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NEWCASTLE

NAME	Jamela LASHARPOOR
DEGREE	BA (Hons) Finance and Investment Management
SUPERVISOR	Dr. Muhammad Ali Malik
TITLE	Exploring the Incorporation of ESG Investment for SRI in Qatar
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STUDENT NO	18039951

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DISSERTATION SUPERVISOR	Dr Muhammad Ali Malik
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ABSTRACT

Qatar is committed to promote sustainable development to support its National Vision of 2030.This dissertation aimed to explore the ESG investment market for socially responsible investors in the emerging market of Qatar. Many developed nations have already introduced SRI or ESG indices that could provide opportunities for institutional investors for better diversification opportunities in the global market. However, Qatar is a growing economy in sustainable finance and in promoting ESG investment.

Therefore, this research aimed to empirically examine ESG investment's risk-adjusted performance by constructing ESG and non-ESG portfolios for 1 year trading period. Each of these portfolios' stocks were selected from Qatar Stock Exchange (QE/DSM Index). ESG and non-ESG portfolios were constructed on Bloomberg Terminal and were comprised of 10 stocks each with equal capital weightings. ESG stocks were selected from Qatar's newly launched MSCI QSE ESG 20 Index, which was launched recently in 2021.

The findings of this study suggest that when integrated ESG factors in portfolio, they produce high risk-adjusted returns, as compared to non-ESG portfolio, but also had high idiosyncratic and systematic risk. The risk-adjusted measures were sharpe ratio, treynor ratio, information ratio, Jensen alpha, sortino ratio, omega ratio, modified sharpe ratio and CVaR. Also, descriptive statistics and paired t-test were used to analyze the risk and return of the portfolios.

It was evident that Qatar is still new for ESG incorporation into its financial market, but can provide portfolio opportunities for SRI or institutional investors. The research was limited to specific strategy and time period and alternative strategies are required to explore the ESG integration within the portfolio construction.

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Table of Contents

List of Tables and Figures

Chapter 3 Methodology

Chapter 4 Analysis and Results

Chapter 1 Introduction

1.1 Introduction

Every government around the globe is required to reinforce sustainable development by the integration of guidelines and actions to galvanize sustainable investment (Breiki & Nobanee, 2019). Socially responsible investment (SRI), also known as sustainable, socially informed and ethical investment attributed to an investment strategy that intends to combine environmental and social benefits with monetary profits, thus associating an investor's ethical, social, and environmental concerns. In many cases. Investors are ready to sacrifice their monetary gains if better social and environmental benefits can be achieved through their investments (Hammadi & Nobanee, 2019). Recently, many international markets seek for investing in companies that are socially responsible, as it provides superior returns as compared to other conventional returns. The growth of five major markets (US. Europe, Canada, Japan and Australia-New Zealand) has increased by 34% for socially responsible investment from 2016 to 2018 (AlMazrouei & Nobanee, 2022). This shows the extreme adaptation and growth speed of SRI market. The state of Qatar is also going through tremendous growth and Qatar's National Vision 2030 prioritizing the developments regarding sustainability and responsible investment.

1.2 Fostering ESG Investment in Qatar

One of the critical trends in managing the portfolio over the past few years is the inclusion of environmental, social and governance (ESG) information. The Global Sustainable Investment Alliance (2015) implies that 21.4 trillion was being managed by SRI at the beginning of 2014. SRI Assets under management (AUM) enhanced by 60%, in comparison to 15% on conventional strategies from 2012 to 2014 (Verheyden et al., 2016). Qatar has joined the Sustainable Stock Exchanges Initiatives (SSEI) in 2016 of the United Nations to promote sustainable practices in Qatar markets and businesses (QSE, 2018). Qatar's sustainability and conservation of natural resources are identified by national security as one the prominent factors through guiding documents of Qatar National Vision of 2030 and Qatar National Development Strategy (QNDS) (Harmon & Truby, 2019). Doha Bank is one of the first Qatari banks to introduce sustainability reporting, which is associated with the GRI Universal Standards Framework and the Qatar Stock Exchange ESG reporting methodology (Doha Bank, 2022). Recently, Qatar Stock Exchange and

MSCI jointly launched the "MSCI QSE 20 ESG Index" to promote ESG investment in Qatar which aims to provide financial returns as well as contribute to sustainable climate objectives when evaluating companies in which investors might want to invest. MSCI QSE S0 ESG Index comprises 20 securities within the MSCI Qatar IMI to illustrate the best Environmental, Social and Governance (ESG) profile and use a tilt approach to index weightings based on MSCI ESG rating (MSCI, 2022). Moreover, current studies are interested in to investigate the integration of ESG in investment practices especially in emerging markets, as many investors look forward for non-financial and financial benefits. They are increasingly interested by ESG criteria to evaluate the performance of businesses because it high ESG performance correlates to long-term business sustainability, higher performance, higher returns with lower risk and diversification opportunities in for their portfolios.

1.3 Research Rationale

Socially Responsible Investment and Environmental, Social and Governance (ESG) research is a field of research with growing significance from the last decade. Fund managers and institutional investors have become more and more interested in sustainable investing, which requires them to conduct ESG research on corporations and help them to make informed decisions on their investment choices. It helps them to understand better why they should invest in the stocks of the company. Researches on ESG were introduced during early 2000s firstly in US, Canada and European countries. Each year more and more people are becoming aware of the importance of sustainability and sustainable investing through research of ESG reports of the companies by governments, businesses, investors and individuals. As Qatar is new in implementing ESG investment. The beginning of ESG index in Qatar started at 1990, with the launch of Domini 400 Social Index, now known as MSCI KLD 400 Social Index. Later in 2021, MSCI and Qatar stock Exchange jointly launched MSCI QSE 20 ESG index, comprising of stocks of listed 20 companies in Qatar (MSCI, 2022).This research would be interesting to provide insight of how portfolio with ESG integrated stocks would perform in comparison to other non-ESG portfolio. This research would encourage other researchers and investors to explore Qatar Stock Market for future investments.

1.4 Aims and Objectives

The primary aim of the study is to explore the current initiatives of incorporation of ESG in portfolio investment by examining its performance and assess risks and opportunities for Socially Responsible Investment (SRI) in Qatar. The aim of this study will be achieved by the following objectives.

1. To empirically examine the performance of MSCI QSE 20 ESG Index stocks and with other selected DSM stocks on by constructing two diversified portfolios.
2. To study whether the ESG stocks generates opportunities for investors
3. To suggest whether Socially Responsible Investors can invest in ESG stocks or alternative strategies that can be implemented when making ESG investment decisions.

The result of this study will help in the future research of ESG investment in Qatar and provide insights in the new areas for the consideration and application of ESG investment by Socially Responsible Investors.

1.5 Dissertation Structure

In order to answer the study objectives, the dissertation is divided into five main chapters.

Chapter 1: This section introduces the main idea and scope of ESG investment in Qatar by showing its relevance to the current studies based on new investment initiatives. Also, this chapter outlines the main aims and objectives, that the research is conducted on

Chapter 2: This section describes the background literature on the Socially Responsible Investment (SRI), its integration in ESG and its relation to Sustainability with the help of relevant theories. Additionally, it provides empirical and theoretical arguments previously stated by researchers or authors on the risk-adjusted performance of ESG integrated indices or investments.

Chapter 3: This section will address the chosen approach taken to answer the research objectives and highlight the research assumptions and limitations of the applied methodology.

Chapter 4: This section provides the main results from quantitative measures using secondary data and provides critical analysis of the results, comparing with the literature with the help of necessary tables and graphs and information extracted from reliable sources

Chapter 5: This section will bring together the research to formulate conclusions and relate it back to the research objectives to highlight the potential future opportunities and limitations that occurred during the research for further research considerations.

Chapter 2: Literature Review

2.1 Introduction

The following chapter critically describes the theoretical background as well as empirical arguments reported in the literature of Socially responsible investors (SRI) and the integration of ESG in investment portfolios for sustainable development and related concepts that are the subject of the investigation of this study. In selecting the literature review for this study, various reviewed works of authors based on their analysis from relevant journal articles on responsible investment and their performance are intensively cited. The study also highlights different views on the risk-adjusted performance of ESG-integrated portfolios.

2.2 SRI and Sustainable Development

Over the decades, there were numerous ambiguous links have affiliated financial development with sustainable development (Scholtens, 2006). Socially Responsible Investment (SRI) is a contemporary highly discussed issue among practitioners and scholars which is caused by the social awareness of the institutions and public interest in social responsibility. SRI can be defined as an investment process which incorporates environmental protection, ethical values, good governance and improved social conditions into traditional investment decision making (Matallín-Sáez et al., 2018). However, SRI was initially introduced due to the rising interest of public in social responsibility.

The origin of SRI appears to be in the 1940's where governments and unions refrained investments with the firms that comprehend to engage in prejudiced labor practices (Martin, 1986). Miller (1992) argued that those individuals who cared about moral, religious, political or ethical principles should invest their money according to their principles and values.

Sparkes (2001) defines SRI as ethical investments that exercises ethical and social criteria for the management and selection of investment portfolios. However, argued that ethical investing could

have been appropriate to describe them as non-profit organisations, such as environmental corporations and charities (Silva & Cortez, 2016). This further led on value-based investing which was rapidly expanded in 1970's due to preeminent social upheavals including the urban strife, Vietnam War, Apartheid and degradation of the environment (Spencer, 2001).

In late 1990's, SRI had also engrossed on the sustainable development of the environment and investors began to acknowledge their environmental responsibility (Richardson, 2008), subsequent to Bhopal, Exxon Valdez and Chernobyl incidents. By this international media started to raise the awareness on the global warming and ozone depletion (Pienitz & Vincent, 2000). Also, the starting of financial and environmental scandals on the negative perception of 2008-2009 crisis led the brokers and Asset Management Companies (AMC) to direct the focus on addressing the socially responsible investment. This caused financial managers and analysts to incorporate ESG data reporting into investment strategies to enhance the realm of opportunities and risk associated in traditional financial analysis to restore social legitimacy (Revelli, 2017). Secondly, the on-going concern for unsustainability enhanced the interest of stakeholders due to worsened environmental conditions resulting in poor air quality affecting the quality for living in the environment. Also, the climate changes risk disturbing the stability of the environment contributing to reconsider the sustainability (Landrigan et al., 2017). However, the contemporary financial system, and financial resources are constantly attracted to generate maximal financial returns for the funding providers. These initiatives are undertaken for short-term by the international financial markets, which continues to result in investments that are likely to have inimical effect on the global sustainability (Gray et al., 2014). Such unsustainable investments include the businesses dealing in alcohol, gambling and tobacco etc.

It is apparent that the investment communities are conscious of the risk related with unsustainability affecting the business operations, profits, financial returns and economic performance of firms (Ng, 2019). Investors are aware of the initiatives taken by management to deal with climate change concerns through fiduciary approach to respond the concerns of investors (Robins, 2008). Furthermore, firms are considering Corporate Social Responsibility (CSR) as a vital approach to maintain their reputational risk. CSR is a complex term and lacks a unique definition (Kot, 2014), while the concept of SRI, CSR and Sustainable Development (SD) are closely linked (Almunawar & Low, 2014). The roots of CSR were introduced on the basis of

ethical perspective by Sheldon (1924), as an organizational responsibility which targeted on improving the interests of society and seeking their own profits. In a progressive study, Carroll (1979) defined CSR as ethical, economic, legal and philanthropic expectations that businesses need to fulfil for the society.

CSR is extensively regarded as a voluntary business contribution to the societal guarding model for sustainable development. However, SRI is the application of the principles of CSR and SD into investment decisions (Almunawar & Low, 2014). Within the context of CSR, research studies on sustainable and responsible investment is gaining momentum. The European Sustainable Investment Forum (Eurosif) is one of the leading and prominent association for promoting sustainable and responsible investment across Europe and different organisations worldwide (Palma-Ruiz et al., 2020). However, in the developing nations in MENA or GCC region were late in adopting CSR as compared to the developed world (Alattar & Al-Khater, 2007). AlNaimi et al., 2012 conducted study on the disclosure of Corporate Social Reporting (CSRR) on GCC countries, particularly on the companies listed on Qatar Exchange for the financial year of 2007, and found that CSRR was very low. Nonetheless, the stakeholders realizing the importance of CSR promoted the awareness and adoption of CSR significantly improved over the last decade (Ghoula et al., 2011). By this socially-oriented investors aims to secure their investments from multifaceted social risks and look for the firms that maintain good CSR and sustainability performance with the aim to reducing their exposure to potential financial and societal issues (Chatzitheodorou et al., 2019).

2.3 ESG incorporation in SRI

The term CSR is often interchangeably used with ESG, which is a broader term that attributes to the incorporation of Environmental (E), Social (S) and Governance (G) in the decisions of investor's portfolio and corporate management (Liang & Renneboog, 2020). Also, Eccles and Viviers (2011) suggests that in the investment process for financial accounting of ESG has been labeled as responsible investment or SRI. However, there does not seem to be any exact accord on what exactly SRI means for investors (Berry & Junkus, 2013)

The term ESG for the integration of Economic, Social and Governance was introduced in 2005, but its application in practice began in 1960's as a part of Socially Responsible Investment (SRI) with investors excluding the entire industries or stocks from their portfolios based on their negative business operations (MSCI, 2021). The most common form of SRI strategy is to exclude the sin-

companies from investment portfolios. The significance of SRI as an investment strategy is comprehended in the theory proposed by Mackey et al. (2007) that stock holders may intend to have interests alongside to maximize their wealth and may want to invest in the firms that seek towards socially responsible investment when they make their investment decisions. This is also aligned with theory proposed by Statman (2004), which suggests that investors are looking towards expressive and not only financial benefits. Both of these theoretical arguments are due to the increased pressure from different stakeholders' perspective for ethical conduct and social responsibility. Thus, when it comes to ESG there is a subjective factor to contemplate. (Gómez-Bezares et al., 2016)

Furthermore, the social responsibility model, a firm has a responsibility towards its other stakeholders which includes, government, employees, suppliers, customers and the society. Lokuwaduge & Heenetigala (2016) suggests ESG disclosures should be affiliated with the wide range of related issues important to stakeholders. They cover concerns that are not just bound to economic issues but also could impact economic aspects (Jenkins, 2004)**.**

The modern portfolio theory (MPT) suggests that fund managers choose assets on the basis of risk minimization, maximizing return and diversification (Markowitz,1952). Tilling (2004) recommends a relationship between community expectations and corporate reporting. According to research, the legitimacy theory provides a dynamic mechanism for comprehensive voluntary environmental and social reporting prepared by organizations (Tilling, 2004).

The early perspective proposed by Friedman (1970) of ESG activities were regarded as agency problem that may cause detoriation of wealth and argues that an agent, a corporate manager should conduct the business to profit its shareholders for the desire of wealth maximization. In other words, corporates should not invest their resources on environmental, social and governance activities as they reduce the shareholder's gain (Peng & Isa, 2020). Several studies suggest that CSR activities are the demonstrations of agency problem in managerial perspective (Masulis & Reza, 2015). Brown et al. (2006) and Krüger (2015) find that managers who involve in business philanthropy benefit themselves at the expense of shareholders. Correspondingly, agency costs are acquired when managers who invest in socially responsible activities to gain and promote their own personal reputation (Barnea & Rubin, 2010) and can be detached from their respective

managerial roles (Jensen & Meckling, 1976). Overall perspective of agency theory in context of ESG practices is not in the favour of shareholders.

Nonetheless, currently many corporations integrating ESG in their business practices to encourage the relationship between the employees and the society. This counterargument to agency theory was proposed by the stakeholder theory of Freeman (1994). The stakeholder theory is relevant to corporations that promote environmental safety and improve social wellness and community relations, and often comply with to the value maximization of governance practices.

Also, society's values, beliefs and norms develop, and managers should acclimate investments to these preferences for competition and survival purposes. The theory of legitimacy suggests that when managers anticipate the legitimacy gap, they tend to develop strategies to realign with societal desires. In coherence with this proposition, the mainstream SRI increases the demand of the criteria for ESG investments (Alda, 2021)**.** According to Deegan (2014), there are many theories that demonstrates a firm's motivation to report ESG information, which have motives that are highly related to standards, regulations, stakeholders and legitimacy. Lokuwaduge and Heenatigala (2017) suggests that there is an increasing stress for management to report ESG information to its significant stakeholders and this stress influences and creates legitimacy crisis for the survival for those organisations. Lindblom (1994) states that corporations gain legitimacy when the entity's value system is congenial with larger value system, which an entity is an element of. If the surrounding society assumes that an entity has encroached its side of social contract, then its legitimacy is under mance. Likewise, Lindblom (1994) and Patten (2005) also suggest that firms tend to use environmental reporting practices were used as a tool of legitimization.

The consequent growth of SRI motivated practitioners and scholars' interest on their contribution to the palatial challenge of sustainable development as well as encouraging organisations to willingly eliminate negative externalities such as, employees' health issues, pollutant emissions, and the safety of environment (Conti, 2017). This entails investors' disposition to adjust their investment decisions according to their personal values, but also motivates corporates to instinctively reduce their inadvertent negative impact on society (Vanwalleghem, 2017).Environmental concerns heightened the global awareness of sustainability issues due to which ESG integration in investment is rising awareness for sustainable development. For instance, United Nations General Assembly defined 17 Sustainable Development Goals (SDGs)

for each nation to must enforce in order to achieve the 2030 vision (Bennani et al., 2018). This led to the ESG integration by analysts and managers into investment strategies to reinstate social legitimacy and to widen the scope of the opportunities embodied in traditional financial analysis (Revelli, 2017). To provide sufficient information for the investors to assess socially responsible and sustainability claims among organisations, expansion of ESG reporting guide has become notable action for disclosure of relevant corporate information (AlMazrouei & Nobanee, 2022).

2.4 Empirical and Theoretical Literature on ESG Performance

Sustainable Investment (SI) is widening the outlook of its focus to outweigh the tiring discussion of the difference of conventional investments and SI, paying substantial attention to ESG risk considerations and its metrics. Most investors are concerned with integrating ESG criteria is likely due to the growing emphasis that investors place in environmental, social and governance criteria (ESG) when constructing their portfolios, bringing a direct connection between SRI and Sustainable Development (Prol & Kim, 2022). Globally, financial markets are moving towards higher transparency concerning to climate and sustainability risk (OECD, 2021). One of such initiatives is the scoring of stocks according to their Environmental (E), Social (S) and Governmental (G) sustainability (Boffo & Patalano, 2020). Morgan Stanely Capital International (MSCI) is the world leading provider for ESG indexes with more than 1500 equity and fixed income ESG indexes which are designed to help investors more efficiently benchmark the performance of ESG investment (MSCI, 2022).

Numerous studies focus on the SRI in the financial markets with the ESG rating criteria on the financial performance. Also, some studies confirm that this contributes to stakeholder's theory that sustainable investment creates shareholders value. According to this perspective, researchers also aim to focus on the performance of ESG indices with other conventional indices. Several research studies suggest that ESG indices outperforms the conventional indices. The growth of ESG investment has led to expansion of ESG strategies, both active and passive. The literature on the impact of ESG is quite controversial (Hartzmark & Sussman, 2019). The early research on socially responsible investment and financial performance by Moskowitz (1972) suggests positive outcome. While Vance (1975) found a negative relationship between socially responsible investment and financial performance.

Researchers find arbitrary evidence that investors significantly value sustainability, but there is no positive outcome on performance (Managi et al., 2012). Similarly, no difference in returns means and volatility were found in SRI and non-SRI in developed financial markets of UK, US and Japan. However, many other financial institutions allege that ESG factors can provide advantage of portfolio risk and return (Prol & Kim, 2022).

Several studies highlight that incorporation of ESG criteria into equity portfolios, focusing on the financial performance of the corporations or portfolio performance. It is argued that ESG screens may undoubtedly reduce the investment umbrella and may lead to poor diversification, as per theoretical arguments by previous studies. By reducing the investment universe appears to be akin to some investment constraints that drives to loss of efficiency. In addition, restraining portfolios to the only firms that accomplish ESG criteria tends to contribute more exposure to specific risks of industry biases or style biases. On the contrary, the proponents of ESG argue that extra-financial aspects are the components of investment decision even though they are difficult to define and quantify and are often specific to each specific investment. Also, ESG integration encompass additional unrequired burden in the investment process imposing costly restrictions. Kempf and Osthoff (2008) evidenced that ESG incorporated by mutual fund charges higher expense ratios. Their study highlights the difference of 13 basis points and the difference was statistically quite significant.

In regards to risk, many empirical studies have identified that the stocks with high ESG rating tend to have a lower total risk in comparison to the same systematic risk. Horn (2023) suggests that ESG rating have significant impact on investors when making investment decisions. In addition, Hoepner (2010) suggests that portfolio risk can be reduced using ESG screening due to the lower specific risk and lower total risk of stocks with a high ESG rating. Over the period of 2007-2012, De and Clayman (2015) reported the relationship between stock volatility and stock ESG rating having a strong negative relationship, as higher ESG ratings being related with lower volatility of stocks. This relationship was observed to be stronger especially during the 2008 financial crisis, when then the period was highly volatile. Stocks with low ESG ratings tend to be in the high volatile group, and stocks with high ESG ratings tends to be in low-volatile group. Cornell and Damodaran (2020) also explains the link between firm ESG scores and risk. Firms with low ESG scores are exposed to risks of reputation and other risks, either in financial or human

terms, with long-term consequences. Also, Karpoff Lott and Wehrly (2005) identify that organizations that disregard environmental standards experience significant loss in their market value, but those losses are roughly equivalent to imposed legal penalties. They did not find any evidence of losses in terms of reputational damage.

While there is a lot of relative unanimity that ESG investment reduces risk, the empirical studies that have examined the performance of ESG investment can be divided into three diverse groups: those which illustrates an outperformance of ESG, those which shows that ESG neither outperform or underperform, and lastly those which determines that ESG leads to outperformance in portfolios.

Ma and Oliphant (2008) reports that stocks of corporations involved in tobacco, alcohol, gambling (sin stocks) outperform the stocks of other corporations. This is also reported by Hong and Kacperczyk (2009) that sin stocks generated extra-financial returns. Darwall et al. (2005) evidenced that equity portfolios with high eco-efficiency scores generated high risk-adjusted returns. Schuhmacher & Breuer (2014) suggests that all risk-adjusted measures such as omega ratio, sortino ratio, and CVaR are all monotonic transformations of sharpe ratio.

Moreover, Statman and Glushkov (2009) establish that stocks with high ESG ratings have performed better than the stocks with low ESG ratings over the period of 1992-2007. Clayman and De (2015) manifests that there is a positive correlation of stocks with ESG rating and their risk-adjusted return, over the period of 2007-2012. They also observed that excluding the stocks with lowest ESG ratings could further improve the correlation. The result of this may be related to low-volatility effect, showing the outperformance on low-volatility stocks.

Duuren et al. (2016) found that ESG information is particularly used for managing risk and several conventional investors have already opted to responsible investing by integrating it in their investment process. Kumar, et al. (2016) evidenced by assessing 157 companies listed on the Dow Jones Sustainability Index (DJSI) and other 809 which are not found on this index that ESG factors show lower volatility in their stock performance when compared to their peers in the same industry. Moreover, the study found stock performance is closely linked with ESG factors and produce higher risk-adjusted returns. Kanuri (2020) also suggests conventional funds outperforms the ESG funds in terms of average returns and sharpe ratio in the long-term, however, sometimes ESG funds perform better.

On the contrary, Cornell and Damodaran (2020) found no evidence that suggest higher ESG ratings are being related with higher risk-adjusted returns.

In conclusion, investors looking for socially responsible investments require ESG-reporting criteria to promote sustainability and to judge good corporate social responsibility practices before making investment decisions. Many developed markets are continuously evaluating the ESG risk-adjusted performance and theoretical and empirical arguments regarding the performance of ESG performance are quite controversial in its ratings and performance. Additionally, it's performance in the emerging markets still needs to be observed and reported.

This quantitative study would examine the integration of ESG in Qatar stocks and its portfolio performance by comparing its risk-adjusted performance with the portfolio comprising of non-ESG stocks. This would help future SRI investors to invest in emerging markets to explore investment opportunities in Qatar.

Chapter 3 Methodology

3.1 Introduction

This chapter will first explain the methodological paradigm and data collection approach. Then it explains the method adopted to assess the performance of the ESG and Non-ESG stocks portfolios. Describing the taken approach is a significant step that will allow the understanding of the rationale behind the selected methodological approach. Also, it also highlights the limitations of the selected methodological approach.

3.2 Research Method

This study used quantitative approach encompasses a range of methods concerned with systematic investigation to produce reliable numerical data (Saunders et al., 2009). Also, quantitative method provide opportunity to interpret case studies with spare description for a number of studies and therefore can be normally used in studies for validation through numeric data. Quantitative method is an appropriate method to empirically examine the performance of investment portfolios, and risk and return could be easily examined by the appropriate statistical measures (Saunders et al., 2009).

This quantitative study used a comparative research design to measure and analyze the effect of ESG integration in emerging market of equities from Qatar and to establish a comparison between ESG and non-ESG stock portfolio performance and volatility of stock returns. Two groups of stock portfolios being analyzed were the MSCI QSE 20 ESG stocks and Qatar Stock Exchange (QSE/DSM index) stocks. The rationale behind this methodological stance was to present factual measurable outcomes to present whether ESG integrated portfolio produce high risk-adjusted returns for investors in comparison to a portfolio of stocks without the integration of ESG and sustainability factors.

3.3 Data collection and Sources

In this study, the SRI or ESG and non-ESG stocks were selected from the Qatar Stock Market to analyze their portfolios performance. As the focus of this study is on ESG and non-ESG stocks from MSCI QSE 20 Index and DSM index stocks from diverse sectors and have publicly available data on ESG data available publicly were randomly chosen. The basis of this study is mainly comprised of an experimental research on the comparison of performance of the ESG and non-ESG stock portfolios.

The research is exploratory in nature and aims at contributing further research on the implications of SRI and ESG integration for the transition toward sustainable development in Qatar. Secondary data were collected from Bloomberg terminal and exported to MS excel.

The monthly closing prices of the stocks were obtained using Bloomberg terminal to measure the performance of the ESG and non-ESG portfolios. The ESG stocks were chosen from the MSCI QSE 20 Index and non-ESG from Qatar Stock Exchange index (DSM) from different sectors and each portfolio comprised of 10 stocks. The data for this study were collected from December 2021 to December 2022, as the MSCI QSE 20 Index was only introduced in November 2021.

Table 3.1a represents the constituents of the Socially responsible companies that produces ESG score report and are used in this study. It provides information of the sectors of the company, MSCI ratings, ESG risk score ratings and ESG-risk category. The risk ratings were obtained from Bloomberg Terminal, as it provides most recent and up-to-date information to investors.

Table 3.1a: ESG-Portfolio Constituents and MSCI Ratings

Stocks	Ticker	Sector	Environmental	Social	Governance	MSCI Rating	Risk Score	Risk Category
Al Ahli Bank	ABQK	Financial Services	0.00	0.23	3.47	-	-	-
Commercial Bank of Qatar	CBQK	Financial Services	0.00	1.15	3.44	BBB	27.72	Medium
Doha Bank	DHBK	Financial Services	0.00	1.29	3.47	-	-	-
Industries Qatar	IQCD	Materials	0.09	1.27	2.93	B	41.27	Severe
Mesaieed Petrochemical	MPHC	Materials	0.17	4.06	2.40	CCC	30.13	High
Ooredoo	ORDS	Communication Services	7.40	12.60	8.50	BBB	28.5	Medium
Qatar Fuel Company	QFLS	Energy	0.00	0.00	0.00	A	23.26	Medium
Qatar Gas Transport Company Limited (Nakilat)	QGTS	Industrials	0.91	4.28	3.90	BBB	21.43	Medium
Qatar Islamic Bank	QIBK	Financial Services	1.70	11.60	14.50	B	27.8	Medium
Qatar National Bank	QNBK	Financial Services	1.30	9.30	11.80	A	22.4	Medium

It is observable from above table that Al Ahli Bank and Doha bank did not receive any MSCI rating and score. It is somewhat surprising that some of the listed companies did not receive an ESG rating yet, and may be a source of idiosyncratic risk (Horn, 2023). Additionally, some companies may fail or avoid to collaborate and thus, some companies did not receive their ESG ratings from the latter (Horn, 2023).ESG score of a company help the investors to assess the risk and the lack of ESG score brings uncertainty regarding a company's risk is not covered by the measures of standard systematic risk (Bali & Zhou, 2016). The stocks of the ESG portfolio are rated mostly between medium to high risk category. Also, the MSCI ratings for the companies are mostly low rated, which suggests its riskiness.

Moreover, Table 3.1b represents non-ESG stocks from DSM index, which does not provide ESG score report and used in this research.

Table 3.1b: Non-ESG Portfolio Constituents

Stocks	Ticker	Sector
Aamal Company	*AHCS*	*Industrials*
Al Khaleej Takaful Insurance Company	*AKHI*	*Financial Services*
Baladna	*BLDN*	*Consumer Defense*
Dlala Brokerage and Investment Holding Company	*DBIS*	*Financial Services*
Ezdan Holding Group	*ERES*	*Real Estate*
Mannai Corporation	*MCCS*	*Technology*
Al Meera Consumer Goods Company	*MERS*	*Consumer Cyclical*
Mekdam Holding Group	*MKDM*	*Industrials*
Mazaya Real Estate Development	*MRDS*	*Real Estate*
Lesha Bank LLC	*QFBQ*	*Financial Services*

3.3 Portfolio Construction Methodology

ESG and non-ESG portfolios were created on Bloomberg. Bloomberg terminal is highly professional service provider for the portfolio construction and its analyses, as it provides appropriate tools to measure and track the performance of constructed portfolios. The PRTU function was used for the creation of portfolios. The portfolios were only based on equities and were equally weighted, equally invested and were diversified in different sectors. The pie chart below illustrates the sectoral diversification and their weightings.

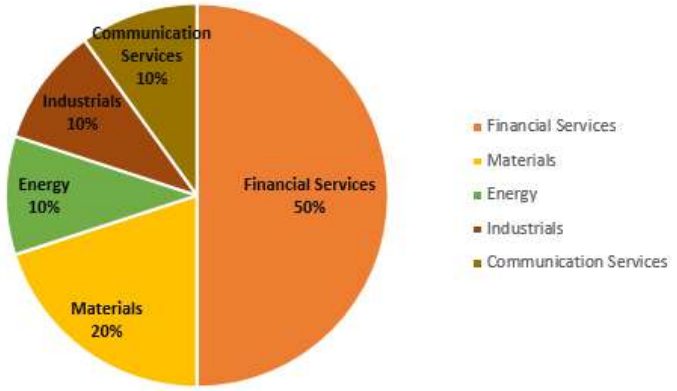


Figure 3.1: ESG Portfolio Sectoral Diversification

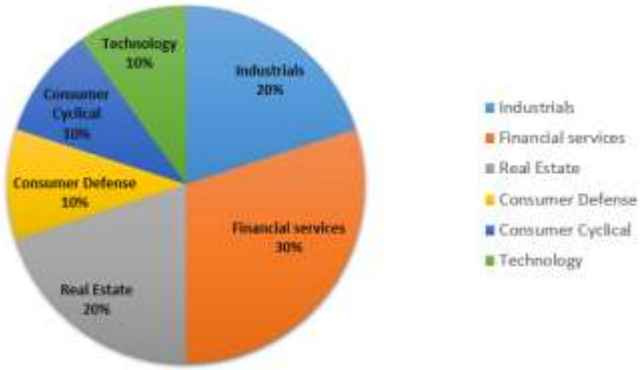


Figure 3.2: Non- ESG Portfolio Sectoral Diversification

Additionally, buy and hold strategy was adopted for this research for a period of one year to have stable portfolio and to understand which portfolio generates better returns when compared. The number of stocks in each portfolio were relatively small. Both the portfolios were compared against the benchmark index of Qatar Stock Exchange (DSM) using PORT function on Bloomberg, which provides performance illustration against the chosen benchmark.

3.4 Risk-adjusted Performance Measurement

This comparative study used technical analysis through quantitative methods to measure risk and reward of the portfolios. Jogiyanto (2010) suggests that the performance of portfolio is not only analyzed by the degree of portfolio return, but it also should scrutinize the degree of risk that must be borne to gain the magnitude of the return, in other words it should determine both the so called risk-adjusted return (return compliance risk). This is also considered by Farinelli and Tibiletti (2008), Flotyński (2016), and Sherwood and Pollard (2017). The basic risk-adjusted performance parameters that this study uses were developed by William Sharpe, Jack Treynor and Michael Jensen and are known as Sharpe, Treynor and Jensen alpha performance measures. This study also uses the risk-adjusted measures of information ratio, Sortino ratio, Modified Sharpe Ratio (MSR) and Certainty Equivalent Returns (CEQ), which were also calculated previously by DeMiguel et al. (2009) and Brzeszczyński et al. (2019) in assessing the socially responsible portfolios

performance. Moreover, Conditional VaR (CVaR) in the worst case of 5% was also calculated to determine the expected loss by both ESG and non-ESG incorporated portfolios. Portfolio optimization of Markowitz (1952) has come long way which proposes risk-return framework. Current regulations require businesses to strategize some of the risk management requirements in terms of percentile distribution of loss. Evaluating portfolio performance using VaR as a measure of risk has been useful for researchers and practitioners for various reasons. All these indicators provided quantitative evidence about the relationship between the integration of ESG strategy and its impact on the risk and return on both ESG and non-ESG integrated portfolios. This methodology is built on the works of Janik and Bartkowiak (2015). In their research, Janik and Bartkowik measures the rate of return, Sortino ratios, omega ratios, Sharpe ratios and VaR for diverse socially responsible indices across Eastern and Central Europe, in order to determine the similarities and differences of socially responsible indices, in order to present a comprehensive analysis of the effects of international integration of socially responsible factors on financial performance. However, this research is slightly different from previous conducted studies, as it compares two different portfolios (ESG and non-ESG) based in Qatar instead of comparing SRI indices.

First, this study calculates monthly returns for ESG and non-ESG portfolio stocks and Qatar Exchange Index (DSM) monthly returns over a period of December 2021-2022, which is calculated as:

$$R_T = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where R_T is the return, P_t denote the price at the end of month t of an asset and let P_{t-1} denote the price at the end of month $t-1$.

Then, descriptive statistics and paired t-stat were conducted to understand the difference in mean returns, standard deviation and t-stat illustrates the mean differences in portfolio and benchmark returns. To measure the risk of the portfolio, beta was calculated as:

$$\beta_p = \frac{Cov(r_p, r_b)}{Var(r_b)}$$

The risk-adjusted measure, sharpe ratio (Sharpe, 1966) was used to compare an investment's excess return to its standard deviation of returns. The formula of Sharpe ratio is as follows:

$$S_P = \frac{E(r_P) - r_f}{\sigma_P}$$

However, the traditional definition of Sharpe ratio has been criticized for its inaccuracy and inaccurate evaluation of risk when returns are negative. Thus, the research study also takes account of this and measures Modified Sharpe Ratio (MSR) of Israelsen (2005).

$$MSR = ER/SD^{(ER/absER}$$

where *ER* represents excess return and is referred to as mean monthly difference between the return of the portfolio and the risk-free return calculated for *n* equal to 12 months, and *SD* is the monthly differences of returns of sample standard deviation. *MSR* is a commonly used measure to address the problem of negative returns and eliminates the problems with the traditional Sharpe ratio.

Treynor ratio introduced by Treynor (1965), also known as reward-volatility-ratio was used to measure how much excess return were generated for every unit of risk taken. It was calculaed as

$$T_P = \frac{E(r_P) - r_f}{\beta}$$

Where r_p is the excess return of the portfolio, r_f is the risk-free rate and β represents the portfolio beta.

Jensen measure or Jensen alpha was first introduced by Michael C. Jensen (1968) is a statistical risk-adjusted measure that investment or portfolio return as compared to the overall market. In this research, the Qatar Stock Exchange (DSM) returns are compared with both Qatar based ESG and non-ESG investment portfolios. The formula for Jensen ratio is given by:

$$\alpha = (Rp - R_f) - [\beta p \times (Rm - R_f)]$$

where α is the alpha, R_p is the portfolio return, R_f represents the risk-free rate, β_p represents Portfolio beta, and R_m shows the expected market return.

Information ratio introduced in 1973 by Treynor & Black indicated the average portfolio return in excess of a benchmark portfolio over a time period divided by standard deviation of this excess return. It is calculated by using the following formula:

$$\frac{\alpha_p}{\sigma_A} = \frac{R_p - R_B}{\sigma(R_p - R_B)}$$

The Post Modern Portfolio Theory (PMPT) suggests that sortino ratio is one of the variations of Sharpe ratio and measures the additional return for each unit of downside risk of the portfolio. It is replaced by downside risk of the standard deviation, instead of just the standard deviation and is calculated by the following formula:

$$\text{Sortino Ratio} = \frac{R_p - r_f}{\sigma_d}$$

Where R_p is the actual portfolio return, r_f is the risk free rate, and σ_d represents the standard deviation of the downside risk. For risk-free rate Qatar Government 10-year Bond rate of 4.280% was used (as of December 2022).

Omega ratio is a weighted risk-return ratio which identifies the chances of gaining compared to loosing for a given level of expected return. It is used to analyze potential returns of the investment portfolio based on historical risk levels and historic returns. It is calculated as:

$$\frac{\int_r^b (1 - F(x))\mathrm{d}x}{\int_a^r F(x)\mathrm{d}x},$$

Where r is the threshold return, and F represents the cumulative density function of returns. For analysis of this measure, the minimum acceptable return was equal to the risk-free rate. CEQ returns are widely known and essential for evaluating risk and are defined as:

$$CEQ = \hat{\mu}_i - (\gamma/2)\hat{\sigma}_i^2$$

CEQ shows the minimum returns that are possible to gain from the investment.

Where μ_k and σ^2_k are the mean and variance of excess returns of a given portfolio or an index k and y is the risk aversion parameter. The low level of risk aversion is at the level y= 2, while normal level of risk aversion is y=3.5 and high level of risk aversion is y=5

Conditional Value at risk (CVaR) provided a useful method using the historical data to reveal what the investment in both portfolios might yield in the worst 5 % of market conditions. It was calculated as:

$$\frac{1}{(1-c)} \times \int_{-1}^{VaR} xp(x)dx,$$

Where p(x)dx symbolizes the probability density of return value (x), c illustrates the measurement point on the distribution (in this case 95%), and VaR is the Value at Risk of the portfolio. It is effective alongside the Sortino ratio to measure the downside risk of portfolios.

3.4 Assumptions

The benchmark for comparing both the portfolios performance with the market was Qatar Stock Exchange (DSM). The reason for selecting same benchmark for different portfolios is because the DSM index was considered a suitable benchmark as it captures the performance of the overall market and include stocks of both portfolios. The risk-free rate used in the risk-adjusted calculations (sharpe ratio) was assumed to be the 4.280 % (measured on December 31, 2022 by Bloomberg Terminal). Also, the investment amount for both the portfolios were 1,000,000 Qatar Riyal.

3.5 Limitations

The conclusion drawn from this study were limited in terms of the time period of the research and its strategy. The study was limited as the inception of MSCI QSE ESG 20 index stocks was November 2021, thus only allowing limited observable data of last 12 months (1 year). Therefore, this research is limited to the duration of MSCI ESG indices in the emerging markets. Also, the incorporation of all the ESG factors are still under process for the selected stocks for ESG integrated portfolios. Additionally, the research conducted followed a passive investment strategy and was not actively re-balanced as an active strategy. This limited the research and the

management of portfolio as many researchers have conflicting views on active and passive strategy to produce greater returns. With active strategy, the for every trading transactional costs are involved, which are higher than managing a portfolio with passive strategy. In this research, only analysis of the risk and return of both portfolios followed by a passive investment strategy are conducted and are compared to justify whether the ESG or non-ESG generate greater returns with the level of risk taken. The portfolio returns do not take any consideration of transactional costs involved for any trading.

Thus, the performance of MSCI ESG index in the context of Qatar are limited in terms of its success, risk and return and may need further observation and different types of analytical approaches could be implemented in the future.

Chapter 4 Results and Analysis

4.1 Introduction

This chapter will highlight the major outcomes on the risk and return of the constructed portfolios and their comparison through the data collected into quantitative measures with appropriate evaluation of results. The results would provide insights into the ESG and non-ESG portfolio risk and returns based on the methodology discussed prior to this chapter.

4.1 Empirical Results

Table 4.1a and Table 4.2b provides the monthly returns of stocks (1 year) and overall portfolio return based on the based on the simulation of investment in the Qatar companies from the Qatar stock exchange (both ESG stocks and non-ESG stocks).

Table 4.1a: ESG Portfolio Returns

ABQK	CBQK	DHBK	IQCD	MPHC	ORDS	QFLS	QGTS	QIBK	QNBK	Portfolio Return
9.11%	6.68%	-7.77%	9.40%	17.32%	4.28%	4.66%	10.15%	7.67%	8.92%	3.25%
-3.29%	-2.93%	-2.22%	9.38%	10.30%	6.19%	-1.53%	4.91%	8.24%	0.41%	5.75%
5.72%	10.38%	-7.67%	5.86%	11.12%	-5.52%	-1.99%	-3.05%	15.25%	7.90%	8.70%
6.86%	8.34%	6.07%	4.20%	-6.32%	10.84%	7.91%	0.55%	8.13%	6.08%	9.38%
2.30%	-9.45%	1.56%	-4.12%	3.17%	-2.57%	-7.48%	7.83%	-6.79%	-8.61%	6.90%
-2.32%	0.25%	0.48%	-9.82%	-4.98%	7.60%	7.32%	3.44%	-0.61%	-4.12%	4.49%
1.78%	5.93%	-2.71%	8.99%	11.76%	20.85%	-0.26%	11.18%	17.98%	2.39%	8.26%
8.97%	5.54%	3.94%	9.00%	-2.45%	1.87%	11.48%	0.41%	1.86%	5.34%	9.60%
1.03%	0.94%	-3.18%	-2.12%	-4.99%	3.04%	3.69%	7.75%	1.39%	1.35%	7.44%
-3.75%	-13.88%	-8.47%	-10.14%	-6.98%	5.71%	-2.01%	-3.70%	-4.91%	-3.51%	6.84%
-0.81%	-9.12%	-6.72%	-9.08%	-1.16%	-12.55%	-8.50%	-6.76%	-4.14%	-5.34%	4.98%
-3.09%	-16.18%	-9.00%	-14.34%	-9.10%	3.25%	-1.42%	-8.15%	-23.88%	-8.56%	-0.77%

Table 4.1a illustrates the monthly portfolio returns for ESG portfolio stocks over a period of 12 months. It also shows the overall portfolio return. The overall portfolio returns were mostly positive with only one negative return throughout the trading period of one year. The highest portfolio return was 9.60%, while lowest was -0.77%.

Table 4.2b :Non-ESG Portfolio Returns

AHCS	AKHI	BLDN	DBIS	ERES	MCCS	MERS	MKDM	MRDS	QFBQ	Portfolio Return
1.53%	2.76%	4.53%	17.42%	9.25%	96.81%	0.54%	23.06%	0.80%	0.97%	2.73%
10.34%	3.60%	-1.55%	3.81%	-5.15%	-13.72%	2.34%	13.90%	-0.18%	0.53%	2.37%
-1.02%	7.78%	0.36%	3.13%	-1.83%	12.72%	-1.11%	22.74%	-3.51%	-4.51%	3.21%
6.25%	-2.98%	6.71%	19.13%	5.10%	6.33%	3.57%	-8.43%	8.42%	12.12%	3.24%
-4.76%	1.62%	22.49%	-3.02%	-3.79%	-3.62%	-5.29%	6.48%	-0.18%	-8.06%	3.24%
-2.05%	-11.23%	-3.52%	-10.32%	-13.62%	-0.18%	-1.18%	-12.22%	-8.28%	-16.18%	1.94%
8.09%	0.90%	3.38%	6.62%	-0.91%	11.76%	4.60%	13.63%	4.85%	-0.94%	2.84%
5.76%	6.08%	-0.08%	3.33%	34.28%	36.99%	4.56%	4.69%	9.91%	18.02%	4.67%
-13.54%	2.14%	3.87%	1.96%	-4.09%	-36.11%	3.22%	4.54%	-2.02%	-3.35%	3.43%
11.92%	-21.63%	-3.93%	-27.18%	-7.01%	-2.09%	-6.06%	-4.06%	-2.06%	-3.23%	3.10%
-12.35%	-16.96%	-1.67%	-32.39%	-11.20%	5.17%	-8.55%	-0.21%	-10.38%	-4.57%	2.95%
-5.19%	0.49%	-9.85%	-3.30%	-10.45%	-8.97%	-5.46%	-1.68%	-11.04%	-6.16%	2.09%

Table 4.2b illustrates the non-ESG portfolio stocks' monthly returns for the period of 12 months. It also shows overall portfolio return. The overall portfolio returns were positive throughout the trading period of one year. The highest portfolio return was estimated as 3.43%, while the lowest return was 1.94%.

Table 4.3: Statistical Analysis

Portfolio	*Mean (M)*	*Standard Deviation (SD)*	*t-stat*
ESG	*6.23%*	*2.96%*	*4.35*
Non-ESG	*2.98%*	*0.71%*	*2.06*

The table above shows the statistical analysis using descriptive statistics and paired t-stat based on monthly portfolio returns for 12-months (1 year). The ESG portfolio shows Mean (M) as 6.23%, standard deviation (SD) 2.96% and t-stat which was measured against the benchmark returns and portfolio returns as 4.35. Consequently, Non-ESG portfolio shows Mean (M) as 2.98%, standard deviation (SD) 0.71% and t-stat which was measured against the benchmark returns and portfolio returns as 2.06.

Table 4.4a: Key Performance Indicators for DSM Index

Qatar Stock Exchange (DSM INDEX)					
Excess Return	***Beta***	***Sharpe Ratio***	***Treynor ratio***	***Jensen Alpha***	***Information Ratio***
-4.82%	*1.00*	*-0.80%*	*-0.048%*	*-0.617%*	*-1.12 %*

Table 4.4b: Key Performance Indicators for ESG and Non-ESG Portfolio from 31 December 2021-31 December 2022

Risk-adjusted Performance Measures	***ESG Portfolio***	***Non-ESG Portfolio***
EXCESS RETURN	1.95%	-1.35%
BETA	0.20%	0.08%
SHARPE	0.66%	-1.79%
TREYNOR	0.09%	-0.17%
JENSEN ALPHA	0.06%	0.03%
INFORMATION RATIO	1.26%	0.63%
MODIFIED SHARPE RATIO	0.66%	0.00%
SORTINO RATIO	0.55%	-1.01%
OMEGA RATIO	24.39%	-2.98%
CERTAINTY EQUIVALENT RETURNS (2)	6.11%	-0.97%
CERTAINTY EQUIVALENT RETURNS (3.5)	21.78%	-1.00%
CERTAINTY EQUIVALENT RETURNS (5)	74.72%	35.12%
CVAR	27,962	4,664
IDIOSYNCRATIC OR RESIDUAL RISK	9.21%	2.02%

Table 4.4a and 4.4b presents the Risk-adjusted performance results of the DSM index and ESG portfolio and Non-ESG Portfolio and are compared against each other. Beta is a measure of risk and ESG portfolio beta is 0.20 and excess return is 1.95%. ESG integrated portfolio showed sharpe ratio of 0.66%, Treynor ratio of 0.09%, Jensen alpha of 0.06%, and information ratio of 1.26%. Modified Sharpe ratio is same as Sharpe ratio. Sortino ratio and omega ratio are 0.55 and 24.39, respectively. CEQ at y= 2 for risk averse investor is 6.11, CEQ at y=3.5 for neutral risk investor is 21.78 and CEQ at y=5 for risk-seeking investor is 74.72. Expected shortfall or CVaR for 1-day loss for ESG portfolio is QR 27,962.

Additionally, Beta for non- ESG portfolio beta is 0.08 and excess return is -1.35%. Non-ESG integrated portfolio shows a negative sharpe ratio of -1.79%, negative treynor ratio of -0.17%, Jensen alpha as 0.03% and information ratio of 0.63%. Modified sharpe ratio is 0.00%. Sortino ratio and omega ratio were negative -1.01% and -2.98%, respectively. CEQ at y= 2 for risk averse

investor is -0.97, CEQ at y=3.5 for neutral risk investor is -1.00 and CEQ at y=5 for risk-seeking investor is 35.12. Expected shortfall or CVaR for 1-day loss for ESG portfolio is QR 4,664 .

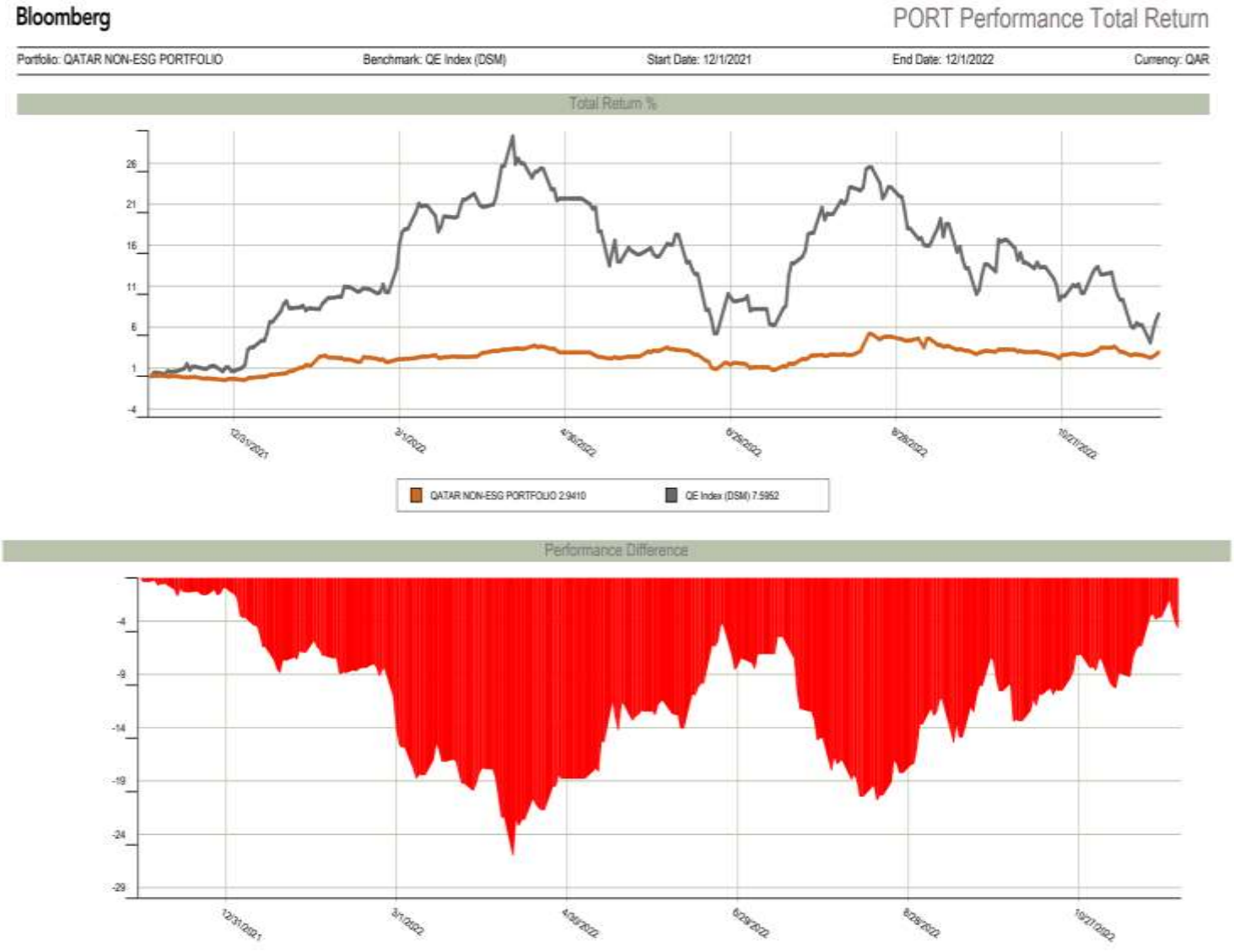
Graph 4.1: ESG Portfolio Performance Against Benchmark (DSM)

Source : Bloomberg Terminal

The graph 4.1 represents the portfolio performance of ESG-integrated portfolio in comparison of DSM index. The graph illustrates the portfolio follows the DSM index but the impact of market was not so high on the portfolio. Also, the portfolio did not outperform the benchmark overall.

However, a slight outperformance was noticed during the starting period and ending period. Moreover, the return of the portfolio and benchmark are 6.82% and 7.60, respectively.

Graph 4.2: Non-ESG Portfolio Performance Against Benchmark (Qatar Stock Exchange Index)



Source: Bloomberg

The graph 4.2 represents the portfolio performance of non ESG-integrated portfolio in comparison of DSM index. The graph illustrates that the portfolio performance was too low when compared

with DSM index. Also, the portfolio underperformed the benchmark overall. The returns of the non-ESG portfolio was 2.94%, which was much lower than the benchmark

4.3 Analysis and Discussion

This research study was implemented to examine the performance of ESG- integrated stocks portfolio with other non-ESG portfolio to suggest whether ESG investment generates opportunities for socially responsible investors. In this sense, the integration of ESG criteria into the stocks from Qatar stock market would communicate importance and transition of SRI strategies to investors, and to a more general audience who are interested in socially responsible investments in Qatar. This study examined the ESG and non-ESG portfolio performance by comparing risk and return by appropriate measurement techniques**.**

The results from Table 4.2a and 4.2b shows that ESG incorporated portfolio returns were much higher than the non-ESG portfolio. However, ESG portfolio showed once negative returns, where non-ESG portfolio despite of generating lower returns remained positive. The descriptive analysis confirms that mean returns of 6.23% of ESG portfolio were higher than 2.98% of the non-ESG portfolio. Standard deviation is a measure of portfolio's systematic risk, also known as market or volatility risk measures suggests ESG portfolio has high standard deviation as compare to non-ESG portfolio. This could be because the ESG portfolio shows riskiness because most of it's portfolio stocks have low MSCI ratings, and are mostly in the category of moderate-to-high risk. Also, mean returns suggest that ESG has higher mean return of 6.23% than non-ESG portfolio. This is explained by risk-return trade off which suggests for potential return rises with increased level of risk.

One of the important factor in investment concept is risk. To measure portfolio risk, beta was approximated using regression analysis of ESG portfolio returns and benchmark returns. Based on prior research, beta is likely to be below one for ESG-integrated portfolios, which would imply that the ESG integrated portfolios does not react more heavily with the market and tend to be less volatile when compared to the market. This is quite unexpected that ESG portfolio showed higher beta than the portfolio without ESG-integration, given that the large body of research that found contrarily. When the beta of the ESG portfolio is above one, it implies that the portfolio is aggressive and more volatile than the market. Hence, the volatility of ESG portfolio was higher than the non-ESG portfolio. This would have substantial consequences for the investment market.

One would have to consider any additional risks while acquiring similar outcomes. Subsequently, modern portfolio theory suggests that an investor is mainly concerned with risk and return. The ESG portfolio shows high idiosyncratic or residual risk of 9.21%, as in comparison of non-ESG portfolio which shows 2.02%. This finding was surprisingly different from the findings of Horn (2023), which suggests that companies' stocks with even low ESG rating shows lower risk. Most of the ESG-integrated portfolio were rated between BB-C ratings. Furthermore, in his study he argued that under-diversified portfolios suffer from idiosyncratic risk. This could be one of the possible view of for the ESG portfolio showing higher risk, as both the portfolios are not equal in terms of sectoral diversification or the stocks selected for the ESG portfolio were from the riskiest sectors, as compared to non-ESG portfolio.

Also, global trends support the view of the low-volatility and low beta. However, ESG portfolio based on MSCI QSE ESG 20 index shows high volatility with high risk and high returns. An efficient portfolio where there is similar return but with lower risk, the investor may find it more convenient to invest in that portfolio. If ESG-integrated portfolio comes with similar returns along with higher market risk as compared to non-ESG integrated portfolio, investors may not invest in ESG integrated portfolio. However, it could be possible that there are investors who consider and give significance to non-financial characteristics of their investment than the financial characteristics. Such investors would continue to invest and prefer in ESG-integrated stocks and portfolios.

The paired t-test was conducted to compare the returns of stocks of MSCI QSE ESG 20 Index stocks used for ESG-integrated portfolio and DSM index as benchmark. Similarly, paired t-test was also conducted to compare the returns of non-ESG stocks portfolio and compared against the means of DSM index. The results of t-statistics of ESG portfolio and non-ESG portfolio were 4.23 and 2.06, respectively. This suggests that the ESG portfolio returns shows significant difference with the benchmark returns as compared to non-ESG portfolio. However, the portfolio means of ESG portfolio is higher than that of the benchmark and non-ESG portfolio.

4.4 Risk-adjusted Returns

Based on the risk-adjusted returns comparison of both portfolios, there was significant difference was observed in returns and performance. Sharpe ratio of ESG portfolio is relatively higher than the benchmark and non-ESG portfolio, indicating good investment performance of ESG portfolio

for the given level of risk. Sharpe ratio for ESG portfolio was 0.66 %, while the non-ESG and benchmark have Sharpe ratio of -1.79% and -0.80%, correspondingly. Previous studies conducted by Schuhmacher and Breuer (2014), and Auer (2015), evidenced that sharpe ratio is not disqualified by either fat tails nor distribution asymmetry, both of which are common with emerging markets. Additionally, Kanuri (2020) suggested analyzing sharpe ratio ESG funds perform better in long-term investments.

The treynor ratio determines the expected risk premium of portfolio adjusted by its sensitivity to market risk. It is usually used to compare portfolios. ESG portfolio shows higher treynor ratio of 0.09%, while non-ESG portfolio shows negative treynor ratio of -0.17%. A negative treynor ratio indicates that non-ESG portfolio has performed worse than a risk-free rate. Jensen alpha represents average return on a portfolio or investment. Non-ESG portfolio showed Jensen alpha of 0.03% and ESG portfolio showed the double of non-ESG portfolio 0.06%. This indicates that average return for non-ESG portfolio for given level of risk were very low. Information ratio represents portfolio's active return in relation to the benchmark. High information ratio means the portfolio's active return have outshined the investor's performance by delivering consistent returns over a specified period of time. Although the non-ESG portfolio showed the Jensen alpha of 0.63, but ESG portfolio have dominance over this by 1.26%, suggesting superior active returns.

Modified sharpe ratio (MSR) values presented in table shows better performance of the ESG portfolio for 1-year period and indicates that ESG portfolio offered better as compared to non-ESG portfolio. MSR is exactly same as sharpe ratio calculated for ESG, but for non-ESG it is 0.00% which is considered unacceptable or indicates bad performance of the portfolio. Sortino ratios presented in table show 0.55% for ESG portfolio and a negative ratio of-1.01% for non-ESG portfolio. Sortino ratio presents the downside risk of the portfolio for per unit of risk taken. A higher sortino ratio of ESG portfolio indicates better returns to compensate investors for the risk taken.

Omega ratio for ESG portfolio shows exceptional results. A high omega ratio of 24.39% suggests good trade-off between the potential returns and the risk of significant losses. Whereas, the non-ESG portfolio showed a very low and negative value of -2.98%, which indicates poor gain or loss balance of portfolio

Certainty Equivalent Returns (CEQ) shows the expected utility or expected returns for investors on the basis of the risk taken. For ESG portfolio CEQ is always positive whether the investor is risk aversion, moderate risk aversion, or high risk aversion. The maximum utility return could be achieved for the high risk aversion (y=5) for investing in SRI or ESG integrated portfolios. Additionally, for non-ESG portfolio the CEQ shows the expected utility or expected returns for investors a negative return for low risk aversion investor (y=2) and normal risk aversion investor (y=3.5). Only, a high risk aversion investor (y=5) could benefit in investing non-ESG portfolio. Hence, ESG integrated portfolio show dominance in the single-year trading period and over the entire period for all the reported risk-aversion levels. This demonstrates good performance of ESG portfolio in comparison of non-ESG portfolio. Also, the findings suggest that for more risk aversion investors, the attractiveness of ESG portfolio increases. This is slightly opposite to the findings of Brzeszczyński & McIntosh (2014) when the conducted similar approach for British SRI stocks.

Conditional VaR (CVaR) or Expected Shortfall (ES) is a useful for measuring risk. CVaR measures the expected losses beyond VaR and show superior characteristics, which helps to predict losses that could exceed traditional VaR (Rockafellar & Uryasev, 2002).The critical characteristic of CVaR is that it provides a complete picture of extreme loss tails, which is important to understand if the extreme tails are correctly predicted (Sarykalin, Serraino, & Uryasev, 2008). Conditional VaR captured by portfolio in Bloomberg suggests the maximum loss at 1-day could be QR26,683 and non-ESG portfolio maximum loss at 1-day period could be QR 4,664. This suggests that ESG portfolio could have higher loss than non-ESG portfolio. Also, this signifies that ESG portfolio is risky and matches with the standard deviation and high idiosyncratic risk estimated by regression analysis.

Lastly, Graph 1 and 2 shows the performance of DSM index against the ESG and non-ESG portfolio extracted from the Bloomberg terminal. It is critical to notice that ESG portfolio performed better and shows a little outperformance when compared against the benchmark. It is interesting for SRI investors to evidence that ESG portfolio management based on passive strategy shows better returns. This aligns with the findings of Derwall et al. (2005) and Kempf and Osthoff (2007) who suggests from their sample that ethical products show outperformance, and is confirmed by Statman & Glushkov (2009) that when integrated socially responsible investment

with in the portfolios they provide better benefits and even compensate for excluding sin stocks from their portfolios.

In short, positive performance of ESG portfolio could be observed by traditional risk-adjusted measures. To confirm its performance MSR and CEQ returns were also taken into account for different levels of risk aversion. Although, the difference in returns was quite obvious for ESG and non-ESG portfolios, but only addresses investment period for short duration without considering any transactional costs. Even, if it is assumed that there were any transactional costs involved, the returns earned from ESG portfolio could still cover the transactional cost involved.

4.4 Comparison with Previous Studies

The ESG risk-adjusted performance in Qatar aligns with the previous research studies in terms of risk-adjusted returns**.** Schuhmacher & Breuer (2014) have suggested that all other risk-adjusted measures are variations of sharpe ratio. However, this study evidences that other ratios such as omega ratio, sortino ratio and CVaR do have different significance for both ESG and non-ESG portfolios. However, this can be agreed that if sharpe ratio suggests superior returns, other risk-adjusted measures show likely results. In terms of ratings reported by Statman and Glushkov (2009), ESG performance slightly differ for the period of 2021-2022, suggesting that ESG with low ratings could also perform better when compared against the non-ESG rating portfolios. Also, Qatar based stocks with low ESG ratings showed positive correlation with high risk-adjusted returns. This finding was contradictory to the findings of Clayman and De (2015) who only suggested that high ESG ratings have high correlation with high risk-adjusted performance. Additionally, Darwall et al. (2005) evidenced that equity portfolios with high Environmental (E) factor scores generated better risk-adjusted returns. The Environmental (E) factor score of mostly Qatar ESG stocks in ESG-integrated portfolio were low, suggesting inconsistency in the findings of previous research. Moreover, this study could add more significance to the findings of Kanuri (2020) who also suggested conventional funds outperforms the ESG funds in terms of average returns and sharpe ratio in the long-term. It is prominent that ESG funds generated better average returns and sharpe ratio in short-term investment. Furthermore, the ESG ratings were low for most ESG selected stocks, but they do provide significance. As stakeholder theory of Freeman (1994) also suggests ESG information adds valuable information for stakeholders to maximize their wealth. Therefore, stakeholders and investors looks for more transparency in the ESG reporting

system to make informed decisions. This view contradicts the findings of Cornell and Damodaran (2020) who argued that higher ESG ratings are being related with higher risk-adjusted returns.

In conclusion, it is noted that this study show similarity with those studies who concludes that ESG generates high risk-adjusted returns and contradicts with the previous findings that claims ESG with low scores generates lower returns and the ratings have no significance in the decision-making process for investors.

Chapter 5 Conclusion

5.1 Conclusion

This section contributes to literature by providing empirical support on the ESG and non-ESG risk-adjusted performance and summarizes the main findings of the undertaken research with its limitations.

First, the idiosyncratic and systematic risk of ESG stocks portfolio in Qatar shows high idiosyncratic and systematic risk when compared against the non-ESG integrated portfolio. Second, not all the companies under MSCI QSE ESG 20 have received their ratings yet, and the stocks selected for ESG mostly show poor rating. While the non-ESG stock portfolio in terms of idiosyncratic and systematic risk show lower volatility than the ESG stocks portfolio.

Third, in terms of risk-adjusted returns the ESG portfolio demonstrated superior returns as compared to non-ESG on all levels of risk aversion. Non-ESG portfolio showed negative and lower risk-adjusted returns. It could be suggested that ESG portfolio shows unique characteristics and has unique benefits. Fourth, ESG portfolio showed a little outperformance when compared against DSM index. As the investment strategy used was passive. Usually a passive strategy aims to follow the benchmark performance rather than to outperform the benchmark, unlike when applied active strategy. Also, non-ESG portfolio remain showed underperformance when compared against the DSM index.

Fifth, both the portfolios were assumed to be invested 1,000,000 Qatar Riyal. After a year, the portfolio value for non-ESG portfolio was 1,012,988 Qatar Riyal and ESG portfolio was 2,016,609 Qatar Riyal. It is observable the amount of gain for non-ESG portfolio was only 12,988 QR, where ESG portfolio provided larger gain of 1,016,609 QR. The gain between both portfolios have significant difference. This would not be wrong in suggesting that ESG portfolio to have extraordinary benefits with exceptional returns.

Hence, previous research studies have evidenced mixed review on of the ESG risk-adjusted performance. The empirical findings suggest and aligns with studies ESG investments provide high risk-adjusted returns and, that Qatar based stocks have potential to provide better risk-

adjusted returns with better ESG ratings. Also, they have potential to outperform the benchmark and generate superior returns.

5.2 Limitations

One of the prominent drawbacks of this research is that the ESG stocks for the portfolio lack the comparability between companies. Additionally, Qatar is new to implement ESG into their portfolios, but are still new to be considered as fully adopted by the MSCI QSE ESG 20 index. The stocks selected for this research were poorly rated, due to which the ESG portfolio in terms of risk were riskier than the non-ESG portfolio. This is not a good news for investors who look to invest in low idiosyncratic stocks and have low volatility. As high idiosyncratic risk could suggest lower expected returns and poor CSR practices. Another aspect of this research is that it is limited to number of stocks. This research consisted of 10 stocks for both portfolios, which were quite low. However, a portfolio consisted of more than 30 stocks would provide better picture in terms of risk and return of the portfolio. Previous studies compared SRI or ESG indices performance and had undertaken longer research period, requiring adequate amount of data. However, this study was limited to only small number of stocks and was only for short-term.

Following the limitations of this research, there are some interesting topics for future research. Few of them could be to implement in their investment strategies such as CAPM estimation, dividend discounting model and relative evaluation of stocks. These asset pricing models could help in managing the rebalancing of portfolio actively following an active approach. Also, the time period of this study is short-term and would be interesting in comparing the statistics and risk-adjusted returns to a completely different crisis. It would be interesting to see whether the demand for ESG or SRI investment remain the same in terms of demand by investors in Qatar.

5.3 Implications for Investors

Currently, favourable opportunities for ESG adaption within emerging market of equities lag behind other from more financially developed nations (Passant et al., 2014). Qatar is a growing country for promoting ESG investment and has recently launched ESG index with only few constituents. The purpose of ESG rating is to show the unmanaged risk of the company, as ESG ratings significantly influences the investment flows (Hartzmark & Sussman, 2019). Thus, the lack of missing ESG rating could be a cause of unsystematic or idiosyncratic risk. However, Horn

(2023) suggests that ESG rating could significantly reduce the idiosyncratic risk even if the company has received low ESG rating. MSCI QSE ESG 20 index lacks ratings for all of its constituents. This study could be useful for investors who are searching for diversification opportunities in emerging markets with the integration of ESG, but maybe discouraged due to downside volatility and lack of information in emerging markets. Also, previous empirical studies conducted by Bali & Zhou (2016) suggests that lack of ESG score brings uncertainty in investment making decisions. Many other studies regarding ESG signifies the importance of ESG rating and conclude its performance based on the ratings. Such empirical studies include, Statman & Glushkov (2009) and De & Clayman (2015) who suggested that stocks with higher ESG ratings performs well than the stocks with lower ESG ratings. Also, Horn (2023) relates that ESG factors have correlation to high risk-adjusted returns.

The result of this study reveals that future investors and other stakeholders may face challenges to invest in SRI or ESG investments in the financial market. Therefore, it is important to be able to report information's that are significant in comparing industries and sectors (Lokuwaduge & Heenetigala, 2017). ESG reporting do not provide any superior benefits unless they are comparable and this study may suggest that there is no uniformity due to lack of reporting standard implied by companies in Qatar. Even though QSE have provided known guiding standards for companies to report ESG, yet the implementation and generating such report would require some more time. GRI serves as very powerful tool for ESG reporting, but Qatar listed companies also have other international indexes for reporting ESG information. Moreover, this study aligns with the results of Sherwood & Pollard (2017), who conducted similar research in emerging market evidenced that integrating ESG into the soaring market of equities could provide institutional investors the chance of higher returns and lower downside risk than non-ESG equity investments.

5.4 Future research and recommendations

In conclusion, if ESG factors integrated correctly in business operations and are reported with transparency, the investment management in portfolios would enhance both sustainable business practices and sustainable financial development. The question of whether ESG investment could provide a platform for socially responsible investors in Qatar is still a subject of under consideration and should be explored using different investment strategies. As private investors,

built portfolios on different levels of risk appetite and goals, which is still needs to be judged on whether ESG portfolios are better for investment to provide both financial and non-financial benefits. Additionally, it is beyond the scope of the conducted research to analyze the idiosyncratic risk of all the listed companies under MSCI QSE ESG 20 index. Nevertheless, it would be interesting to research when companies improve their CSR practices and receive higher ratings to research whether it decreases or increases the idiosyncratic risk.

To conclude, the result of this study provides an intriguing case for the ESG integrated investment portfolio within the emerging asset class of equities in Qatar. It may be accepted that, based on the historical developments of ESG incorporation, that ESG incorporation in the investments opportunities will continue to prosper and standard will continue to develop in its accuracy and transparency and more and more institutional investors utilize their expertise in ESG investment for increased returns. Furthermore, this study adds to existing literature of ESG investment in GCC region or emerging equities market on the field of ESG or SRI investing, as it focuses particularly on the empirical demonstration of the effect of ESG inclusion on the risk and return of portfolio performance in Qatar. Finally, the adoption of proper ESG reporting index approach could provide SRI a comparative depiction of the state of ESG reporting with respect to explicit companies, specifically in Qatar.

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Appendix A: Reflective Statement

This research study that I am reflecting on as a part of completing my Dissertation coursework, which was focused on Socially Responsible Investment (SRI) and ESG in emerging markets. It has been approved by my dissertation supervisor and I chose Qatar's emerging market to explore the ESG investment performance. While doing the research, I felt excited and was enthusiastic to conduct this experimental research because it was never explored in context of Qatar, and the result of this research could be of potential benefit for future researchers and investors. I was delighted to receive positive feedback from my dissertation supervisor, which kept me motivated while conducting the research. However, it was not easy to gather sources on the topic, as its still developing and investors and researchers have many different views on the topic. Therefore, while gathering sources for my literature review, I found it quite exhausting to make the literature relevant to my research specifically. Nonetheless, the motivation I had for conducting this research pushed me further. The research required specific skills in investment and use of Bloomberg software, which are usually used by analysts. The previous knowledge and practical exposure to Bloomberg terminal was proved to be beneficial for me to capture and gather data for this research without any difficulties and measure the performance of the portfolios for my intended research.

In future, this research would be my stepping stone to continuous learning and development and I would be eager to implement and explore alternative investment strategies that could be implemented for future ESG investment, as it reflects my interest being a finance student to explore new investment markets that would also enhance my practical knowledge and future career path. Lastly, my action plan for future is to continuously be self-aware of emerging market conditions and sustainability practices through research articles and daily news because as a finance student and future working citizen, it is essential to know which industries and companies are practicing CSR for not just financial gains, but for the growth of sustainability practices and healthy community.

Appendix B- Dissertation Proposal

Background

Socially Responsible Investment (SRI) is a contemporary highly discussed issue among practitioners and scholars which is caused by the social awareness of the institutions and public interest in social responsibility. SRI can be defined as an investment process which incorporates environmental protection, ethical values, good governance and improved social conditions into traditional investment decision making. The incorporation is likely due to the growing emphasis that investors place in environmental, social and governance criteria (ESG), bringing a direct connection between SRI and Sustainable Development. Recently, Qatar Stock Exchange and MSCI together launched the "MSCI QSE 20 ESG Index" to promote ESG investment in Qatar which aims to provide financial returns as well as contributes to sustainable climate objectives when evaluating companies in which investors might want to invest.

Aims/Objectives

The primary aim of the study is to explore the current initiatives of incorporation of ESG investment and associated risks and opportunities for Socially Responsible Investment (SRI) in Qatar. The aim of this study will be achieved by the following objectives.

- To empirically examine the performance of MSCI QSE 20 ESG Index stocks and with other selected DSM stocks on diversified portfolios. (Qatar Blue chips stocks, Large Cap, Mid cap stocks)
- To study whether the ESG stocks generates opportunities for investors
- To suggest whether Socially Responsible Investors can invest in ESG stocks or alternative strategies that can be implemented when making ESG investment decisions.

The result of this study will help in the future research of ESG investment in Qatar and arise new areas of consideration and application of ESG investment by Socially Responsible Investors.

Methodology

The following research will involve quantitative approach in determining the risk involved in the incorporation of ESG stocks in the portfolio. The daily share prices of last one year will be obtained using Bloomberg to calculate risk and expected return of such portfolios with ESG stocks and non-ESG stocks from the Qatar Stock Exchange websites. The results will help in-depth analyzation of the information about the data by using published news articles, books and journals. Finally, it will help in to recommend strategies to improve and integrate ESG investments for Socially Responsible Investors (SRI) in Qatar in a better way.

Literature Review

Socially Responsible Investment (SRI) is a contemporary, highly discussed issue among practitioners and scholars caused by the social awareness of the institutions and public interest in social responsibility. SRI can be defined as an investment process which incorporates environmental protection, ethical values, good governance and improved social conditions into traditional investment decision-making (Matallín-Sáez et al., 2018). The incorporation is likely due to the growing emphasis that investors place on environmental, social and governance criteria (ESG), bringing a direct connection between SRI and Sustainable Development (Prol & Kim, 2022).

Globally, financial markets are moving towards higher transparency concerning climate and sustainability risk (OECD, 2021)**.** One such initiative is the scoring of stocks according to their Environmental (E), Social (S) and Governmental (G) sustainability (Boffo & Patalano, 2020). The literature on the impact of ESG is quite controversial (Hartzmark & Sussman, 2019). Researchers find arbitrary evidence that investors significantly value sustainability, but there is no positive outcome on performance (Managi et al., 2012). Similarly, no difference in returns means and volatility were found in SRI and non-SRI in developed financial markets of the UK, US and Japan. However, many other financial institutions allege that ESG factors can provide an advantage of portfolio risk and return (Prol & Kim, 2022) and evidence indicates positive link between financial performance and ESG (Whelan et al., 2021).

The modern portfolio theory (MPT) suggests that fund managers choose assets based on risk minimization, maximizing return and diversification (Markowitz,1952). However, society's

values, beliefs and norms develop, and managers should acclimate investments to these preferences for competition and survival purposes. The theory of legitimacy suggests that when managers anticipate the legitimacy gap, they tend to develop strategies to realign with societal desires. In coherence with this proposition, the mainstream SRI increases the demand for the criteria for ESG investments (Alda, 2021)**.**

Detail description of the dissertation

One of the critical trends in managing the portfolio over the past few years is the inclusion of environmental, social and governance (ESG) information. The Global Sustainable Investment Alliance (2015) implies that 21.4 trillion was being managed by SRI at the beginning of 2014. SRI Assets under management (AUM) enhanced by 60%, in comparison to 15% on conventional strategies from 2012 to 2014 (Verheyden et al., 2016). Qatar's sustainability and conservation of natural resources are identified by National security as one the prominent factors through guiding documents of Qatar National Vision of 2030 and Qatar National Development Strategy (QNDS) (Harmon & Truby, 2019). Doha Bank is one of the first Qatari banks to introduce sustainability reporting, which is associated with the GRI Universal Standards Framework and the Qatar Stock Exchange ESG reporting methodology (Doha Bank, 2022). Recently, Qatar Stock Exchange and MSCI jointly launched the "MSCI QSE 20 ESG Index" to promote ESG investment in Qatar which aims to provide financial returns as well as contribute to sustainable climate objectives when evaluating companies in which investors might want to invest. MSCI QSE S0 ESG Index comprises 20 securities within the MSCI Qatar IMI to illustrate the best Environmental, Social and Governance (ESG) profile and use a tilt approach to index weightings based on MSCI ESG rating (MSCI, 2022).

The quantitative approach will be adopted for the intended research. Organizational consent and ethical issues will not be required; as publicly available data will be used. Furthermore, statistical tools will be used for measuring the performance risk for the ESG stocks and non-ESG stocks portfolios, such as Value-at-risk (VaR) will be used in MS Excel/Bloomberg. Earlier in the 1980s, VaR was administered by US banks as a technique to measure and analyze market risk in monetary terms. It was further imposed by the Banking Committee on Banking Supervision, due to the negative effect of the International Financial Crisis in the 1990s. In the current circumstances, it is difficult for investors and managers to demonstrate the potential loss of their asset portfolio (Fallon

& Sabogal, 2004). This method will not just help in measuring the risk but will also provide the exact per cent of the loss for the specific probability range.

The growing uproar for Socially Responsible Investment (SRI) globally, giving rise to ESG investments. Qatar also intends to place a high value on it. While other developed countries are already progressing in this context, Qatar is still new to implementing it progressively. The study will not be just noteworthy in determining the ESG investment in Qatar but would also provide a stepping stone for other researchers and investors in the perspective of ESG investment in the growing economy of Qatar. Although the literature around ESG investment and its performance have mixed reviews, it's new to study whether such initiatives provide any positive, negative, or no change in the performance of investments in Qatar.

Timetable for research

The dissertation is expected to last for six months. The literature review will be the first element to be focused on. For the purpose of methodology, data will be derived from Bloomberg and yahoo finance, and the calculations will be done using excel. The findings of these calculations will be help to demonstrate and involve in discussions and deriving conclusions. Furthermore, the introduction would be the last part of this research study.

Start Week	End Week	Task Name	November	December	January	Febr uray	March	April
10-Nov	5-Dec	Literature Review	10th November-5th December					
10-Dec	30-Dec	Methodolody		10th-30th December				
5-Jan	20-Jan	Findings & Discussion			5th-20th January			
30-Jan	20-Feb	Conclusion				30th January-20th February		
26-Feb	20-Mar	Introduction				26th February- 20th March		
1-Apr	30-Apr	Dissertation Review and Submission						1st-30th April