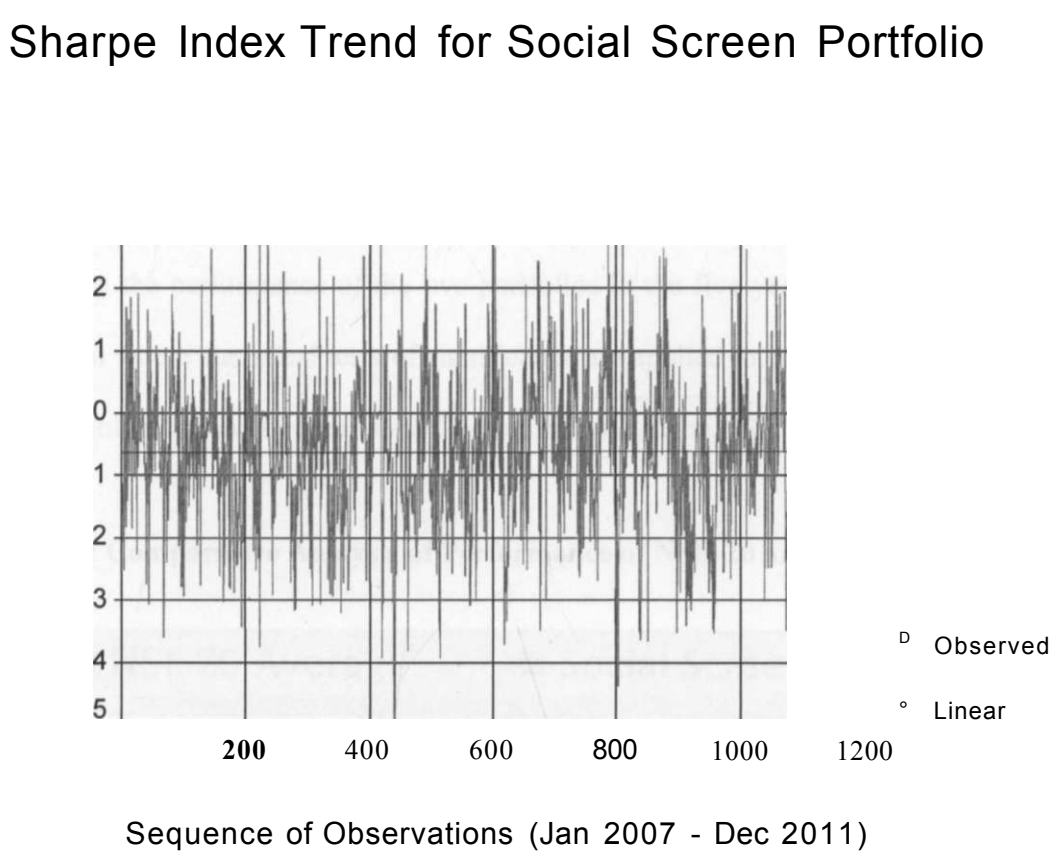
**Figure 4.2: Portfolio Performance for NSE-20 Portfolio**




**Source: Research Data**

The findings presented in Figure 4.2 indicate that the Sharpe indices for the NSE-20 portfolio widely varied throughout the 2007 - 2011 period. The lowest Sharpe index for the NSE-20 portfolio was -5.07 while the highest value was 3.86. The average Sharpe index for the NSE-20 Portfolio was -0.49 (shown by the best line of fit in Figure 4.2). Figure 4.3 presents the Sharpe index observed trend as well as the trend line for the socially screened portfolio.

**Figure 4.3: Portfolio Performance for Socially Screened Portfolio**



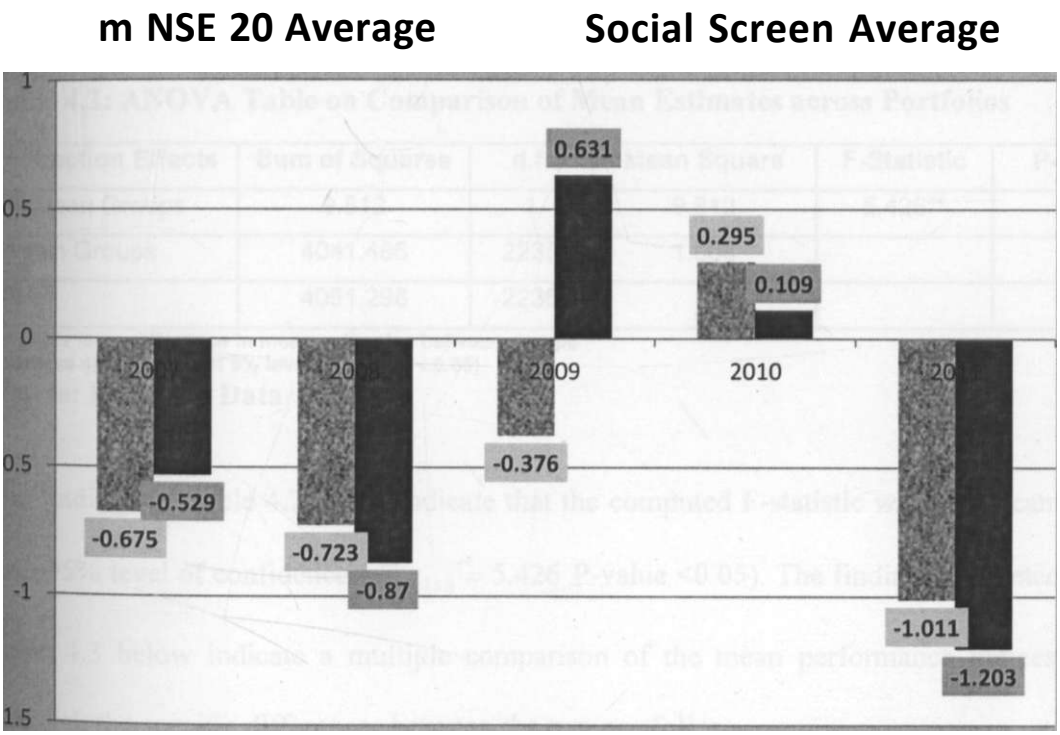

**Source: Research Data**

The findings presented in Figure 4.3 indicate that the Sharpe indices for the socially screened portfolio widely varied throughout the 2007 - 2011 period as well. The lowest Sharpe index for the socially screened portfolio was -13.16 while the highest value was 3.66. The average Sharpe index for the socially screened portfolio was -0.62 (shown by the best line of fit in Figure 4.3)

Figure 4.4 below presents a comparison of the average portfolio performance between the NSE-20 and social screen portfolios using the average annual Sharpe indices. Mixed

**results** are visible. There are periods where the social screened portfolio has outperformed the NSE-20 portfolio and others where the NSE-20 portfolio has outperformed the social screened portfolio. Both portfolios recorded the worst **performance** in year 2011. The social screened portfolio had the best performance in year **2009** where it recorded an average Sharpe index of 0.631. There are however great **variations** in the performance of the two portfolios in the five years, which leads to the **next** session where statistical tests of significance are applied to establish whether or not **social** screening has an effect on portfolio performance at the NSE.

**Figure 4.4: Comparative Analysis of Performance of NSE-20 and Socially Screened Portfolio**




**Source: Research Data**

### 4.4. Tests of Relationship between Social Screening and Performance

The third objective of the study sought to determine whether a socially screened portfolio carries more risk than a conventional portfolio. T-tests were carried out to determine whether there are significant difference between the risk and returns of the NSE-20 portfolio and that of the socially screened portfolio. This was done using SPSS. The sample data was classified as per the two portfolios. Mean Sharpe Performance indices were computed for each of the portfolio. The mean estimates were subjected to F-test to establish if there were notable significant changes in the averages between the two portfolios. F-test is used here as a diagnostic test to precede the T-test of the differences in means. The findings are presented in Table 4.2 below.

**Table 4.2: ANOVA Table on Comparison of Mean Estimates across Portfolios**

| Interaction Effects | Sum of Squares | d.f. | Mean Square | F-Statistic | P-value |
|---|---|---|---|---|---|
| Between Groups | 9.812 | 1 | 9.812 | 5.426" | 0.02 |
| Within Groups | 4041.486 | 2235 | 1.808 | | |
| Total | 4051.298 | 2236 | | | |

**$H_0$: There is no difference in mean estimates between groups**
*** denotes significance at 5% level (P-values < 0.05)**

**Source: Research Data**

The findings of Table 4.2 above indicate that the computed F-statistic was significant at both 95% level of confidence ($F_{(1\ 223J)}$ = 5.426 P-value <0.05). The findings presented in Table 4.3 below indicate a multiple comparison of the mean performance indices to establish the specific differences between the two portfolios.

**Table 4.3: Comparisons of Average Performance Indices between the NSE-20 and the Socially Screened Portfolio**

| | Mean Difference (I-J) | Std. Error | P-value | 95% Confidence Interval | |
|---|---|---|---|---|---|
| | | | | Lower Bound | Upper Bound |
| NSE-20 Portfolio **(I)** Vs. Socially Screened Portfolio **(J)** | 0.1325 | 0.056 | <0.05 | 0.0209 | 0.2441 |

*** denotes significance at 5% level (P-values < 0.05); Critical values = 1.96 (at 5%)**

**Source: Research Data**

The findings of Table 4.3 above indicate that the average performance indices were significantly different between the NSE-20 portfolio and the socially screened portfolio. A positive value of the mean difference indicates that the NSE-20 portfolio performs higher than the socially screened portfolio over the sample period. A higher average Sharpe ratio implies that the NSE-20 portfolio has a better risk adjusted performance than the socially screened portfolio.

# CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## 5.1. Introduction

This chapter analyzed and presented a summary of the study including the key findings. Conclusions as well as the recommendations for policy and future research were presented as well. The final section captured the limitations of the study.

## 5.2. Summary of Findings

This study was also premised on three objectives namely: to establish a socially screened portfolio in the NSE; to compare the performance of a socially screened portfolio with that of a conventional portfolio; and to determine whether a socially screened portfolio carries more risk than a conventional portfolio.

### 5.2.1. Creation of Socially Screened Portfolio

The creation of a socially screened portfolio at the Nairobi Securities Exchange was possible (Appendix D). Out of 58 listed companies at the NSE, it was established that up to 20 companies could meet the relevant criteria to be included in the social screened portfolio. The list of the 20 companies that met the social screening criterion are presented in Appendix D.

### 5.2.2. Comparative Performance of the Social and Conventional Portfolios

Secondly, the study sought to investigate the effect of social screening on portfolio performance at the Nairobi Securities Exchange. To execute this, two portfolios were formulated; one comprised of the 20 constituent firms of the NSE 20-share index and the second comprised 20 firms that passed the negative screening criterion that was employed. Monthly and annual returns were calculated for years 2007 - 2011. The standard deviation and beta were the chosen risk measures. In terms of monthly and annual raw returns, the social screened portfolio was seen to outperform the NSE-20 portfolio (See Figure 4.1). The Sharpe portfolio performance measures were also calculated. The NSE-20 portfolio had a higher average Sharpe ratio than the social screened portfolio hence it outperformed the social screened portfolio when compared in terms of returns and total risk (See Figure 4.4). The findings indicated that the average performance indices were significantly different across the two portfolios (NSE-20 and Socially Screened) [See Table 4.2 and Table 4.3]. This supports earlier findings by Hong and Kacperzcyk (2009) that screened portfolios exhibit reduced returns and higher expected returns for sinful stocks that are usually excluded from a portfolio because of negative ethical issues. Going by the argument posted by Sharpe (2001), the essential idea behind portfolio performance measurement is to compare returns obtained in comparison with what could have been obtained if one or more appropriate alternative portfolios had been chosen for investment. In this case, the study confirms that social screening has no significant impact in influencing investors' decision on which firm to invest in or not (Table 4.3). Rather, they would go for conventional aspects such as the returns on stocks.

### 5.2.3. Comparative Risk Analysis between the Social and Conventional Portfolios

Thirdly, the study sought to determine whether a socially screened portfolio carries more risk than a conventional portfolio. T-tests were used to determine whether there was significant difference between the risk and returns of the two portfolios (Table 4.3). There was a significant difference between the risk and raw returns of the two portfolios, with the NSE-20 portfolio outperforming the socially screened portfolio. Both portfolios had a mix of positive and negative returns over the study period. The returns for the two portfolios seemed to move in the same direction showing that there may be a correlation between the two portfolios (Figures 4.2 and 4.3). There are mixed results in the portfolio performance. The socially screened portfolio outperformed the NSE-20 portfolio in relation to total risk but in relation to systematic risk and performance, the NSE-20 portfolio outperformed the social screened portfolio (Table 4.3).

## 5.3. Conclusions

The key findings of the study were threefold, based on the three study objectives. First, the study showed that it is possible to construct social screens for firms listed at the NSE (See Appendix D). Secondly, there was mixed results in the portfolio performance. The socially screened portfolio outperformed the NSE-20 portfolio in relation to total risk but in relation to systematic risk and performance, the NSE-20 portfolio outperformed the social screened portfolio (Table 4.3). The findings indicated that the average performance indices were significantly different across the two portfolios (NSE-20 and Socially Screened). This supports earlier findings by Hong and Kacperzcyk (2009) that screened

portfolios exhibit reduced returns and higher expected returns for sinful stocks that are usually excluded from a portfolio because of negative ethical issues. Going by the argument posted by Sharpe (2001) the essential idea behind portfolio performance measurement is to compare returns obtained in comparison with what could have been obtained if one or more appropriate alternative portfolios had been chosen for investment. In this case, the study confirms that social screening has no significant impact in influencing investors' decision on which firm to invest in or not. Rather, they would go for conventional aspects such as the returns on stocks. A socially screened investment seeks to meet certain baseline standards of social and environmental responsibility, actively engaging companies to become better, more responsible corporate citizens, and dedicating a portion of assets to community economic development in the investment decision making process. However, this would not be of significance to a fund manager seeking to invest at the NSE. Thirdly, both portfolios had a mix of positive and negative returns over the study period. The returns for the two portfolios seemed to move in the same direction showing that there may be a correlation between the two portfolios.

### 5.4. Recommendations

There are distinct variations in the performance both in terms of risk and returns which symbolize that the portfolios react differently to certain scenarios. Further creation of new conventional portfolios to compare with the socially screened portfolio (or the NSE-20 portfolio) would give a better indication of the differences in the risk adjusted results. This is because the different portfolios would exhibit different results based on the definition criterion. The policy makers at the NSE could also consider formulating an

index to capture the periodic performance of socially screened top-20 companies so as it would be easy to document any sharp variations in returns between the social screened pool and any other portfolio.

### 5.5. Limitations of the Study

The study focused on monthly observations over the five year period 2007 - 2011. Refined results would be obtained by using weekly statistics since they can be easily obtained from the NSE. The study also relied on a single measure of performance namely the Sharpe's index. Inclusion of other measures that have been applied in empirical studies such as the Treynor and Jensen portfolio performance measures would also help in corroborating the findings established from the present study.

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# APPENDIX A: SCREENING CRITERION

| | | No alcohol | No smoking | No Environment pollution | Labour relations | Employment equality | Community investment and r | Human rights violation | Qualify/Does not qualify |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Sasini | Y | Y | Y | N | N | Y | Y | DQ |
| 2. | Rea Vipingo | Y | Y | Y | N | N | Y | Y | DQ |
| 3 | Eaagads Ltd | Y % | Y | Y | N | N | Y | Y | DQ |
| 4 | Kakuzi Ord. | Y | Y | Y | N | N | Y | Y | DQ |
| 5 | Kapchorua Tea | Y | Y | Y | N | N | Y | Y | DQ |
| 6 | Limuru Tea Co | Y | Y | Y | N | N | Y | Y | DQ |
| 7 | Williamson Tea | Y | Y | Y | N | N | Y | Y | DQ |
| 8. | Express Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 9 | Hutchings Biemer Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 10 | Kenya Airways Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 11 | Nation Media Group | Y | Y | Y | Y | Y | Y | Y | Q |
| 12. | Scangroup Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 13. | TPS Eastern Africa | Y | Y | Y | Y | Y | Y | Y | Q |
| 14 | Standard Group Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 15 | Uchumi supermarkets | - | - | susp | end | ed- | - | - | DQ |
| 16 | Access Kenya Grp | Y | Y | Y | Y | Y | Y | Y | Q |
| 17 | Safaricom Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 18 | Barclays Bank Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 19. | CFC Stanbic Holdings Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 20. | Diamond Trust Bank Kenya | Y | Y | Y | Y | Y | Y | Y | Q |
| 21. | Equity Bank Limited | Y | Y | Y | Y | Y | Y | Y | Q |
| 22. | Housing Finance Co Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 23. | Kenya Commercial Bank Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 24. | National Bank of Kenya Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 25 | NIC Bank Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 26. | Standard Chartered Bank Ltd | Y | Y | Y | Y | Y | Y | Y | Q |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 27. | The Cooperative Bank | Y | Y | Y | Y | Y | Y | Y | Q |
| 28 | B.O.C Kenya Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 29 | British American Tobacco | Y | N | Y | Y | Y | Y | Y | DQ |
| 30 | Carbacid Investments Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 31 | Kenya Orchards | Y | Y | Y | Y | Y | Y | Y | Q |
| 32 | Bauman Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 33 | East African Breweries Ltd | N | Y | Y | Y | Y | Y | Y | DQ |
| 34 | Eveready East Africa Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 35 | Mumias Sugar Co. Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 36 | Unga Group Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 37 | Car and Gen Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 38 | CMC Holdings | Y | Y | N | Y | Y | Y | Y | DQ |
| 39 | Sameer Africa Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 40 | Marshalls E.A | Y | Y | N | Y | Y | Y | Y | DQ |
| 41 | Jubilee Holdings | Y | Y | Y | Y | Y | Y | Y | Q |
| 42 | Pan Africa Insurance | Y | Y | Y | Y | Y | Y | Y | Q |
| 43 | Kenya Re Insurance | Y | Y | Y | Y | Y | Y | Y | Q |
| 44 | CFC Insurance | Y | Y | Y | Y | Y | Y | Y | Q |
| 45 | British American Ins | Y | Y | Y | Y | Y | Y | Y | Q |
| 46 | City Trust Ltd | Y | Y | Y | Y | Y | Y | Y | Q |
| 47 | Olympia Holdings | Y | Y | Y | Y | Y | Y | Y | Q |
| 48 | Centum Investment | Y | Y | Y | Y | Y | Y | Y | Q |
| 49 | Trans-Century | Y | Y | Y | Y | Y | Y | Y | Q |
| 50 | KenGen Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 51 | Kenol Kobil | Y | Y | N | Y | Y | Y | Y | DQ |
| 52 | KP & L Ltd | Y | Y | N | Y | Y | Y | Y | DQ |
| 53 | Total Kenya | Y | Y | N | Y | Y | Y | Y | DQ |
| 54 | Athi River mining | Y | Y | N | Y | Y | Y | Y | DQ |
| 55 | Bamburi Cement | Y | Y | N | Y | Y | Y | Y | DQ |
| 56 | Crown Berger | Y | Y | Y | Y | Y | Y | Y | Q |
| 57 | E. A. Cables | Y | Y | Y | Y | Y | Y | Y | Q |
| 58 | E. A Portland | Y | Y | N | Y | Y | Y | Y | DQ |

**Definition of keys used**

Y- the company meets the given social screen

N- the company does not meet the given social screen

Q- qualifies to be in the socially screened portfolio

DQ- does not qualify to be in the social screen.

## APPENDIX B: DATA ENTRY FORM

| Company | Short Code | Year | Month | Month Begin share price | Month Close share price | Dividend | Screen |
|---|---|---|---|---|---|---|---|
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## APPENDIX C: THE NSE 20 PORTFOLIO

1. Kenya Airways
2. Safaricom Limited
3. Sasini
4. Equity Bank
5. Barclays Bank of Kenya
6. Kenya Commercial Bank
7. Standard Chartered Bank
8. Co-operative Bank of Kenya
9. Mumias Sugar
10. Kenya Electricity Generating Company
11. Kenya Power
12. Athi River Mining
13. Express Kenya
14. East Africaan cables
15. Bamburi Cement
16. British American Tobacco
17. Rea Vipingo Plantations
18. CMC Holdings
19. Nation Media Group
20. East African Breweries

## APPENDIX D: THE SOCIALLY SCREENED PORTFOLIO

1. Express Ltd
2. Nation Media Group
3. Scangroup Ltd
4. Standard Group Ltd
5. Centum Investment
6. Trans-Century Ltd
7. Barclays Bank Ltd
8. CFC Stanbic Holdings Ltd
9. Equity Bank Ltd
10. Kenya Commercial Bank
11. National Bank of Kenya
12. Standard Chartered Bank
13. The Cooperative Bank
14. Mumias Sugar Co. Ltd
15. Pan Africa Insurance
16. Kenya Re Insurance
17. British American Insurance
18. City Trust Ltd
19. Olympia Holdings
20. East African Cables