



**SCHOOL OF ACCOUNTING, FINANCE & ECONOMICS**

**A COMPARATIVE ANALYSIS OF ISLAMIC AND CONVENTIONAL FUND  
PERFORMANCE ON THE JOHANNESBURG STOCK EXCHANGE**

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**This dissertation is submitted in fulfilment of the requirements for the degree  
Of**

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## DECLARATION

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## **DEDICATION**

This research thesis is dedicated to God Almighty, My dearest wife and My family.

## **ACKNOWLEDGEMENT**

I would like to thank God for the strength He has given me, as well as all the people who helped ensure the success of this thesis.

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## GLOSSARY OF TERMS

Gharar	- Ambiguity
Islam	- The Islamic faith
Maisur	- Gambling
Muslim	- A believer of the Islamic faith
Quraan	-The holy book for Muslims
Riba	- Usury/Interest
Rishwah	- Bribery
Shariah	- The laws of Islam based on the Quraan and teachings of Prophet Muhammed.
Sunnah	- The teachings and actions of Prophet Muhammed, PBUH, during his lifetime.
Zakat	- Taxes for religious purposes
Zulum	- Exploitation

## LIST OF ACRONYMS

JSE	Johannesburg Stock Exchange
JSE ALSI	Johannesburg Stock Exchange All Share Index
MSCI	Morgan Stanley Composite Index
CAPM	Capital Asset Pricing Model
APT	Arbitrage Pricing Theory
MPT	Modern Portfolio Theory
CAL	Capital Allocation Line
CML	Capital Market Line
ETMF	Exchange Traded Mutual Funds
MM or M <sup>2</sup>	Modigliani & Modigliani
DEA	Data Envelopment Analysis

## ABSTRACT

The study comparatively evaluated the performance of Islamic and Conventional funds vis-à-vis selected market benchmark indices. This was carried out by the creation of both Islamic and Conventional portfolios based on existing individual South African funds listed on the Johannesburg Stock Exchange (JSE). Whilst the study utilised descriptive statistical analysis for the non-risk adjusted performance analysis, several investment performance models were used for the risk adjusted performance analysis. Relevant statistical tests were performed to decipher relationships between the Islamic fund and the Conventional fund vis-à-vis the selected market benchmarks. Based on the non-risk adjusted performance analysis and absolute risk adjusted performance analysis, the empirical evidence suggests that the Conventional fund performed better than the Islamic fund. However, the relative risk adjusted performance analysis shows a mixed overall result during the entire period of the study. While the Modigliani & Modigliani measure and Jensen alpha showed that the Conventional fund performed better than the Islamic fund from a risk adjusted return perspective, the Treynor ratio showed that the Islamic fund performed better than the Conventional fund. Likewise, from a relative risk perspective, the study found that the Conventional fund performed better and is less risky than the Islamic fund when benchmarked against the JSE Shariah Index, the Johannesburg Stock Exchange All Share Index (JSE ALSI) Index and the Morgan Stanley Composite Index (MSCI) Emerging Markets in Europe, the Middle East and Africa. More so, while the t-test analysis suggests that there is no statistically significant evidence to support that the Islamic fund under or outperforms the Conventional fund, the correlation analysis showed that both funds are more positively correlated and statistically significant with the South African market indices. The findings of the study imply that an investment in the Conventional fund would have offered a superlative non-risk adjusted return than the Islamic fund. Also, the relative risk adjusted performance imply that upon the diversification of unsystematic risks in some market indices, the Islamic fund may perform better than the Conventional fund. Finally, the positive correlation of both portfolios with the local market benchmarks, imply that their performance is largely influenced by the performance of both the JSE Shariah All Share Index and the JSE All Share Index

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# Chapter One

## Introduction

### 1.1 Overview and Background of the study

Over the years, financial innovation and the creation of financial products and services in the world of banking and finance have been largely driven by objectives and wealth maximization rather than ideals and principles (Pilbeam, 2018). However, the birth and emergence of Islamic finance globally have evidenced a new perspective on banking and finance, which is premised on faith-based ideals and principles (Aziz, 2018). These faith-based ideals and principles evolved from the law of Shariah, which in itself is an age-long set of rules and conventions drawn from the Quran. Hitherto, several Islamic countries have adopted the Quran as the basis of their constitution, judicial precedence, and ultimate way of life.

In the past few decades, the increasing application of the Shariah ideals and principles has evolved into a new paradigm and area of finance and banking widely referred to as Islamic banking and finance. This new paradigm of finance takes its essence from the foundational edicts and conventions of the Islamic holy book- The Quran. The Quran explicitly specifies some practices, activities, and elements that are forbidden among the Islamic faithful (Badr, 2016). Amongst these practices, activities, and elements include:

***Riba (Usury):*** *Riba* is a term in Islamic banking and finance that commonly denotes interest. The reason for the prohibition of interest in the Islamic investment system and structure is that it creates and leads to an unequal distribution of wealth growth in a society and economy (Yusof and Berhad, 2019). The following verses from the Quran summarize these prohibitions:

- *"Whatever interest you pay to increase people's wealth does not increase in God's sight. Whatever you pay as zakaah (charity), seeking God's pleasure, such people truly multiply." (Holy Quran, Chapter 30: Verse 39)*
- *"O you who believe! Do not consume interest, compounding it many times over. Fear God that you may be successful." (Holy Quran, Chapter 3: Verse 130)*

- *"And God has permitted trading and prohibited interest." (Holy Quran, Chapter 4: Verse 275)*

**Gharar (Ambiguity):** *Gharar* is an Arabic term that is connected with uncertainty, deception, and risk. It has been illustrated as "the sale of what is not yet present," such as crops not yet harvested or fish not yet netted (Yusof and Berhad, 2019). The commodity must be owned by the seller and described in detail at the time of the transaction, as the sharia does not allow transactions to be vague and uncertain.

**Maisur (Gambling):** In Islam, gambling is prohibited because the agreement between participants is based on immoral inducement provided by entirely wishful hopes in the participants' minds that they will gain by mere chance, with no consideration for the possibility of loss (Yusof and Berhad, 2019). There should be no speculation in a transaction as gambling is one of the features that would render the investment and transaction impermissible.

**Zulum (Exploitation):** This term defines and explains acts of harshness or unfair doings of exploitation, oppression, and wrongdoing. An individual either denies or robs others of their rights or does not fulfil his/her obligations towards them (Yusof and Berhad, 2019). The superior objective and goal of Islamic finance and banking should be to minimize exploitation and promote a fair and just economic system and structure.

**Rishwah (Bribery):** Bribery is to give something to annul a right or to achieve an injustice, and it is prohibited for both the one who offers and presents it and the one who receives and accepts it, and also for the negotiator between them (Yusof and Berhad, 2019). The money earned from bribery is unlawful and impermissible and involving oneself in bribery is one of the major sins.

The following verse from the Quran can be used to verify that bribery is forbidden in Islam:

*"And cooperate in righteousness and piety, but do not cooperate in sin and aggression." (Holy Quran, Chapter 5: Verse 2)*

In recent times, the rising popularity of Islamic banking and finance has precipitated a positive spill-over effect on Islamic investing. This effect is evident via the increasing demand for shariah-compliant collective investment products (Islamic funds), which

are currently regarded as the fastest-growing niche of the Islamic financial system (Badr, 2016). The growth trajectory of the Islamic investment funds is crucial and can serve as a plausible gauge/indicator of the awareness, acceptance, and growth of the broader Islamic financial system as well as its Shariah precepts globally.

### **1.1.1 Collective Investment Schemes: The case for unit trusts and their variants**

The availability of long-term and stable sources of finance to businesses and investments cannot be over-emphasized as it provides a lifeline of liquidity and solvency (Connolly and Jackman, 2017). This need for liquidity and solvency has resulted in the creation of financial markets where diverse financial products and services are traded to provide capital and funding to businesses and investments (Greenbaum et al., 2019). Whilst financial products have continually evolved, these products have distinctive features based on their structures and how they channel resources from the supply side to the demand side of the economy

Due to the dire need for a long-term and stable supply of funds, financial innovators have devised a way of providing resources to the financial markets via collective investment schemes which transform individual savings into blocks of investments for capital needs (Tershukova et al., 2016). A collective investment scheme has been conceptualized by Botha et al. (2019) as an investment scheme that pools the money of several investors who want to invest in financial products such as shares, bonds, and money market instruments. Herein, the total pooled fund is managed by a professional fund manager and is sold to individual investors in units.

Unit trusts as a form of collective investment scheme have been defined by Aziz et al. (2019) as an investment scheme that collectively pools funds invested by individuals, who share a common set of financial and investment objectives and have entrusted the management of the fund in the care of a professional fund manager. Likewise in the purview of Billah (2019), the underlying basis of a unit trust is premised on the allocation of a pooled fund to a boutique of well-diversified investments as determined and managed by a finance and investment professional (Billah, 2019). This pooled fund is aggregated based on personal contributions of individuals that have in common a shared perspective of financial objectives, risk appetite, and investment strategy.

As collective investment schemes, unit trusts are often used interchangeably with mutual funds as they both offer individual investors the opportunity to pool savings

together and invest in a diversified portfolio. However, both funds have a prevalent distinction in terms of their legal framework (Tershukova et al., 2016). Regardless of this distinction, both funds are operationally structured in the same way with the fundamental objective of maximizing returns to investors in the most risk-efficient way possible (Lekpek, 2016). Hence, both funds measure their performance using risk-adjusted performance measures (Reddy et al., 2017; Ahmad and Alsharif, 2019). Amongst these performance measures are the Sharpe ratio, Treynor ratio, and Jensen Alpha.

With consideration to unit trusts, the rising popularity of unit trusts as a collective investment scheme offers individual investors the opportunity to invest in funds based on the specified fund objectives. These objectives serve as a policy statement for the fund which determines how the pooled capital is invested and allocated to financial products, businesses, and projects that meet the shared perspective of the investors (Aziz, 2018; Aziz et al., 2019). This shared perspective is such that has necessitated the emergence and rise in the demand for unit trust funds that are shariah compliant among investors within the Muslim community

Popularly known as the Islamic unit trust fund, this fund is a financial product that is categorized as a Shariah-based investment product, which is managed by an asset management company or a unit trust agent (Yusuff et al., 2017). As a collective investment product, this unit trust is suitable for low and middle-income investors mainly from the Muslim community, who seek low to medium level of risk exposure upon diversification. Herein, the asset management company or the fund manager manages the pooled capital on behalf of risk-averse investors who often have limited investing knowledge yet seek to invest in Shariah-compliant financial products.

Unlike Conventional unit trust funds, Islamic unit trust funds are strictly built on Islamic principles and Shariah laws. They differ from the typical Conventional unit trust funds as they are faith-based funds that invest only in Shariah-compliant financial assets (Badr, 2016; Billah, 2019). Hence, the underlying distinction between a Conventional unit trust fund and an Islamic unit trust fund is that the pooled funds of the latter are invested in a portfolio of Shariah-approved financial assets (Aziz et al., 2019). These include equities of Shariah-compliant companies, Islamic bonds (Sukuk), Islamic deposits, and Islamic money market instruments.

## **1.2 Research problem**

The birth and emergence of Islamic finance globally have heralded a new perspective on banking and finance, which is premised on faith-based ideals and principles (Aziz, 2018). Islamic funds are widely referred to as Sharia-compliant investments, as their investing basis must act following the principles of the Sharia law- the Islamic law, governing all aspects of a Muslim's life (Hasan et al., 2020). The core of the fundamentals of Islamic investing is aptly drawn from the Quran, which outlines the economic and investment principles for Islamic investments and banking among all Muslim faithful.

Globally, several studies have revealed the rising awareness and advocacy in Islamic investing and Islamic unit trusts (Agussalim et al., 2017; Patel, 2018; Hasan et al., 2020). However, only a few studies have considered analyzing this advocacy in terms of the performance of Islamic unit trusts vis-à-vis the performance of Conventional unit trusts (Reddy et al., 2017; Ahmad and Alsharif, 2019; Trabelsi et al., 2020).

In the South African context, it is currently unknown whether there is a significant difference between the performance of Islamic unit trusts and the performance of Conventional unit trusts. Thus, this research study aims to comparatively evaluate the performance of Islamic and Conventional funds that are listed on the Johannesburg Stock Exchange (JSE) stock exchange using selected market benchmark indices.

## **1.3 Objectives of the study**

This study seeks to achieve the following research objectives:

- To compare the non-risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.
- To analyze the risk-adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.
- To determine the extent of the difference between the performance of Islamic and Conventional portfolios.

#### **1.4 Research Questions of the study**

This study seeks to answer the following research questions:

- How does the non-risk-adjusted performance of the Islamic portfolio compare to the Conventional portfolio as well as the selected market benchmark indices?
- How does the risk-adjusted performance of the Islamic portfolio compare to the Conventional portfolio as well as the selected market benchmark indices?
- What is the extent of the difference between the performance of Islamic and Conventional portfolios?

#### **1.5 Expected Results (Hypotheses)**

- H1: Non-risk adjusted performance of Islamic portfolios outperforms the Conventional portfolios and selected market benchmark indices.
- H10: Non-risk adjusted performance of Islamic portfolios does not outperform the Conventional portfolios and selected market benchmark indices.
- H2: Risk-adjusted performance of Islamic portfolios outperforms the Conventional portfolios and selected market benchmark indices.
- H20: Risk-adjusted performance of Islamic portfolios does not outperform the Conventional portfolios and selected market benchmark indices.
- H3: There is a difference between the performance of Islamic portfolios and Conventional portfolios vis-a-vis selected market benchmark indices.
- H30: There is no difference between the performance of Islamic portfolios and Conventional portfolios vis-a-vis selected market benchmark indices.

#### **1.6 Contribution of the study**

Based on the provision of scientific answers to the aforementioned research questions, this research study will make valuable contributions to both academic and corporate users of financial information. From an academic perspective, the findings of this research study will contribute immensely to the body of existing knowledge in

unit trusts investments. More precisely, the study will make novel contributions to existing knowledge on the performance of Islamic unit trusts in South Africa from a comparative analysis standpoint.

Likewise, from a corporate finance perspective, the findings of this study will be relevant to both individual and institutional investors, locally and globally. The insights that will be provided via the findings of this study will assist investment decisions of existing and potential investors who are keen on the South African financial market and Islamic investing in the biggest African stock exchange market.

### **1.7 Scope of the study**

The scope of this study will consider both Islamic unit trusts and Conventional unit trusts that are listed on the Johannesburg Stock Exchange (JSE) market. For the Islamic unit trusts, the researcher will consider all Islamic and Shariah-compliant unit trusts that are listed on the JSE market. On the other hand, for the Conventional unit trusts, the researcher will consider small-cap equity unit trusts are listed on the JSE market. These unit trusts will represent the Conventional unit trust that meets the definition of a non-Islamic unit trust.

As of the date of this research study, there were twenty-one Islamic and Shariah-compliant unit trusts listed on the JSE Market. Likewise, there were forty-two Conventional unit trusts listed on the JSE market at the same time of the study. For this study, all observations will be considered. Furthermore, this research study will consider the stock return performance of the unit trusts over 10 years from 01-January-2009 to 31- December-2019. Over this period, the daily returns of each unit trust will be considered and calculated in percentage terms. Thereafter, the mean average over the period will be calculated for each unit trust under consideration.

### **1.8 Structure of the research study**

#### *Chapter one- Background of the study*

This chapter introduces the research study and the phenomenon of unit trusts investments in South Africa. In this discourse, the chapter considers both Islamic and

Conventional types of unit trusts in the overview section of the study. Thereafter, the research problem statement and the broad aim of the study were clarified. Subsequently, the research objectives, questions, contributions, scope, limitations, and delimitation of the study were discussed in detail.

#### *Chapter two- Theoretical and empirical literature review*

Chapter two of this research study focuses on both the theoretical and empirical review of literatures. Under the theoretical review of literatures, fundamental finance and investment theories such as the theory of risk and return and portfolio theory were discussed. In addition, empirical literatures on unit trusts, Islamic investing, Conventional investing, performance measures were considered from both global and local perspectives. Prior to this, this chapter systematically covered the definitions and characteristics of key terms in the research subject matter.

#### *Chapter three- Research methodology*

Chapter three of this research study covers the research approach, design, and techniques applied in the research study. Herein, the chapter considers the data collection, sampling techniques, definition, and justification of the research variables. Furthermore, the chapter provides and justifies the descriptive and inferential analytical methods adopted in the research study.

#### *Chapter four- Data analysis*

This chapter of the research study analyzed the collected secondary research data using both descriptive and inferential analytical techniques. Herein, the results of the analysis are interpreted and further discussed vis-à-vis existing literatures to highlight the findings of the study and make necessary assertive conclusions.

#### *Chapter five- Conclusion and recommendations*

This chapter of the research study provides a summary of the entire research study. In this chapter, findings per each research question, conclusion, recommendations, and limitations of the research study are highlighted, discussed, and covered.

## **1.9 Summary**

Chapter one of this study introduced and provided a general background to the study. In this chapter, the research study began by succinctly explaining Islamic unit trust by discussing Islamic banking, Islamic finance, Islamic investing, collective investment schemes, and unit trusts. This helped in the formulation of the research problem, the aim of the study, the research questions, the research objectives as well as the intended contribution of the research study. Furthermore, the scope of the study was clarified, and the structure of the research thesis was adequately outlined.

The next chapter of this research thesis covers both the theoretical and empirical literature review of the study.

## **Chapter Two**

### **Literature Review**

#### **2.1 Introduction**

Chapter two of this research study covers the theoretical, conceptual, and empirical frameworks. Herein, the researcher discusses the relevant and applicable theories such as the Modern Portfolio Theory, the Capital Asset Pricing Model (CAPM) theory as well as the Arbitrage Pricing Theory (APT). Also, the chapter succinctly clarifies the concept of mutual funds and Islamic funds as a type of mutual fund. Lastly, the chapter provides a review of relevant empirical literatures.

#### **2.2 Theoretical Framework: The Modern Portfolio Theory**

The modern portfolio theory is fundamental in the field of finance, investment, and financial economics. This theory was pioneered via the seminal works of Harry Markowitz (1952), which were further improved by the works of William F Sharpe (1964). These extensive works evidence the beneficial superiority of having a portfolio of securities as compared to investing in single security (ZongMing et al., 2017). The portfolio theory offers a set of assumptions that forms the foundational principles at the core of several investment strategies, investment decisions, and how the financial markets are perceived by investors.

According to the Nobel Laureate Harry Markowitz, in his award-winning publication in the Journal of Finance, titled "Portfolio Selection", the crux of the portfolio theory is premised on the maximization of expected return at a specific market risk level. Markowitz asserts the possibility of risk-averse investors maximizing their expected returns via portfolio optimization that can be seen on an efficient frontier (ZongMing et al., 2017). According to the Modern Portfolio Theory (MPT), an investor can create an efficient frontier using optimal portfolios that offer the highest expected returns based on a specific risk level.

Under the modern portfolio theory, an investor does not just consider the risk and return characteristics for single investment security but assesses how the risk and

return characteristics of each security will impact the overall portfolio risk and return (Bodie et al., 2019). In the context of evaluating the performance of a portfolio, statistical measures such as variance and correlation afford an investor to observe the weighted performance of a combined set of securities. This is because the portfolio theory supports the combination of several securities that will maximize expected returns at a given level of risk assumed. Conversely, Bakar and Rosbi (2018) assert that the modern portfolio theory can help an investor construct a portfolio to achieve a desired level of risk based on the lowest possible return.

### **2.2.1 Risk and Return**

The modern portfolio theory is built on the idea of risk aversion. This idea believes that individual investors are risk-averse and would generally prefer to invest in a portfolio that offers less risk than one that offers more risk for the same level of expected return (Bodie et al., 2019). In practice, the risk and return axiom of the modern portfolio theory holds that an investor is deemed to take on more risk if such risk is compensated with a higher expected return, and vice-versa (Pilbeam, 2018). This implies that a rational investor will not invest in a portfolio, where an alternative portfolio with a better risk-expected return portfolio exists.

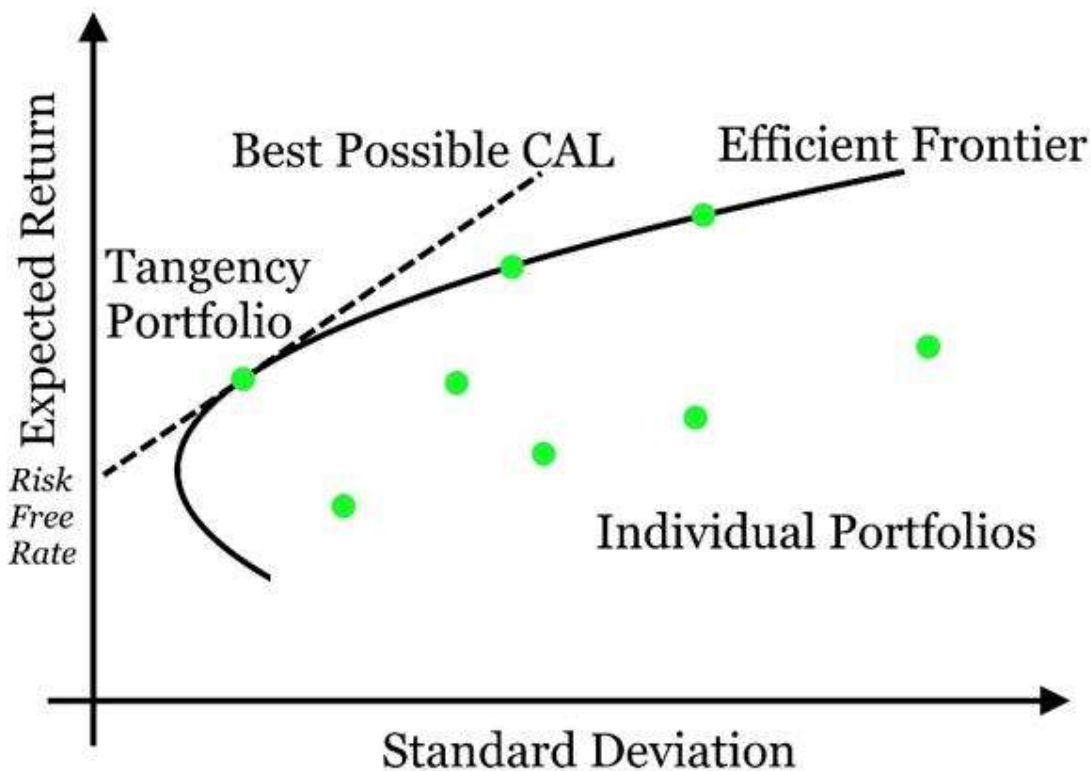
Whilst the risk and return for individual security are calculated singularly, for a portfolio of multiple securities, the weighted risk and return are computed. This is done by considering the weight (proportion) of investment in each security/asset vis-à-vis the expected return (ZongMing et al., 2017). On the other hand, the computation of the portfolio risk adopts a more complex approach that considers the weights, the standard deviation, and the correlations among the securities.

### **2.2.2 Diversification**

Through the use of a correlation coefficient, an investor can determine the type of relationship that exists between individual securities. This helps the investor create a diversified portfolio of securities that are negatively correlated. Bakar and Rosbi (2018) note that the idea of diversification is such that it allows an investor to maximize the expected returns of a portfolio at a reduced level of risk. This reduction in risk level is done using the mean-variance framework that aids the construction of optimal investment portfolios.

The correlation coefficient is a statistical metric whose value ranges between -1 and 1. A correlation coefficient of 1 is known as a perfect positive correlation, which means that two individual securities move in the same direction and are most likely to share the same performance behavior. Likewise, a correlation coefficient of -1 is referred to as a perfect negative correlation, which means that two individual securities move in opposite directions and are most likely to have distinct performance behaviors. Furthermore, Chandra (2017) notes that a correlation coefficient of 0 represents a situation where there is no correlation, which means that there is no linear relationship between the performance behavior of two individual securities.

### 2.2.3 Efficient Frontier



**Figure 2.1:** Efficiency Frontier Graph

As seen above, the efficient frontier is a graphical representation of all possible portfolios (combination of securities) with their portfolio risks and expected returns that can be obtained (Bodie et al., 2019). This graphical representation helps the investor to determine the best/most efficient portfolio on the frontier, which is the portfolio that offers the maximum expected return at the least risk level. This is depicted via the

drawing of an upward sloping hyperbola that connects the most efficient portfolios on the efficient frontier (Pilbeam, 2018). Hence, any portfolio outside the efficient frontier will be deemed as an inefficient portfolio, and not worthy of investment.

#### **2.2.4 Mutual fund separation theorem**

In furtherance to the efficient frontier axiom, the modern portfolio theory postulates the mutual fund separation theorem which holds that under specific circumstances, any investor's optimal portfolio can be constructed via holding each of certain funds in the appropriate ratios, where the number of mutual funds is smaller than the number of individual assets in the portfolio (Bodie et al., 2019). In this context, a mutual fund refers to any specified benchmark portfolio of the available assets.

#### **2.2.5 Risk-free asset and the capital allocation line**

A risk-free asset can be understood as a financial asset that offers a hypothetical risk-free return on investment. This financial asset in practice is usually the short-term government securities known as the treasury bills that are backed and guaranteed by the government against default (Pilbeam, 2018). Hence, treasury bills are characterized as risk-free assets because of their exceptionally low (if not impossible) rate of default, and fixed income rate. Due to this feature, risk-free assets are uncorrelated with other assets as they have zero variance. The inclusion of a risk-free asset in a portfolio offers a change in return that is linearly related to the change in risk based on the proportion in the portfolio.

In relation to the Capital Allocation Line (CAL), the introduction of the risk-free asset creates the possibility for the construction of portfolios with the combinations of both risky and risk-free securities (Bodie et al., 2019). Also known as the Capital Market Line (CML), the Capital Allocation Line is a line that is plotted on a graph to show all possible combinations of both risky and risk-free securities (Pilbeam, 2018). Herein, the graph reveals the expected return that an investor might earn via the adoption of a certain degree of risk within their investment (Nguyen et al., 2017). Furthermore, the slope of the Capital Allocation Line (CAL) is widely referred to as the reward-to-variability ratio.

### **2.2.6 Assumptions of the Modern Portfolio Theory [DA3]**

In the 1952 award-winning publication in the Journal of Finance, titled "Portfolio Selection", Harry Markowitz outlined the following assumptions for the Modern Portfolio Theory (ZongMing et al., 2017). These assumptions include:

1. The portfolio risk is measured and determined using the variability of the returns generated by the portfolio.
2. The theory believes that an investor has an aversion attitude towards risk.
3. The theory believes that an investor would prefer to increase consumption.
4. The theory assumes that the model period for investment analysis is for a single period.
5. The theory upholds the rationality of an investor in investment and finance-related decisions.
6. The theory believes that an investor's utility function is graphically concave because of the investor's aversion towards risk and preference for consumption.
7. The theory believes that an investor's maximization of portfolio return could either be at a given level of risk or at the minimal risk possible.

### **2.3 Portfolio theory and the CAPM Theory**

The emergence of the Capital Asset Pricing Model Theory was largely motivated by advances and further works on the modern portfolio theory that was developed by Harry Markowitz in 1952. Widely referred to as the CAPM theory, this theory was developed through the works and contributions of several scholars in the field of Financial Economics. Notable amongst these scholars were Jack Treynor (1961), William F Sharpe (1964), John Linter (1965), and Jan Mossin (1966). In 1972, further works of Fisher Black led to the development of a more robust and empirically influential version of the Capital Asset Pricing Model Theory, known as the Zero-beta CAPM or the Black CAPM (Rossi, 2016; Ruhani et al., 2018). This improved version

of the Capital Asset Pricing Model Theory ignores the assumption of a riskless asset that was present in the original model.

The Capital Asset Pricing Model can be conceptualized as a financial economics model that attempts to explain the subsisting relationship between the systematic risk of a risky investment and the expected return on the investment (Bodie et al., 2019). As a widely used model in the field of financial economics, the Capital Asset Pricing Model offers investors and financial economists the possibility of valuing risky financial assets such as stocks. This valuation is done via the computation of expected future returns for the assets based on the perceived risk and cost of capital for such assets.

The core assumption of the Capital Asset Pricing Model revolves around the idea that the risk and return profile of a given portfolio can be optimized. Herein, the idea of an optimal portfolio is such that offers the lowest possible risk for a given level of return (Rossi, 2016). This optimality is achievable as a result of portfolio diversification-inclusion of diverse assets/securities that improves the overall optimality of the portfolio via the efficient weighting of asset values. Through the application of diversification, it is assumed that all unsystematic/diversifiable risks will be eliminated, and only systematic/ undiversifiable risks will be remaining within the portfolio (ZongMing et al., 2017; Ruhani et al., 2018). Thus, the Capital Asset Pricing Model denotes the systematic/ undiversifiable risks with the beta coefficient.

### **2.3.1 Assumptions of the Capital Asset Pricing Model Theory**

The Capital Asset Pricing Model theory is built on the following foundational assumptions (Rossi, 2016):

1. The theory assumes that investors are rational and risk averse.
2. The theory seeks to maximize economic utility for investors.
3. The theory assumes that there is a broad and diverse range of securities and financial assets available to the investor.
4. The theory assumes that financial trade among securities and assets occurs without transaction costs.

5. The theory assumes that investors are price takers and cannot influence the prices of securities.
6. The theory assumes that investors have similar and homogeneous investment expectations.
7. The theory assumes that there are no limits on borrowing and lending at risk-free interest rates.
8. The theory assumes that investors and market participants are availed of the same information at the same time.
9. The theory assumes the liquidity and divisibility of securities and financial assets for investment purposes.

### **2.3.2 Portfolio theory and Arbitrage Pricing Theory**

The Arbitrage Pricing Theory was postulated and developed via the works of the renowned economist, Stephen Ross in 1976. Ross proposed the Arbitrage Pricing Theory as a linear factor model that is widely used by professionals in finance and asset management, as the benchmark for assessing commercial risk and other factors that may affect the performance of investments (Ruhani et al., 2018). The Arbitrage Pricing Theory can be conceptualized as a pivotal theory in finance and asset pricing which opines that the expected return of assets/securities can be modelled as a linear function of several factors and market metrics (Nguyen et al., 2017), whereby the sensitivity of changes in each factor is measured by each factor specific beta coefficient.

As an asset pricing and portfolio theory, Ruhani et al. (2018) the Arbitrage Pricing Theory and the Capital Asset Pricing Model theory are fundamental theories in the field of financial economics that attempt to improve the tenets of the modern portfolio theory. Unlike the Capital Asset Pricing Model theory, the Arbitrage Pricing Theory has a more restrictive set of assumptions. Notable among these assumptions is the belief that an investor will have a bespoke portfolio that is characterized by a set of betas rather than having the same market portfolio as postulated by the Capital Asset Pricing Model theory (AqabaBranch, 2018). This distinction of the Arbitrage Pricing Theory

exhibits its explanatory capability to model the performance of securities using several risk-weighted factors.

However, a major drawback of the Arbitrage Pricing Theory relates to the ambiguity in the selection and the determination of the appropriate number of explanatory factors to be included in the model. This grey area has been a source of contention among scholars and academics which has resulted in the development of three to five-factor models to predict return performance. Regardless of this, Ruhani et al. (2018) asserts that it is necessary to assert that empirical findings have suggested that in many cases that the Capital Asset Pricing Model theory modeling approach has outperformed the Arbitrage Pricing Theory predictive outcomes

Comparatively, further empirical findings suggest that the Arbitrage Pricing Theory can be perceived as a "supply-side" model as it reflects the sensitivities of economic conditions via the beta coefficients. Hence, the explanatory factors are effective in explaining the impact of systemic conditions on expected returns of investments. On the other hand, the Capital Asset Pricing Model theory is widely perceived as a "demand-side" model which seeks to resolve the problem of investor's utility maximization, from the purview of the market equilibrium.

## **2.4 Conceptual Framework: Mutual funds**

### **2.4.1 Definition of Mutual Fund / Conventional fund**

A mutual fund otherwise known as a Conventional fund is a collective investment company that pools money/funds from several investors for investment purposes (Alwi et al., 2019). These investors are bound by a mutually shared objective of investing the pooled funds in diverse financial assets and securities such as money market instruments, fixed income securities, and equities (Anwar and Arif, 2017). This conglomeration of investments that make up the mutual fund is generally referred to as a portfolio. As an investment company, Gil-Bazo et al. (2019) assert that the legal framework of mutual funds allows it to sell ownership units to potential investors in the form of shares that offers income streams to holders of such shares

As a collective investment scheme, mutual funds are a type of open-end investment company like hedge funds and Exchange Traded Funds that issue and redeem share

units directly to investors (Ben-David et al., 2017). Whilst the share units offered by open-end funds such as Mutual Funds are unlimited, the trading times of these shares are determined by the mutual fund managers. As a result of this, the price of mutual fund shares is fixed and determined once a day based on their Net Asset Value which is an indicator of their performance. Determination of the Net Asset Value can be derived by deducting the mutual fund's total liabilities from its total assets daily.

On the other hand, some collective investment scheme has a closed-end investment fund modus operandi. This type of fund operates like an investment company that sells limited share units to investors via an Initial Public Offering (Mishi and Chipote, 2014). Subsequent to the Initial Public Offering (Mishi and Chipote, 2014), the shares of the closed-end investment fund are listed on an exchange and are traded on the secondary market using the services of brokers (Gil-Bazo et al., 2019). Unlike the open-ended fund, these funds can be traded at any time as long as the exchange is open. As a result of this, the shares of a closed-end investment fund are traded at their market values rather than their Net Asset Value. Hence, closed-end investment funds are notable for being priced at a premium or at a discount relative to their Net Asset Value.

#### **2.4.2 Benefits of investing In Mutual funds**

Over the years there has been increasing popularity in favor of mutual funds among the investing community (Kumar, 2016; Agussalim et al., 2017; Anwar and Arif, 2017). Kumar (2016) The growing interest in a mutual fund can be attributed to the following benefits that mutual funds offer investors

- ***Professional portfolio management***

Investors in mutual funds enjoy the benefit of having a professional portfolio manager, who actively manages the mutual fund by conducting research on the portfolio securities, monitoring, rebalancing, and evaluating the performance of the portfolio. Usually, the mutual fund investor pays a small management fee as part of the portfolio expense ratio that is used to hire and engage the skills of a professional portfolio manager.

- ***Risk reduction and Diversification benefit***

Mutual funds offer the benefit of risk reduction and diversification. This is possible as mutual fund managers invest the pooled funds gotten from investors in a diverse set of numerous securities and financial assets. A typical mutual fund portfolio comprises over 50 securities and financial assets that are well screened, researched, and evaluated for diversification benefits using a statistical technique such as correlation analysis.

- ***Liquidity***

Investment in a mutual fund offers investors the benefit to redeem their investment at any time at the net asset value and include associated redemption fees. This offers a typical investor liquidity and access to his or her money within a short interval.

- ***Convenience and Affordability***

Mutual funds are notable for their ease of purchase and affordable minimum required investment sums. As a result, a potential investor can easily purchase mutual funds via a bank, broker, or investment company. Also, the transitional details of mutual funds are relatively easy to understand as details of mutual funds are typically summarised and simplified in fund fact sheets that are available to the general public.

- ***Fair pricing and stability in value***

Unlike most closed-end investment funds that are traded continuously when exchanges are open, mutual funds are only traded once a day. This trading structure of mutual funds offers fairness in the prices of a mutual fund as they are traded at closing Net Asset Value per day. This structure further eliminates fluctuations in prices and arbitrage opportunities that are caused by active investors and day traders who trade securities daily. The resultant effect of this is that mutual funds are perceived to be fairly stable in value as their values are elusive of the flaws of active trading.

- ***Dividend reinvestment***

Investment in mutual funds offers the opportunity for dividends and interest income generated from the mutual fund portfolio to be reinvested back into the mutual fund.

This benefit of reinvestment further increases the cumulative return on investment as well as the compounding effect on investment value.

### **2.4.3 Drawbacks of investing In Mutual funds**

- ***Tax inefficiency***

A major drawback of mutual funds is that they are proven to be tax inefficient. The tax inefficiency of mutual funds is largely due to their high turnover ratio that reflects the number of times a mutual fund portfolio changes within a year. These changes and rebalances in the portfolio composition often result in higher taxes that are borne by investors, as taxable gains for the year are distributed directly to the mutual fund investors and shareholders.

- ***Excessive costs and High Expense ratios***

Mutual funds that are actively managed are notable for being excessively costly to manage. Whilst mutual funds are negatively characterized by their high expense ratio, there are also several hidden and embedded costs that are passed onto investors of mutual fund investments. Amongst these are sales load costs that are often paid to the selling broker, as well as costs relating to research and training.

- ***Poor trade execution***

From an investor's perspective, although the mutual funds are widely favored for their stability and fair pricing as they trade once per day and closely to their Net Asset Value. However, this feature of mutual funds has evident weakness in the execution of trading opportunities as investors cannot take advantage of market timing and opportunities that are associated with active day trading.

- ***Management Abuses***

Another drawback of mutual funds is that more often than not, mutual funds are susceptible to corrupt practices and managerial abuses such as churning, and creative accounting. This is often a resultant effect of the pressures associated with meeting investors' performance expectations as well as ensuring adequate remuneration for professional fund management which are performance-based.

#### **2.4.4. Types of Mutual Funds**

Over the years, the evolution of mutual funds has witnessed the creation of diverse blends of mutual funds. Notable among these are the following types of mutual funds:

- **Money market funds**

Money market funds are funds that invest in money market instruments such as treasury bills, certificates of deposit, bankers' acceptance, commercial paper, and repurchase agreements. These instruments/ securities are short-term in nature and highly liquid as their maturity dates are less than a year. Hence, there are often exempted from tax implications relating to capital gains and losses that relate to the redemption of portfolio securities.

- **Equity funds**

Equity funds are a type of mutual funds that invest mainly in equities and stocks of companies based on the discretion of the fund manager. Although this type of fund primarily focuses on investing in stocks, it is also permissible in practice for the fund to invest a portion (about 5%) of its pooled funds in fixed income and money market securities. This fractional segment of the fund's portfolio provides the fund investors with liquidity that is required for share redemption purposes.

- **Exchange-Traded Mutual Funds**

Exchange-Traded Mutual Funds (ETMFs) are a type of mutual funds that are traded on exchanges like shares. Also known as Exchange-Traded Managed Fund, Exchange Traded Mutual Funds (ETMFs) combines the fundamental features of both open-end mutual fund and Exchange Traded Fund (ETF). This is explicated as ETMFs uses a typical open-end mutual fund that has a Net Asset Value to trade its shares on a stock exchange in real-time as a typical exchange-traded fund.

- **Fund of Funds**

Fund of funds is a type of mutual fund, whose portfolio invests in other investment funds rather than direct investments in securities such as equities, bonds, and money market instruments. Otherwise known as a multi-manager investment fund, this type

of mutual fund seeks to invest in a portfolio of securities that matches its investment goals and desired composition of securities.

- **Index Fund**

An index fund is a type of mutual fund that is created to track a broad or specific component of a financial market index such as the JSE All Share Index (JSE ALSI) or JSE Real Estate Investment Trusts Index. This investment fund follows a certain set of defined rules and replicates the performance of an index by constructing a portfolio that has the same proportion of underlying securities as the index.

- **Specialized sector funds**

Also known as specialty funds, Specialized sector funds are a type of mutual fund that is focused on investing in financial assets and securities that have distinct characteristics in common. This distinct feature could be in terms of sector, industry, geographical area, or type of security. Due to the lower level of diversification, Specialized sector mutual funds are notable for their potential higher return as well as risks.

- **Bond Funds**

Bond funds as a type of mutual fund are specialized mutual funds that hold a portfolio of securities that invest primarily in bonds and fixed income securities of different variants. The selection of bonds and fixed income securities for inclusion in a portfolio can be driven by type, nature, underlying security, maturity, and/or credit risk rating of the issuer. Hence, based on this perspective, examples of bonds and fixed income securities available to a mutual fund manager include Treasury bonds, Municipal bonds, Mortgage-backed bonds, short term bonds, Intermediate bonds, and long-term bonds.

- **International funds**

International funds are a type of mutual funds that invest in securities outside their country of domiciliation. These investment funds are such that have a global outlook and a worldwide investment universe for security selection. For instance, some international mutual funds invest in emerging market securities, which are equities,

fixed income securities, and money market instruments of developing regions and nations. This type of security is often poised to offer higher average returns than securities from other geographical regions.

- **Balanced funds**

Balanced funds are a type of mutual funds that holds a relatively stable weighting of both equities and fixed income securities. This type of mutual fund is designed as a life-cycle fund that seeks to create a portfolio that manages an individual's entire investment. Herein, different investment styles that range from aggressive to conservative investment strategies are patterned according to the demographic features of potential investors. For instance, an aggressive investment style that seeks to attract potential younger investors is created via static allocation of life-cycle funds. Whereas, for potential older investors, a conservative investment style-driven portfolio is created using targeted maturity funds.

## **2.5 Islamic funds**

Islamic funds are widely referred to as Sharia-compliant investments, as their investing basis must act following the principles of the Sharia law- the Islamic law, governing all aspects of a Muslim's life (Hasan et al., 2020). To understand the core of the fundamentals of Islamic investing correctly, it is essential to detail the beliefs of Islam that give rise to these economic and investment principles and to compare the differences between the current Conventional financial and investment system and an Islamic one.

The Quran lays down the foundation for an Islamic investment and banking system. Amongst these is the prohibition of interest. The reason for the prohibition of interest in the Islamic investment system and structure is that it creates and leads to an unequal distribution of wealth growth in a society and economy.

The following verses from the Quran summarise these prohibitions:

1. *"Whatever interest you pay to increase people's wealth does not increase in God's sight. Whatever you pay as zakaah (charity), seeking God's pleasure, such people truly multiply."* (Holy Quran, Chapter 30: Verse 39).

2. *"O you who believe! Do not consume interest, compounding it many times over. Fear God that you may be successful. "(Holy Quran, Chapter 3: Verse 130).*
3. *"And God has permitted trading and prohibited interest." (Holy Quran, Chapter 4: Verse 275).*

In addition to the Quran, the people of the Islamic faith also follow and adhere to the instructions and behaviour of the Prophet Muhammad (PBUH), which is commonly referred to as the Sunnah. Islamic scholars research and study in detail the Quran and Sunnah and apply the economic principles to different periods pending on each unique economic and investment situation and circumstance (Hayek, 2016; Tuba, 2017).

### **2.5.1 Distinctive features of Sharia-compliant investments**

The distinctive features that invest to be Sharia-compliant are discussed briefly below (Kholvadia, 2017; Hasan et al., 2020):

- *The Sharia investing approach promotes the use of profit-sharing together with risk sharing and partnership schemes as interest commonly referred to as *riba* is forbidden in Islam. Hence, any business transaction or investment that has an element of interest inclusion will not be permissible. Some scholars allow a portion of non-permissible income, which will need to be given out as charity to purify the transaction, but this will be discussed in detail in the dissertation.*
- *There should be no speculation in a transaction as gambling is one of the features that would render the investment and transaction impermissible.*
- *The commodity must be owned by the seller and described in detail at the time of the transaction, as the sharia does not allow transactions to be vague and uncertain.*

### **2.5.2 Islamic Investment Screening Criteria**

According to Khadidja (2019), the vision of Islamic socio-economic justice is centred on eliminating interest and all other exploitative components from the economic sphere. At the outset of Islamic investments, investments must go through a thorough

screen selection process, which is classified, into qualitative and quantitative criteria that are required within the guidelines of the sharia.

**Qualitative screens** filter out companies primarily based on their nature of operation and trading that are not following the sharia. Examples of such companies are businesses manufacturing and selling alcohol and drugs, the pornographic industry, the gambling sector of the economy, and businesses whose main or bulk source of income is the earning of interest.

**Quantitative screens** examine certain financial ratios of companies that pass the quantitative screen criteria to ensure that they meet the required criteria set out by the guidelines of the sharia. Waris et al. (2018), suggest three main financial ratios that are responsible for the quantitative screening process for Islamic funds are the leverage ratio, cash ratio, and liquidity ratio.

### **2.5.3 Islamic banking and investment in South Africa**

The Muslim population in South Africa is considered a minority making up 2% of the country's population. Although this is percentage seems fractional about the total South African population at the time of the survey, it should be noted that the influence that this minority population plays in South African economics is significant (StatsSA, 2016). More so, the constitutional rights and freedom that the citizens of South Africa are entitled to allow this minority population to practice their religion free from any harm or prejudice.

In November 2014, The National Treasury in South Africa issued a \$500 million Sukuk (Islamic type of bond). This attracted local Muslim investors as well as investors from the Middle East to invest in this government Sukuk.

Kholvadia (2017) asserts that Islamic banking is still in its infancy in South Africa in terms of existence and market size. Although at the time only two of the major Big Four Conventional banks offer Islamic banking products, this paradigm has evolved drastically in recent years. Today, the majority of Conventional banks in South Africa have accommodated the Islamic banking products and have formed a separate Islamic finance and investment division in their business models.

Hence, it can be seen that the need for Islamic banking and investments is considered to be in demand globally as well as in the South African economy.

## **2.6 Empirical Framework: Review of Relevant Literatures**

In a study conducted in Saudi Arabia, Merdad et al. (2010) examined in comparative terms the performance of both Conventional and Islamic mutual funds that are managed by The Hongkong and Shanghai Banking Corporation Limited (HSBC). The study considered seven years, from 2003 to 2010, which were divided into four categories of the bull period, financial crisis period, bear period, and full period for in-depth comparative analysis. The comparative study utilized both non-risks adjusted performance measures as well as risk-adjusted performance measures such as the Average returns, Standard deviation, Coefficient of variation, Sharpe, MM, Jensen Alpha, and Treynor measurements.

Based on the analysis, it was found that the Islamic fund outperformed the Conventional funds in both the bearish and financial crisis periods but underperformed the Conventional fund in the bullish and full periods.

Similarly, AbdelHakem (2012) conducted a comparative study that evaluated the performance of twenty-four Conventional mutual funds and eight Islamic mutual funds over 96 months ranging from 2006-2011. The researchers considered the analysis in sub-periods of the pre-financial crisis period, the financial crisis period, and the whole period. This analysis was implemented using both non-risk adjusted performance measures as well as risk-adjusted performance measures such as the Net Asset Values (Navarro-Martinez et al.), Standard deviation, Coefficient of variation, Sharpe, MM, Jensen Alpha, and Treynor metrics. Among other findings, the results of the analysis conclude that while there is no significant difference between the overall performance of Conventional and Islamic mutual funds, research evidence indicates that Islamic mutual funds slightly outperform Conventional mutual fund.

Ahmed and Soomro (2017) in their study considered the performance of both Conventional and Islamic equity funds listed on the Karachi Stock Exchange in Pakistan. The study which considered twenty-one Conventional funds and four Islamic funds that have survived the 2009 Global Financial Crisis was done over five years from 2009 to 2013. Findings of the study noted that Conventional funds outperform

Islamic funds based on non-risk adjusted performance as measured via the fund average returns. However, with the utilization of risk-adjusted performance measures such as Sharpe and Treynor ratios, it was found that the Islamic funds exhibited better overall growth potential than their Conventional peers. Of noteworthy, the study further found that both funds performed better than their selected market benchmarks.

Agussalim et al. (2017) sought to evaluate the performance between Conventional mutual funds and Sharia-compliant mutual funds in Indonesia. The research inquiry considered data over seven years (2007-2014) and utilized stock mutual funds that are listed on the Indonesia Stock Exchange. The study utilized popular risk-adjusted performance metrics such as Sharpe, Jensen Alpha, and Treynor metrics to assess both the return and risk performance of the stock mutual funds. In the assessment of the return performance, the study found the Conventional mutual funds to be better than the sharia mutual funds as indicated by the average returns and Sharpe index. However, the risk performance analysis as measured by the Jensen Alpha and Treynor metrics, it was noted that the sharia mutual funds are less risky than the Conventional mutual funds. Regardless, the t-test results suggested that the differences in the return and risk analyses of the funds are not significant.

In a study conducted by Banani and Hidayatun (2017), the researchers comparatively explored the performance of Islamic and Conventional indices in developing economies such as Indonesia and Turkey. The study which adopted a purposive sampling technique compared the performance of Islamic Indices such as the Jakarta Islamic Index and the Dow Jones Islamic Market Turkey vis-à-vis Conventional indices such as the LQ45 index and the Dow Jones Turkey Titans 20 index. This comparative analysis was done over four years (2010-2014), using risk-adjusted performance metrics such as the Sharpe, Jensen Alpha, and Treynor measures. Based on the empirical results, it was found that the overall performance of Islamic indices is not significantly lower than the Conventional indices. This was based on evidence that explicated that while the Jakarta Islamic Index insignificantly outperformed the LQ45 index in Indonesia, the Dow Jones Islamic Market Turkey insignificantly underperformed and the Dow Jones Turkey Titans 20 index in Turkey.

Patel (2018) noted that South African Shariah indices underperformed Conventional market indices over 5 years ranging from 2012 to 2017. The study which analyzed

Shariah-compliant funds using the 5 investment categories highlighted by the Association for Savings and Investment South Africa (ASISA) further noted several findings. Amongst these notable findings include: the underperformance of Sharia-compliant multi-asset and income funds and the outperformance of Sharia-compliant REITs and global equity funds.

Alwi et al. (2019) evaluated the performance of Islamic and Conventional mutual funds in Malaysia from 2007 to 2015. The inquiry divided the study period into sub-periods of the financial crisis and whole periods, which were compared with the performance of the MSCI Malaysia Islamic Index and Kuala Lumpur Composite Index benchmarks. The study applied both non-risks adjusted performance measures as well as risk-adjusted performance measures such as the Mean, Standard deviation, Sharpe ratio, Jensen Alpha, and Treynor metrics. The empirical findings of the study suggest that while the Islamic mutual fund slightly performed better than the Conventional fund, it was further found that both mutual funds (Islamic and Conventional) outperform their market benchmarks in both periods.

Using both risk-adjusted performance measures as well as the Data Envelopment Analysis model, Arif et al. (2019) performed a comparative evaluation of Islamic and Conventional mutual funds listed on the Pakistani Stock Exchange. The study which was conducted over eight years (2010-2017), considered 30 Islamic and Conventional mutual funds. This was done using risk-adjusted performance measures such as Sharpe ratio, Jensen Alpha, and Treynor ratio as well as the Data Envelopment Analysis model. Upon analysis, the Sharpe and Treynor ratios evidenced that the Islamic mutual fund performed better than the Conventional mutual fund. However, from the Jensen Alpha standpoint, it was noted that the Islamic mutual fund underperformed in comparison to the Conventional mutual fund. Furthermore, results from the Data Envelopment Analysis model suggest that the Islamic mutual fund exhibited higher efficiency than the Conventional mutual fund.

Omri et al. (2019) sought to comparatively explore the performance of mutual funds in Saudi Arabia using the Riyadh Capital mutual funds as a proxy for analysis. The researchers adopted both absolute and relative risk-adjusted measures as well as single and multifactor models to analyze the dataset which spanned from 2009 to 2014, against both local and global market benchmarks. Based on the empirical

findings, the research evidence suggests that the Islamic fund outperformed the Conventional fund and market benchmarks. Although, this outperformance was only statistically significant in the local market. The scholars further assert that Islamic funds tend to slightly favor a contrarian investment strategy.

Shaikh et al. (2019) comparatively evaluated the performance of Conventional and Shariah-compliant equity and income mutual funds in Pakistan. The analysis utilized both non-risk adjusted performance and risk-adjusted-performance measures such as the NAV, MM, Standard deviation, Sharpe ratio, MM, Information ratio, Jensen Alpha, and Treynor measurements to analyze a total of 60 funds over twenty years. The findings of the analysis suggest that the Islamic equity funds are better off with positive Sharpe and Treynor ratios. Its further evidence that the Islamic income funds underperform the market benchmark as a result of their strict shariah-compliant requirements. Regardless, the overall findings suggest that Islamic equity funds are slightly less risky than both the Conventional and market benchmarks.

In an empirical comparative study, Alam and Ansari (2020) evaluated the performance of both Conventional and Islamic indices in India. These indices comprised of four Conventional indexes and three Islamic indexes which spanned from 2006 to 2018. The analysis utilized both non-risks adjusted performance measures, risk-adjusted performance measures as well as factor models. Amongst the computations done were the Average returns, Standard deviation, Coefficient of variation, Sharpe ratio, MM, Information ratio, Jensen Alpha, Treynor measurements, Fama-French, and Carhart factor models. Based on the analysis, it was found that the Islamic indices provided superior return performance than the Conventional indices. However, it was further noted that the difference in the performance is not statistically significant.

Whilst considering emerging markets in Asia, Latin America, and Europe, Trabelsi et al. (2020) conducted a performance analysis of Islamic, Conventional and Mixed portfolios from 2002 to 2017. The dataset which consisted of MSCI Islamic stock indices as well as their American counterparts utilized a Markov regime-switching model and Sharpe ratios to evaluate and analyze the performance of the portfolios vis-à-vis the selected market benchmarks. Upon analysis, the study found that the Islamic portfolio slightly offers superior performance than the Conventional portfolio. Further

analysis of the mean difference test evidence that this superior performance is not statistically significant.

## **2.7 Summary**

Chapter two of this research study covered the theoretical, conceptual, and empirical frameworks. Herein, the researcher discussed the relevant and applicable theories such as the Modern Portfolio Theory, the Capital Asset Pricing Model theory as well as the Arbitrage pricing theory. Also, the chapter succinctly clarified the concept of mutual funds and Islamic funds as a type of mutual fund. Lastly, the chapter provided a review of relevant empirical literature.

The next chapter of this research study will focus on the research methodology of the research study.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

Chapter three of this research study focuses on the research methodology. This chapter helps clarify the broad framework devised and utilized to achieve the objectives and overall aim of the research study. In this chapter, the researcher critically discusses the data collection procedures, the research study variables, data analytic methods as well as the relevant model specification. Furthermore, the data interpretation and ethical considerations are discussed.

#### **3.2 Data collection**

The relevant secondary data utilized for this study was mainly obtained from the Infront Database. This robust financial database provided the researcher with the needful daily performance returns of the necessary unit trusts and indices. The daily performance returns for the Islamic unit trusts and the Conventional unit trusts were gotten from the Johannesburg Stock Exchange (JSE) market data. For the indices, both the JSE Shariah All Share Index (J143) and the JSE All Share Index (J203) were gotten from the Johannesburg Stock Exchange (JSE) market data. However, the daily performance returns namely, the Dow Jones Islamic Market World and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East, and Africa (MSCI EM EMEA) indices were sourced from the Dow Jones Index and Morgan Stanley Composite Index, which are global indices.

The research study considered a dataset that spanned over ten consecutive years (120 months). The period ranged from 1st of November 2007 to 31st October 2017, was categorized into three phases of the pre-financial crisis (10 months), the Financial Crisis (17 months), and the post-Financial Crisis (93 months). For standardization, the researcher ensured that the dataset timeframe of the selected unit trusts was comparatively suitable for both the Islamic and Conventional unit trusts.

### **3.3 Research Population and Sample**

For this research study, the research population was ascertained based on the total number of unit trusts that were actively operating in the Johannesburg Stock Exchange (JSE) at the time of this study. Whilst the scope of this study considered unit trusts over a 10-year period which spanned from 1st of November 2007 to 31st October 2017, it is necessary to state that a few numbers of unit trusts have existed on the Johannesburg Stock Exchange (JSE) before this time. However, to effectively capture a sizeable number of both Islamic and Conventional unit trusts with available data for the objective of this study, the researcher utilized this timeframe.

Thus, at the time of this study, 5450 funds were listed on the Johannesburg Stock Exchange (JSE) across 58 different fund categories. Of this number, there were 29 Islamic equity funds and 42 Small-Cap equity funds. For this study, the researcher utilized the South African Small Cap equity fund as a representation of the Conventional (non-Islamic) fund.

From this population, the research study sample included 8 Islamic funds and 27 Conventional funds that are listed on the Johannesburg Stock Exchange (JSE). The selected funds for this research study are descriptively presented in Tables 3.1 and 3.2, in the appendix section.

### **3.4 Research study variables**

#### **3.4.1 Dependent variable**

The dependent variables in this research study refer to the mean return performance of the unit trusts (Badr, 2016). This consists of the mean return performance for both the Islamic funds and the Conventional fund. The returns performance of both funds was considered in the perspectives of both non-risks adjusted return performance as well as risk-adjusted return performance (Badr, 2016). Whilst the non-risk adjusted return performance was computed using the capital gain plus income, the risk-adjusted return performance was calculated using financial models such as the Sharpe ratio, Treynor ratio, Jensen Alpha, and the Modigliani-Miller ratio.

### **3.4.2 Independent variables**

The independent/explanatory variables considered in the research study relating to the comparative benchmark variables. The comparative benchmarks as the explanatory variables of this research study sought to explain the return performance of both the Islamic and Conventional funds vis-à-vis the return performance of selected benchmarks (Badr, 2016). These selected benchmarks consisted of both single/local and multiple/global indices (Badr, 2016). For the single/local, both the JSE Shariah All Share Index (J143) and the JSE All Share Index (J203) from the Johannesburg Stock Exchange (JSE) were used as South African benchmarks. While multiple/global benchmarks comprised of returns the Dow Jones Islamic Market World and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East, and Africa (MSCI EM EMEA) indices.

### **3.6 Data analysis**

The data analysis of this research study considers the descriptive statistics, the mean pair t-test, the correlation analysis, as well as the investment performance models that were applied by the researcher to achieve the clearly defined research objectives and research questions of this research study (Badr, 2016). As these analytical methods are crucial to the achievement of the overall aim of the research study, the researcher deems it fit to succinctly clarify their application in the subsequent sections of this chapter.

#### **3.6.1 Objective One**

The foremost objective of this research study was to comparatively analyze the non-risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices (Alwi et al., 2019; Omri et al., 2019; Alam and Ansari, 2020; Trabelsi et al., 2020). This was achieved via the use of descriptive-analytical methods as well as the computation of cumulative returns performance. Thus, to effectively achieve this objective, the researcher will utilize statistical techniques in the computation of non-risk adjusted returns in terms of the average returns, minimum returns, maximum returns, and cumulative returns. These computed statistics were analyzed descriptively using tables and graphs which were presented in four phases- the pre-financial crisis period, the Financial Crisis period, the Post Financial Crisis

period, and the Entire period. These analyses were carried out using the Microsoft Excel spreadsheet and analytical tool.

### **3.6.2 Objective Two**

Subsequently, the second objective of this research study sought to comparatively analyze the risk-adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices (Alwi et al., 2019; Omri et al., 2019; Alam and Ansari, 2020; Trabelsi et al., 2020). This objective was accomplished via the computation of risk-adjusted performance metrics for both absolute risk-adjusted performance and relative risk-adjusted-performance.

Whilst the computation of the absolute risk-adjusted returns were considered in terms of the Sharpe ratio, Standard deviation, and Coefficient of variation, the researcher computed the relative risk-adjusted returns in terms of the MM measure, Treynor ratio, Jensen alpha, Beta, and R-squared coefficient. These computed statistics were analyzed descriptively using tables that were presented in four phases- the pre-financial crisis period, the Financial Crisis period, the Post Financial Crisis period, and the Entire period. These analyses were carried out using the Microsoft Excel spreadsheet and analytical tool as well as the Python programming tool using the Jupiter notebook interface.

### **3.6.3 Objective Three**

Finally, the third research objective sought to determine the extent of the difference between the performance of Islamic and Conventional portfolios (Alwi et al., 2019; Omri et al., 2019; Alam and Ansari, 2020; Trabelsi et al., 2020). To actualize this research objective, the researcher conducted a mean difference testing using t-test and Correlation analysis to explore the extent of the difference between the performance of Islamic and Conventional funds. These computed statistics were analyzed descriptively using tables that were presented in four phases- the pre-financial crisis period, the Financial Crisis period, the Post Financial Crisis period, and the Entire period. These analyses were carried out using the Microsoft Excel spreadsheet and analytical tool as well as the Python programming tool using the Jupiter notebook interface.

### 3.7 Model specification for portfolio performance evaluation

To evaluate the performance of a fund, both the non-risk adjusted returns model and risk-adjusted models can be utilized. These models are succinctly discussed in the following sections with the necessary mathematical equations.

#### 3.7.1 The Non-Risk adjusted Model

The non-risk adjusted returns model calculated the returns of a portfolio or fund by the summation of both the capital gains and the dividend incomes of the portfolio or fund (Merdad et al., 2010; AbdelHakem, 2012; Reddy et al., 2017). This is a simplistic and basic approach to calculating the return performance of a portfolio or fund, as it does not consider any variant of risk associated with the performance of the portfolio or fund. This method utilizes the Net Asset Values (NAVs) of the portfolio or fund to compute the return performance of a portfolio or fund. Thus, the formula for calculating the non-risk adjusted returns is expressed in the mathematical equation below:

$$R_{i,t} = \frac{NAV_{i,t} - NAV_{i,t-1} + D_{i,t}}{NAV_{i,t-1}}$$

Where:

$R_{i,t}$  = Total return of an individual fund (i) at month (t)

$NAV_{i,t}$  = Net Asset Value of an individual fund (i) at month (t)

$NAV_{i,t-1}$  = Net Asset Value of an individual fund (i) at month (t-1)

$D_{i,t}$  = Cash disbursements or Dividends of an individual fund (i) at month (t).

The researcher constructed two portfolios based on defined time phases [Pre-Financial Crisis (10 months), the Financial Crisis (17 months), the Post Financial Crisis (93 months), and the Entire period (120 months)] and category (Islamic fund, Conventional fund and Both).

To effectively compare the performance of these portfolios based on these distinctions, the researcher utilized the following formula:

$$R_{p,t} = \sum_{i=1}^{n,t} \frac{R_{i,t}}{n,t}$$

Where:

$R_{p,t}$  = Return at month (t) for an individual portfolio (P: Islamic or Conventional)

$R_{i,t}$  = Total return at month (t) of an individual fund (i) that belongs under either: The Conventional category if p= Conventional or Islamic category if p= Islamic.

n, t = The number of individual funds under each category (Conventional or Islamic) at month (t).

To effectively assess the non-risk adjusted returns performance of the portfolios or funds comparatively, the researcher computed the average return, Minimum return, maximum return, and cumulative return for the individual portfolios or funds (Islamic fund or Conventional fund).

### **3.7.2 The Risk-Adjusted Models**

Unlike the non-risk adjusted model discussed above, these are a set of models that have been developed by renowned scholars and Nobel Laureates in the field of finance and economics to improve performance evaluation. The crux of these models revolves around the inculcation of risk in the performance evaluation of securities, portfolios, or funds. Hence, these models are widely dubbed as risk-adjusted models. The notable risk-adjusted models adopted in this research study are discussed succinctly below.

#### **3.7.2.1 Sharpe ratio**

The Sharpe ratio was invented by the Nobel Laureate William F Sharpe in the year 1966, as a measure for calculating risk-adjusted returns in absolute terms. This ratio helps an investor to determine the excess return that will be received by the investor for taking additional risk (Bodie et al., 2019). This is done via the computation of the average net return of the risk-free return that is earned by the investor for each unit of total risk borne by the investor. Hence, as an absolute measure, the Sharpe ratio is a suitable indicator of how well an investor is being compensated for taking additional

risk, as determined by the standard deviation of the portfolio. Ideally, the greater the Sharpe ratio, the better the portfolio risk-adjusted return in comparison to other portfolios being evaluated. The formula for the Sharpe ratio is explicated below:

$$S = \left( \frac{R_p - R_f}{\sigma_p} \right)$$

Where:

$S$  = the Sharpe ratio

$R_p$  = the return on a single portfolio

$R_f$  = the return on the risk-free rate (90-day T-bills)

$\sigma_p$  = standard deviation of returns for on a single portfolio.

### 3.7.2.2 Treynor ratio

Jack Treynor developed the Treynor ratio as a relative measure for computing risk-adjusted returns of portfolios using systematic risk. Unlike Sharpe who calculated risk-adjusted return based on total risk, Treynor distinguished risk in two categories of systematic and unsystematic risk. While the unsystematic risk is such risk that is specific to a company and can be diversified by the portfolio manager or investor via asset allocation and securities selection, the systematic risk is an inherent market risk that cannot be diversified by the portfolio manager or investor via asset allocation and securities (Reddy et al., 2017; Ahmad and Alsharif, 2019). According to the Treynor ratio, the performance of a portfolio is better evaluated using the systematic risk which is represented by the "beta". As a relative risk-adjusted performance model, the Treynor ratio measures the performance of a portfolio as a return per unit of systematic risk. This reflects the ability of a portfolio manager or investor to effectively diversify the unsystematic risks in comparison to other portfolio managers or investors. Hence, as a performance evaluation tool, the portfolio fund that provides a higher Treynor ratio is preferred to a portfolio fund that provides a lower Treynor ratio.

The formula for the Treynor ratio is explicated below:

$$T_A = \frac{R_a - R_f}{\beta_a}$$

Where:

$T_A$  = the Treynor ratio

$R_a$  = the return on a single portfolio

$R_f$  = the return on the risk-free rate (90-day T-bills)

$\beta_a$  = the beta as measured by the volatility of a single portfolio in relation to the JSE index.

### 3.7.2.3 Jensen Alpha

The Jensen Alpha measure is a relative risk-adjusted performance return measure that was developed by American Financial Economist, Michael Jensen in 1968. As a risk-adjusted performance measure, the Jensen alpha seeks to determine the abnormal return of a security, portfolio, or fund in comparison to its theoretical expected return as calculated using the CAPM technique (Chandra, 2017; Ahmad and Alsharif, 2019). In practical computational terms, the ascertained abnormal return could either be a positive or negative alpha based on the excess or deficit of the portfolio return in comparison to the CAPM return.

Within this context, a positive alpha i.e. the portfolio or fund return exceeds the CAPM return indicates that the portfolio or fund has outperformed its benchmark market return as denoted by the CAPM return. Likewise, a negative alpha i.e. the portfolio or fund return falls below the CAPM return, indicates that the portfolio or fund has underperformed its benchmark market return as denoted by the CAPM return. The formula for the Jensen Alpha is explicated below:

$$\alpha = R_p - [R_f + \beta(R_m - R_f)]$$

Where:

$\alpha$  = Alpha

$R_p$  = the return on a single portfolio

$R_f$  = the return on the risk-free rate (90-day T-bills)

$\beta$  = Beta

$R_m$  = Market return

### 3.7.2.4 MM or M2 Measure

Often referred to as the MM or M2 measure, the Modigliani & Modigliani relative risk-adjusted performance measure was developed in 1997 by Nobel-prize winner Franco Modigliani and his granddaughter, Leah Modigliani. As a risk-adjusted performance measure, this measure is widely perceived as an extension of the Sharpe ratio which assesses the performance of a portfolio or fund in relative terms (Chandra, 2017). The MM or M2 measure does this by calculating the risk-adjusted performance of a portfolio or fund vis-à-vis a market benchmark in percentage terms. This computation helps to reveal the difference in the risk-adjusted performance of a portfolio or fund and the market benchmark using the same standard deviation as a common risk adjustment basis. The formula for the MM or M2 measure is explicated below:

$$M^2 = [SR_p * SD_m] + R_f$$

Where:

$$M^2 = M^2 \text{ RAP}$$

$SR_p$  = Sharpe ratio of the portfolio

$SD_m$  = Market Standard Deviation

$R_f$  = the return on the risk-free rate (90-day T-bills)

### 3.7.3 Risk Measurement Models

#### 3.7.3.1 Standard deviation

The standard deviation is a statistical measure that is widely used in quantitative professions such as Finance and Investments to measure the risk of a security, portfolio, or fund. The standard deviation does this by measuring the level of dispersion or variation among a set of values (Chandra, 2017). As a measure of risk, a low standard deviation indicates a low level of risk in security, portfolio, or fund as the values tend to cluster closely around the mean, or the expected value of the number set or historical returns. Conversely, a high standard deviation indicates a high level of risk in security, portfolio, or fund as the values tend to spread out over a wider range around the mean, or the expected value of the number set or historical returns. Thus, the formula for the standard deviation is explicated below:

$$S_p = \sqrt{\frac{\sum |X - \bar{X}|^2}{n}}$$

Where:

$S_p$  = Standard Deviation of the portfolio

N = Size of the portfolio

X= Individual returns of the portfolio

$\bar{X}$  = Mean return of the portfolio

### 3.7.3.2 Coefficient of variation

The coefficient of variation is a statistical measure that measures variability and dispersion of numbers within several series of datasets around the mean or expected value. In contrast to the standard deviation, the coefficient of variation offers the benefit of comparing levels of risks across different datasets with varying means and standard deviations (Chandra, 2017). This is done via calculating the ratio of the standard deviation to the mean. When applied in the field of finance and investment, the coefficient of variation helps an investor to determine the level of risk per unit of the average return that is expected from an investment in security, portfolio, or fund. As a performance evaluation measure, a lower coefficient of variation is preferred to a higher coefficient of variation. Hence, the formula for the coefficient of variation is explicated below:

$$CV = \frac{SD}{\bar{X}}$$

Where:

CV = Coefficient of variation of the portfolio

SD= Standard Deviation of the portfolio

$\bar{X}$  = Mean return of the portfolio

### 3.7.3.3 Beta

While both the standard deviation and coefficient of variation are absolute risk measures, the beta coefficient is a relative risk measure that considers risk as a

coefficient of market performance benchmark. This coefficient measures the volatility of a security, portfolio, or fund in simulation with general market volatility (Chandra, 2017; Nofsinger, 2017). As a variable in the Capital Asset Pricing Model, the beta helps in the determination of the cost of equity via the estimation of the perceived risk in the determination of the rate of return.

As a performance indicator, a beta coefficient that is higher than one implies that the security, portfolio, or fund is more volatile than the overall market. Conversely, a beta coefficient that is less than one, implies that the security, portfolio, or fund is less volatile than the overall market. Thus, the formula for calculating beta is explicated below:

$$\beta = \frac{cov(r_p, r_m)}{var(r_m)}$$

Where:

$\beta$  = Beta of the portfolio

$r_p$  = Return on the portfolio

$r_m$  = Return on the market

$cov(r_p, r_m)$  = covariance of the portfolio and the market

$var(r_m)$  = variance of the market

### **3.8 Data Interpretation**

Subsequent upon the data collection and analysis of the secondary data, the researcher ensured that the analysed data were further presented and interpreted using the relevant descriptive analytical techniques such as tables, charts, and narratives. This was done to observe and evaluate the relationships that exist between the highlighted research study variables in both descriptive and inferential contexts. In furtherance, the results of these findings were discussed comparatively, with reference to existing relevant literature identified in chapter two of this study.

### **3.9 Ethical Consideration**

The commencement of this research study was foremostly subjected to the approval of the University's Research Ethics Office. This department within the University is

saddled with the responsibility of ensuring that necessary ethical procedures are been observed to the strictest terms possible. Therefore, before embarking on the research journey, the researcher and the supervisor ensured that necessary consultations were made with the University's Research Ethics Committee for review and approval of the proposed research study. Thus, the researcher affirms to the incorporation of all research ethos as stipulated by the University Research Ethics office in the conduct of this research study.

### **3.10 Summary**

This chapter considered the research methodology of the research study. In this chapter, the researcher critically discussed the data collection procedures, the research study variables, data analysis methods as well as the relevant model specification. Furthermore, the data interpretation and ethical considerations were discussed.

The next chapter of this research study will focus on the data analysis, data interpretation, and the discussion of the findings of the research study vis-à-vis the relevant literature reviewed in the previous chapter,

## CHAPTER FOUR

### DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF FINDINGS

#### 4.1 Introduction

The chapter four of this research study covers the empirical data analysis, interpretation of results and discussion of research findings. Herein, the researcher adopts a simplified and thematic approach to achieve the primary goal of this chapter. This was done as the empirical analysis; interpretation of results and discussion of research findings were clinically synchronised and presented with the objectives of the research objectives.

#### 4.2 Empirical data analysis and interpretation of results

This section of the research study considers the empirical analysis of the secondary data of the study. In the subsequent sub sections, the researcher explicates the achievement of the research objectives of this study via the application of several statistical techniques and risk adjusted models. furthermore, the results of the analysis were succinctly interpreted and simplified for understanding.

##### ***4.2.1 Objective One: Non-Risk- Adjusted Performance Analysis***

The objective one of this research study comparatively considers the non-risk adjusted performance for both the Islamic and the Conventional portfolios vis-à-vis the selected market indices (JSE Shariah All Share Index, JSE All Share Index, Dow Jones Islamic Market World Emerging Markets Index and MSCI Emerging Markets EMEA Index). Herein, the researcher adopted several relevant non-risks adjusted models and descriptive statistical techniques to succinctly evaluate the non-risk adjusted performance of both the Islamic and the Conventional portfolios as well as the selected market indices.

Table 4.1 below exhibits and adequately presents the relevant descriptive statistics for the research study. These statistics comprise of the non-risk adjusted returns (Average return, minimum return, and maximum return), and the Cumulative Returns for both the Islamic portfolio, the Conventional portfolio as well as the various benchmark indices considered.

### *Descriptive Statistics and Cumulative Returns*

Table 4.1 of this research study as shown below, reports the descriptive statistics for both the Islamic and Conventional portfolios as well as the selected market benchmark indices. These selected market benchmark indices consist of the JSE Shariah All Share Index (locally focused Islamic benchmark index), the JSE All Share Index (locally focused Conventional benchmark index), the Dow Jones Islamic Market World (globally focused Islamic benchmark index) and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa (globally focused Conventional benchmark index).

Furthermore, this research study evaluates the performance of the portfolios and benchmark indices in 4 distinct periodical phases of the pre-financial crisis (10 months), the Financial Crisis (17 months), the post Financial Crisis (93 months) and the entire period (120 months). Based on these periodical segmentations, the non-risk adjusted returns were computed in terms of the average returns, the minimum return and the maximum return.

Lastly, Table 4.2 of this research study as shown below depicts and reports the computation of the cumulative returns.

Table 4.1: Descriptive Statistics- Average Return, Minimum, and Maximum

<b>DESCRIPTIVE STATISTICS - Non-Risk Adjusted Return</b>								
		<b>Unit Trusts</b>			<b>Benchmarks/Indices</b>			
<b>Period</b>	<b>Metric</b>	<b>Islamic Unit trusts</b>	<b>Conventional Unit trusts</b>	<b>Combined Unit trusts</b>	<b>JSE Shariah ALSI (143)</b>	<b>JSE ALSI (203)</b>	<b>Dow Jones Islamic Market World Emerging Markets Index</b>	<b>MSCI Emerging Markets EMEA index</b>
<b>Pre-financial crisis (Nov 2007 - Aug 2008)</b>	<b>Average return</b>	-0.0258	-0.0994	-0.0626	0.0000	-0.0005	-0.0029	-0.0009
	<b>Minimum return</b>	-5.3064	-5.6307	-5.4685	-0.0521	-0.0461	-0.2560	-0.0532
	<b>Maximum return</b>	2.5521	2.7475	2.6498	0.0626	0.0528	0.1229	0.0439
<b>Financial crisis (Sept 2008 - Jan 2010)</b>	<b>Average return</b>	-0.0022	0.1621	0.0799	-0.0001	0.0001	0.0013	0.0000
	<b>Minimum return</b>	-4.5488	-5.2716	-4.9102	-0.0919	-0.0730	-0.0464	-0.1647
	<b>Maximum return</b>	4.7803	11.3309	8.0556	0.0974	0.0707	0.0535	0.1214
<b>Post financial crisis (Feb 2010 - Oct 2017)</b>	<b>Average return</b>	0.0377	0.0503	0.0440	0.0002	0.0004	0.0002	0.0002
	<b>Minimum return</b>	-3.5812	-31.4413	-17.5112	-0.0573	-0.0428	-0.0823	-0.0515
	<b>Maximum return</b>	3.7737	18.0843	10.9290	0.0642	0.0432	0.0779	0.0451
<b>Entire period (1 Nov 2007 - 31 Oct 2017)</b>	<b>Average return</b>	0.0143	0.0355	0.0249	0.0001	0.0003	0.0001	0.0001
	<b>Minimum return</b>	-5.3064	-31.4413	-18.3738	-0.0919	-0.0730	-0.2560	-0.1647
	<b>Maximum return</b>	4.7803	18.0843	11.4323	0.0626	0.0707	0.1229	0.1214

Table 4.2: Cumulative Returns

Cumulative Returns							
Period	Unit Trusts			Benchmarks/Indices			
	Islamic Unit trusts	Conventional Unit trusts	Combined Unit trusts	JSE Shariah ALSI (143)	JSE ALSI (203)	Dow Jones Islamic Market World Emerging Markets Index	MSCI Emerging Markets EMEA index
<b>Pre-financial crisis (Nov 2007 - Aug 2008)</b>	-7.2726	-23.6281	-30.9007	0.4953	-9.8427	-28.9512	-17.2652
<b>Financial crisis (Sept 2008 - Jan 2010)</b>	6.8153	0.4139	7.2292	-2.5759	3.5552	14.1941	0.0631
<b>Post financial crisis (Feb 2010 - Oct 2017)</b>	73.3501	99.8030	173.1532	29.3522	86.0695	38.5140	41.6654
<b>Entire period (1 Nov 2007 - 31 Oct 2017)</b>	72.8928	76.5888	149.4817	27.2717	79.7820	19.8219	21.2684

### Interpretation of results for Objective one

With reference to Table above, Table 4.1 **and** Table 4.2 evidence the descriptive statistics for the Islamic fund, the Conventional fund as well as the selected benchmark indices. These market indices include: the JSE Shariah All Share Index (locally focused Islamic benchmark index), the JSE All Share Index (locally focused Conventional benchmark index), the Dow Jones Islamic Market World (globally focused Islamic benchmark index) and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa (globally focused Conventional benchmark index).

Table 4.1 reports the non-risk adjusted returns in terms of the average returns, minimum returns, and maximum returns. As evident in the analysis contained in Panel A, the Islamic fund outperformed the Conventional fund by 0.07% in the pre-financial crisis period. However, the Islamic fund underperformed the Conventional fund in the other periods of financial crisis, Post financial crisis, and Entire period by 0.16%, 0.013%, and 0.02% respectively. Regardless, it is necessary to note that these differences are not statistically significant.

In addition to this, the researcher further evaluated the non-risk adjusted average returns for both the Islamic and the Conventional portfolios by analysing the performance from the perspective of the cumulative returns against the selected market indices. To do this, the researcher computed the cumulative returns for both the Islamic and the Conventional portfolios as well as the selected market indices (JSE Shariah All Share Index, JSE All Share Index, Dow Jones Islamic Market World Emerging Markets Index and MSCI Emerging Markets EMEA Index). This was done across all the periods of pre-financial crisis period, financial crisis period, Post financial crisis period, as well as the Entire period of the study.

Upon this computation of the cumulative returns, it was evident from the analysis contained in Table 4.2 that the Conventional fund and the JSE All Share Index reported the highest returns of 99.8% and 86% in the Post financial crisis period. The results of the analysis further found that the Islamic portfolio offered more cumulative return than the Conventional portfolio in both the pre-financial crisis and financial crisis period. However, in the Post financial crisis period and the Entire period of the study, it was noted that the Conventional portfolio outperformed the Islamic portfolio.

In summary, the research findings above have succinctly provided an empirical analysis and clarification necessary to the achievement of the first objective of this research study.

#### ***4.2.2 Objective Two: Risk- Adjusted Performance Analysis***

The objective two of this research study comparatively considers the risk adjusted performance for both the Islamic and the Conventional portfolios vis-à-vis the selected market indices (JSE Shariah All Share Index, JSE All Share Index, Dow Jones Islamic Market World Emerging Markets Index and MSCI Emerging Markets EMEA Index). Herein, the researcher adopted several relevant risks adjusted models and statistical techniques to succinctly evaluate the risk adjusted performance of both the Islamic and the Conventional portfolios as well as the selected market indices.

The risk adjusted performance (return and risk) analysis was considered in both absolute and relative perspectives to provide a detailed and in-depth analysis.

#### ***Absolute Risk-Adjusted Performance and Risk Measures***

Risk adjusted performance measures are performance measures that evaluates the performance of financial assets such as a stock, or portfolio of stocks by adjusting returns using a risk basis. While the risk adjusted basis can be absolute or relative to a specific market benchmark, either approach offer an investor or market participant the opportunity to rank investments based on their risk weighted performance.

The Sharpe ratio as a risk adjusted measure is an absolute risk adjusted performance measure that ranks performance of stocks or portfolio of stocks on the basis of their individual total risk as measured by the standard deviation. The researcher adopted the Sharpe ratio to compare the absolute risk adjusted return performance between the Islamic fund and the Conventional fund. This comparative analysis was done in all periods of pre-financial crisis period, financial crisis period, Post financial crisis period, and Entire period of the study. The findings of this analysis are further summarised in Table 4.3 below.

Furthermore, the riskiness of each individual funds (Islamic and Conventional funds) was measured using notable risk measures such as the standard deviation and the coefficient of variation. The standard deviation is a statistical measure that is widely used in quantitative professions such as Finance and Investments to measure the risk

of a security, portfolio, or fund. The standard deviation does this by measuring the level of dispersion or variation among a set of values. Similarly, the coefficient of variation is a statistical measure that measures variability and dispersion of numbers within several series or dataset around the mean or expected value. In contrast to the standard deviation, the coefficient of variation offers the benefit of comparing levels of risks across different datasets with varying means and standard deviations

In the context of this study, the researcher adopted the standard deviation and the coefficient of variation as plausible risk measures to compare the riskiness between the Islamic fund and the Conventional fund. This comparative analysis was done in all periods of pre-financial crisis period, financial crisis period, Post financial crisis period, and Entire period of the study. The findings of this analysis are further summarised in Table 4.4 below.

Table 4.3: Absolute Risk-Adjusted Performance Measure- Sharpe ratio

Absolute Risk Adjusted Performance Measure								
	Pre FC period		FC period		Post FC period		Entire period	
Portfolio	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
Sharpe	-0.0721	-0.2181	0.0152	-0.0097	0.0676	0.0953	0.0435	0.0469

Table 4.4: Absolute Risk Measures- Standard Deviation & Coefficient of Variation

Absolute Risk Measures								
	Pre FC period		FC period		Post FC period		Entire period	
Portfolio	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
Standard Deviation	0.6296	0.5663	0.7434	0.7049	0.4718	0.4781	0.5329	0.5255
Coefficient of Variation	-18.1790	-5.0329	38.6146	602.8960	12.4516	9.2784	18.2761	17.1595

*Interpretation of results for Absolute Risk-Adjusted Performance (Objective two)*

In the context of this study, the Sharpe ratio evidences that the Islamic fund outperformed the Conventional fund in both the pre-financial crisis period and the financial crisis period. However, it was found that the Islamic fund underperformed the Conventional fund in the Post financial crisis period and the Entire period of the study. While the Islamic fund recorded a better Sharpe ratio of -0.0721 and 0.0152 in the pre-financial crisis period and the financial crisis period respectively, the Conventional fund evidenced 0.0953 and 0.0469 in the Post financial crisis period and the Entire period of the study.

Likewise, in the perspective of the comparative riskiness of the funds, the standard deviation evidence that except in the Post financial crisis period, the Islamic fund is riskier than the Conventional fund. This was noted as the standard deviations for the Islamic fund were 63%, 74%, and 53.3% in the pre-financial crisis period, the financial crisis period and the Entire period respectively. However, it was found that the Islamic fund was less risky than the Conventional fund in the post financial crisis period by 0.63%.

A further comparative analysis of the riskiness of both funds was performed using the coefficient of variation measure. This analysis revealed that except in the pre-financial crisis period and financial crisis period, the Islamic fund appears to be riskier than the Conventional fund. This was noted as the coefficient of variation for the Islamic fund were 12.5 and 18.28 in the Post financial crisis period and the Entire period respectively. However, it was found that the Islamic fund was less risky than the Conventional fund in both the pre-financial crisis and the financial crisis periods by (13.15) % and 21.67%.

### Relative Risk-Adjusted Performance and Risk Measures

Table 4.5 - Table 4.8 below summarises the performance of the portfolios (Islamic and Conventional) via risk measures and relative risk adjusted measures using each of the selected market indices (JSE Shariah All Share Index, JSE All Share Index, Dow Jones Islamic Market World Emerging Markets Index and MSCI Emerging Markets EMEA Index) as benchmarks.

Based on the constructed portfolios (Islamic and Conventional) and the periods being considered in this research study, the researcher comparatively assessed the relative risk adjusted performance and the risk performance using applicable techniques and measures. For the relative risk adjusted performance, the researcher Modigliani and Modigliani (MM) measure, the Treynor Ratio, and the Jensen Alpha. In like manner, the risk performance of both portfolios (Islamic and Conventional) was assessed using the Beta and the R-square measure of the Jensen Alpha model.

Subsequently, the Panel A1 and A2 below shows the results of analysis when the portfolios are benchmarked against JSE Shariah All Share Index. Panel B1 and B2 below shows the results of analysis when the portfolios are benchmarked against JSE All Share Index. Panel C1 and C2 below shows the results of analysis when the portfolios are benchmarked against Dow Jones Islamic Market World Emerging Markets Index. Panel D1 and D2 below shows the results of analysis when the portfolios are benchmarked against MSCI Emerging Markets EMEA Index.

Table 4.5 (Panel A1): Portfolios are benchmarked against JSE Shariah Index - Performance Measures- MM, Treynor and Jensen Alpha

Performance measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
MM	-0.0346	-0.1125	0.0193	0.0012	0.0379	0.0515	0.0292	0.0306
Treynor	-13.1938	16.6717	0.1659	-0.2955	1.5748	-28.5306	15.5685	2.9190
Alpha	-0.0453	-0.1232	0.0123	-0.0065	0.0317***	0.0455***	0.0231***	0.0246***

Table 4.5 (Panel A2): Portfolios are benchmarked against JSE Shariah Index - Risk Measures- Beta & R-squared

Risk measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
Beta	0.0034	-0.0074	0.0678	0.0231	0.0202	-0.0016	0.0015	0.0084
R-squared	40.77%	25.05%	5.67%	0.72%	0.27%	0.0005%	0.0097%	0.13%

\*, \*\*, \*\*\* significant at 10%, 5%, 1%, respectively.

Table 4.6 (Panel B1): Portfolios are benchmarked against JSE ALSI Index - Performance Measures- MM, Treynor and Jensen Alpha

Performance measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
<b>MM</b>	-3.46%	-11.25%	1.93%	0.12%	3.79%	5.15%	2.92%	3.06%
<b>Treynor</b>	-0.3044	-0.9380	0.0404	-0.0324	0.1238	0.1484	-2.4761	-4.4134
<b>Alpha</b>	-0.0366	-0.1155	0.0107	-0.0073	0.0220	0.0337	0.0234	0.0248

Table 4.6 (Panel B2): Portfolios are benchmarked against JSE ALSI Index - Risk Measures- Beta & R-squared

Risk measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
<b>Beta</b>	0.1488	0.1313	0.2783	0.2108	0.2575	0.3068	-0.0094	-0.0056
<b>R-squared</b>	43.07%	31.26%	59.18%	37.77%	27.33%	37.76%	0.044%	0.0079%

, \*\*, \*\*\* significant at 10%, 5%, 1%, respectively.

Table 4.7 (Panel C1): Portfolios are benchmarked against Dow Jones Islamic Market World Emerging Markets Index - Performance Measures- MM, Treynor and Jensen Alpha

Performance measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
MM	-0.0346	-0.1125	0.0193	0.0012	0.0379	0.0515	0.0292	0.0306
Treynor	-0.6255	-1.3402	0.4441	-1.1760	20.0080	-4.6503	1.1566	1.7672
Alpha	-0.0343	-0.1093	0.0104	-0.0070	0.0319***	0.0457***	0.0231	0.0246

Table 4.7 (Panel C2): Portfolios are benchmarked against Dow Jones Islamic Market World Emerging Markets Index - Risk Measures- Beta & R-squared

Risk measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
Beta	0.0724	0.0919	0.0253	0.0058	0.0016	-0.0098	0.0200	0.0139
R-squared	2.13%	4.19%	0.78%	0.045%	0.0014%	0.023%	0.25%	0.15%

, \*\*, \*\*\* significant at 10%, 5%, 1%, respectively.

Table 4.8 (Panel D1): Portfolios are benchmarked against MSCI Emerging Markets EMEA index - Performance Measures- MM, Treynor, Jensen Alpha

Performance measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
<b>MM</b>	-0.0346	-0.1125	0.0193	0.0012	0.0379	0.0515	0.0292	0.0306
<b>Treynor</b>	-0.8968	-1.1443	0.2798	-0.1452	-2.4274	51.2431	2.1313	1.4228
<b>Alpha</b>	-0.0406	-0.1131	0.0116	-0.0065	0.0321	0.0455	0.0231	0.0246

Table 4.8 (Panel D2): Portfolios are benchmarked against MSCI World Index - Risk Measures- Beta & R-squared

Risk measures								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
<b>Beta</b>	0.0505	0.1077	0.0402	0.0471	-0.0131	0.0009	0.0109	0.0173
<b>R-squared</b>	0.96%	5.45%	1.60%	2.43%	0.0029%	0.060%	0.063%	0.18%

\*, \*\*, \*\*\* significant at 10%, 5%, 1%, respectively.

### Interpretation of results for Relative Risk-Adjusted Performance (Objective two)

The summarised findings from Table 4.5 above, presents the relative performance and risk measures when the portfolios (Islamic and Conventional) are benchmarked against the JSE Shariah Index. Based on the findings, it is evident that the results are consistent with findings of the Sharpe ratio. With similarity to the Sharpe ratio, the relative risk adjusted performance show that the Islamic fund outperformed the Conventional fund in both the pre-financial crisis period and the financial crisis period. However, it was found that the Islamic fund underperformed the Conventional fund in the Post financial crisis period and the Entire period of the study.

Using the MM metric, it was noted that had the Conventional fund had the same standard deviation with the JSE Shariah Index, it would have underperformed it by (11.25 per cent) less than the Islamic fund would underperform the benchmark (3.46 per cent) in the pre-financial crisis period. However, during the financial crisis period, the Islamic fund outperformed the JSE Shariah Index more than the Conventional fund would by (0.12 per cent). Likewise, in the Post financial crisis period and the Entire period of the study, the Conventional portfolio outperformed the JSE Shariah Index by (5.15% and 3.06%) than the Islamic portfolio (3.79% and 2.92%) respectively.

Likewise, using the MM metric, the research study indicated similar findings across all periods when evaluated using other different benchmarks such as the JSE All Share Index (Table 4.6), the Dow Jones Islamic Market World Index (Table 4.7) and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa (Table 4.8).

Unlike Sharpe who calculated risk adjusted return based on total risk, Treynor distinguished risk in two categories of systematic and unsystematic risk. According to the Treynor ratio, the performance of a portfolio is better evaluated using the systematic risk which is represented by the "beta". As a relative risk adjusted performance model, the Treynor ratio measures the performance of a portfolio as a return per unit of systematic risk. Based on Table 4.5 above, this research study evidences that the Treynor measures figures are also in consistency with the MM and Sharpe measures in all of the periods except the the pre-financial crisis period. Herein, the excess return per unit of systematic risk (when JSE Shariah Index is used as the benchmark index) is higher for the Conventional portfolio (16.67 per cent) during the

pre-financial crisis period, but lower than the Islamic portfolio in other periods i.e. the Financial crisis period (-0.29 per cent), the Post financial crisis period (-28.53 per cent) and the Entire period of the study (2.92 per cent).

Likewise, for the Islamic portfolio, the Treynor measure reported (-13.19 per cent) in the pre-financial crisis period, (0.17 per cent) in the financial crisis period, (1.57 per cent) in the Post financial crisis period and (15.57 per cent) in the Entire period of the study.

In summary, the analysis found similar results in the Dow Jones Islamic Market World index, except for observed divergence in the pre-financial crisis period and the Entire period. In these periods, it was noted that the excess return per unit of systematic risk for the Islamic portfolio (-0.63 per cent) (when Dow Jones Islamic Market World Index is used as the benchmark index) is higher for the Conventional portfolio (-1.34 per cent) during the pre-financial crisis period, but lower than the Conventional portfolio by (0.6 per cent) in the Entire period.

However, the results of analysis further show consistency between the JSE All Share Index (Table 4.6) and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa (Table 4.8). this was evident as the Islamic portfolio outperformed the Conventional portfolio in all the periods except the Post financial crisis period, in both benchmarked cases.

The Jensen alpha as a risk adjusted performance measure seeks to determine the abnormal return of a security, portfolio or fund in comparison to its theoretical expected return as calculated using the CAPM technique. A positive Jensen Alpha shows the ability of the portfolio to provide superior returns than the benchmarked market index. The overall results evidence that in most cases the portfolios (Islamic and Conventional) exhibited superior returns than the benchmarked indices (JSE Shariah All Share Index, JSE All Share Index, Dow Jones Islamic Market World Emerging Markets Index and MSCI Emerging Markets EMEA Index) across the study periods.

Based on the Panel A above, this research study evidences that the Jensen Alpha measures figures are also in consistency with the MM and Sharpe measures in all of the periods. Herein, the excess return per unit of systematic risk (when JSE Shariah Index is used as the benchmark index) is higher for the Conventional portfolio (16.67 per cent) during the pre-financial crisis period, but lower than the Islamic portfolio in

other periods i.e. the Financial crisis period ( -0.29 per cent), the Post financial crisis period (-28.53 per cent) and the Entire period of the study (2.92 per cent). The findings in the Post financial crisis period and the Entire period of the study were further found to be highly statistically significant at 1 percent significance level. Also, results from the Panel B (when JSE All Share Index is used as the Market benchmark index) evident similar findings, as the Islamic portfolio outperformed the Conventional portfolio in the pre-financial crisis and financial crisis periods but underperformed the Conventional portfolio in the Post financial crisis period and Entire period of the study. However, this comparative performance was not statistically significant across all periods of the study.

Likewise, when benchmarked against the Dow Jones Islamic Market World Emerging Markets Index in Table 4.7, the study found the Conventional portfolio to offer more excess return per unit of systematic risk than the Islamic portfolio in the Post financial crisis period (1.38 per cent). This finding was found to be highly statistically significant at 1 percent significance level. However, except for the Entire period of the study, the results indicate that the Islamic portfolio outperformed the Conventional portfolio. Lastly, results from Table 4.8 (when MSCI Emerging Markets EMEA Index is used as the Market benchmark index) evident similar findings, as the Islamic portfolio outperformed the Conventional portfolio in the pre-financial crisis and financial crisis periods but underperformed the Conventional portfolio in the Post financial crisis period and Entire period of the study. However, this comparative performance was not statistically significant across all periods of the study.

Based on the results in Table 4.5 above, although the Jensen Alpha evidenced positive and highly statistically significant performance in the Post financial crisis period and the Entire period of the study, the R-squared (0.0005% and 0.13%) are low explain the performance of the Conventional portfolio in these periods. In like manner, according to the Panel B above, the R-squared showed the highest explanatory power for the Islamic portfolio in the financial crisis period, and the lowest for the Conventional portfolio in the Entire period of the study. In the Panel C, although the Jensen alpha for both portfolios (Islamic and Conventional) were found to be significant, neither of their respective R-squared coefficients exhibited good explanatory power. Lastly, Table 4.8 show showed the highest explanatory power for the Conventional portfolio

in the pre-financial crisis period, and the lowest for the Islamic portfolio in the post-financial crisis period.

The Panel 2s of Table 4.5 -4.8 above evidence that the systematic risk for the portfolios (Islamic and Conventional) varies based on the selected market benchmarks. In this regard, Using the South African focused Islamic index (Panel A2: JSE Shariah All Share Index) and the South African focused Conventional index (Panel B2: JSE All Share Index), it was found that the systematic risk for the Islamic portfolio is higher than the Conventional portfolio in both the pre-financial crisis and financial crisis periods. However, when benchmarked with the JSE All Share Index the Conventional portfolio exhibited higher systematic risk than the Islamic portfolio in the Post financial crisis and Entire periods. This was same for the Entire period when benchmarked JSE Shariah All Share Index.

Likewise, using the globally focused Islamic index (Panel C2: Dow Jones Islamic Market World Emerging Markets Index) and the globally focused Conventional index (Panel D2: MSCI Emerging Markets EMEA Index), it was found that the systematic risk for the Islamic portfolio is higher than the Conventional portfolio in all the period categories except in the pre-financial crisis period, when benchmarked against the Dow Jones Islamic Market World Emerging Markets Index. However, when benchmarked with the MSCI Emerging Markets EMEA Index the Conventional portfolio exhibited higher systematic risk than the Islamic portfolio in all the period categories (pre-financial crisis period, financial crisis period, Post financial crisis period and Entire period).

In summary, the overall absolute and relative performance was considered via metrics such as the Sharpe ratio, Standard deviation, Coefficient of variation, MM measure, Treynor ratio, Jensen alpha, Beta and R-squared coefficient. Upon the analysis, the empirical evidence showed mixed results across the periods of the study as well as in the entire period of the study. With reference to the overall result based on the entire period of the study, the absolute risk adjusted analysis evidenced that while the Conventional fund is slightly better than the Islamic fund from a Sharpe ratio perspective, both the Standard deviation and Coefficient of variation showed that the Islamic fund is riskier than the Conventional fund.

However, from the perspective of the relative risk adjusted analysis, the empirical evidence showed that while the MM measure and Jensen alpha found the Conventional fund to perform better than the Islamic fund, the Jensen alpha showed that the Islamic fund performed better than the Conventional fund.

In summary, the research findings above have succinctly provided an empirical analysis and clarification necessary to the achievement of the first objective of this research study.

#### ***4.2.3 Objective Three: Extent of difference between the performance of Islamic and Conventional portfolios***

##### ***Mean Difference testing***

Based on the objective three of the research inquiry, the researcher evaluated the non-risk adjusted returns for both the Islamic and the Conventional funds by testing for the significant difference in the means against the selected market indices. To do this, the researcher tested the Islamic and Conventional portfolios against the selected market benchmark indices.

Table 4.9 of this research study as shown below summarises and presents the mean difference testing between each portfolio and the selected market benchmark indices. While Panel A1 reports the difference between the Islamic portfolio and the selected market benchmark indices, the Panel A2 reports the difference between the Conventional portfolio and the selected market benchmark indices.

Table 4.9: Non-Risk-Adjusted Return Mean Difference Testing

<b>Non-Risk Adjusted Return Mean Difference Testing</b>				
	<b>Pre-financial crisis (Nov 2007 - Aug 2008)</b>	<b>Financial crisis (Sept 2008 -Jan 2010)</b>	<b>Post financial crisis (Feb 2010- Oct 2017)</b>	<b>Entire period (1 Nov 2007 - 31 Oct 2017)</b>
<b>Panel A1: The Difference between the Islamic unit trusts and:</b>				
<b>Conventional Unit trusts</b>	1.33%	0.33%	-0.88%	-0.085%
<b>Combined Unit trusts</b>	1.28%	-0.014%	-2.47%**	-1.43%
<b>JSE Shariah (143)</b>	-0.28%	0.19%	0.82%	0.58%
<b>JSE ALSI (203)</b>	0.11%	0.08%	0.27%	-0.10%
<b>Dow Jones Islamic Market World Emerging Markets Index</b>	1.07%	-0.15%	0.92%	0.90%
<b>MSCI Emerging Markets EMEA index</b>	0.50%	0.15%	0.88%	0.85%

<b>Panel A2: The Difference between the Conventional unit trusts and:</b>				
<b>Combined Unit trusts</b>	0.40%	-0.24%	-1.81%*	-1.38%
<b>JSE Shariah (143)</b>	-0.89%	0.06%	1.30%	0.62%
<b>JSE ALSI (203)</b>	-0.58%	-0.08%	0.28%	-0.055%
<b>Dow Jones Islamic Market World Emerging Markets Index</b>	0.28%	-0.27%	1.47%	0.95%
<b>MSCI Emerging Markets EMEA index</b>	-0.32%	0.008%	1.43%	0.89%

Interpretation of results for extent of performance difference analysis (Objective three-Mean Difference testing)

As indicated above, firstly, the researcher tested the Islamic fund against the selected Islamic market indices. To do this, the researcher tested the Islamic fund against the JSE Shariah All Share Index (locally focused Islamic benchmark index), and the Dow Jones Islamic Market World (globally focused Islamic benchmark index). Upon testing, it was found that the Islamic fund outperformed the JSE Shariah All Share Index in the financial crisis period, post financial crisis period, Entire period of the study but underperformed in the pre-financial crisis period. Thereafter, the researcher further tested the Islamic fund against the Dow Jones Islamic Market World (globally focused Islamic benchmark index). Findings of the test suggest that the Islamic fund outperformed the Dow Jones Islamic Market World (globally focused Islamic benchmark index) across all periods except the in financial crisis period. However, no statistically significant difference was noted across the periods.

In like manner, the researcher tested the Islamic fund against the selected Conventional market indices. To do this, the researcher tested the Islamic fund against the JSE All Share Index (locally focused Conventional benchmark index), and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa (globally focused Conventional benchmark index). Upon testing, it was found that the Islamic fund outperformed the selected Conventional market indices in all periods of the study for both Conventional indices, except in the Entire period of the study when benchmarked against the JSE All Share Index. However, no statistically significant difference was noted across the periods.

Likewise, the researcher conducted testing using the Conventional fund against the selected Islamic and Conventional market indices. These conducted tests were summarised and presented in the latter part of Panel B above. From the Panel B, it was found that the Conventional fund outperformed the JSE Shariah All Share Index (locally focused Islamic benchmark index), in all considered periods except in the pre-financial crisis period. however, when benchmarked against the Dow Jones Islamic Market World (globally focused Islamic benchmark index), the Conventional fund outperformed in all periods of consideration except in the financial crisis period. Despite this, no statistically significant difference was noted across the periods.

Lastly, when the Conventional fund was benchmarked against the selected Conventional market index, it was found that Conventional fund outperformed the JSE All Share Index (locally focused Conventional benchmark index), in both the Post financial crisis period and Entire period of the study only. Whereas, when benchmarked against the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa (globally focused Conventional benchmark index), it was found that the Conventional fund outperformed the index in all the periods except the pre-financial crisis period. Regardless of this, no statistically significant difference was noted across the periods.

In summary, the computation of the results of the mean difference testing of the non-risk adjusted returns analysis shows that there is no statistically significant evidence to support that Islamic fund under or outperform the Conventional fund across all the periodical phases of economic cycles. This finding is further applicable in the context of both the Islamic and Conventional fund, as well as the selected market indices across all periods of the research study

### Correlation Analysis

This section of the study considers the correlation between the Islamic fund, the Conventional fund as well as the selected market indices across all periods of the research study. The findings from the Pearson's correlation tests and the results of the correlation are summarised in Table 4.6 below:

Table 4.10 summarises the correlation analysis between the Islamic portfolio, the Conventional portfolio as well as the selected market indices. In this research study, the Islamic portfolio was computed based on 8 Islamic funds, while the Conventional portfolio was calculated based on 27 Conventional funds. All funds utilised in this research study are listed on the Johannesburg Stock Exchange (JSE). The research study considered a dataset that spanned over a period of ten consecutive years (120 months). The period ranged from 1<sup>st</sup> of November 2007 to 31<sup>st</sup> October 2017, was categorised into three phases of the pre-financial crisis (Nov 2007 - Aug 2008), the financial crisis (Sept 2008 -Jan 2010) and the Post financial crisis (Feb 2010- Oct 2017).

Also, the selected market indices consisted of both single/local and multiple/global indices. For the single/local, both the JSE Shariah All Share Index (J143) and the JSE All Share Index (J203) from the Johannesburg Stock Exchange (JSE) were used as South African benchmarks. While multiple/global benchmarks comprised of returns the Dow Jones Islamic Market World and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa (MSCI EM EMEA) indices.

Thus, Table below presents a summary of significant correlation coefficients that were computed using the Pearson's correlation tests.

Table 4.10: Correlation Analysis

Correlation Analysis								
Portfolio	Pre FC period		FC period		Post FC period		Entire period	
	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
<b>JSE Shariah ALSI (143)</b>	0.6611***	0.5129***	0.2381	0.0846	0.0483	-0.0037	0.0042	0.0239
<b>JSE ALSI (203)</b>	0.6668***	0.5693***	0.7693***	0.6146***	0.5228***	0.6146***	-0.0215	-0.0130
<b>Dow Jones Islamic Market World Emerging Markets Index</b>	0.1472	0.2085	0.0881	0.0213	0.0032	-0.0196	0.0248	0.0401
<b>MSCI Emerging Markets EMEA Index</b>	0.1006	0.2376	0.1261	0.1556	-0.0252	0.0018	0.0494	0.0347

\*, \*\*, \*\*\* significant at 10%, 5%, 1%, respectively.

Interpretation of results for extent of performance difference analysis (Objective three-  
Correlation Analysis)

An overview of the correlation analysis with the market indices across the periods, depicts that there is a low level of correlation between the portfolios (Islamic and Conventional) and the selected market indices. This is evident as there is no statistical significance between the portfolios (Islamic and Conventional) and the selected foreign market indices (Dow Jones Islamic Market World Emerging Markets Index and MSCI Emerging Markets EMEA Index) across all time periods (pre-financial crisis period, financial crisis period, Post financial crisis period and Entire period).

However, the results of the analysis evidence positive correlation at 1 percent significant level, between the portfolios and the South African market indices (JSE Shariah All Share Index and JSE All Share Index) across all time periods (pre-financial crisis period, financial crisis period, and post financial crisis period). For instance, the correlation analysis noted a statistically significant relationship between the portfolios (Islamic and Conventional) and the JSE Shariah All Share Index in the Pre-Financial crisis period at 0.6611 and 0.5129 for Islamic and Conventional portfolios respectively.

Likewise, it was found that a statistically significant relationship exists between the portfolios (Islamic and Conventional) and the JSE All Share Index in the Pre-Financial crisis period, financial crisis period, and post financial crisis period. This was observed at 0.6668 and 0.5693 for Islamic and Conventional portfolios respectively in the pre-financial crisis period. For the financial crisis period, it was noted that the Islamic and Conventional portfolios were statistically significant at 0.7693 and 0.6146 respectively. Lastly, in the post-financial crisis period, the Islamic and Conventional portfolios were statistically significant at 0.5228 and 0.6146 respectively.

Based on the correlation analysis, it is evident that the portfolios are more positively correlated with the South African market indices (especially the JSE All Share Index) than they are with the foreign market indices. This implies that their performance is largely influenced by the performance of the JSE All Share Index. Furthermore, the low/weak and negative correlation shown in the foreign market indices can offer a room for more diversification depending on investment objectives and investors' appetite.

### **4.3 DISCUSSION AND IMPLICATIONS OF THE RESEARCH FINDINGS**

This section of the research study focuses on the findings of the research study based on the priorly highlighted research questions that the study sought to answer. In this wise, the research findings are considered in comparative style with relevant previous studies that have been reviewed in the chapter two of this study.

#### ***4.3.1 Research Objective One***

This objective sought to comparatively analyse the non-risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.

##### *Research Question One*

How does the non-risk-adjusted performance of Islamic portfolio compare to the Conventional portfolio as well as the selected market benchmark indices?

To provide the rightful scientific answer to this research question, the researcher collected the necessary data, and utilised the applicable data analytical techniques needful to test the formulated research hypothesis and achieve the corresponding research objective. Thereafter, the empirical analytical results were discussed in line with relevant literatures.

##### *Comparative analysis of non-risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.*

##### *Descriptive Analysis of non-risk adjusted performance*

Based on the computation of the non-risk adjusted returns in terms of the average returns, minimum returns, maximum returns and cumulative returns, the empirical evidence showed that the Conventional fund performed better than the Islamic fund. This is evident has the Conventional fund offered superlative returns than the Islamic fund over the entire period of the study in both average and cumulative returns terms.

Agussalim et al. (2017) and Ahmed and Soomro (2017) found that Conventional funds performed better than Islamic funds.

However, some recent studies have evident that an Islamic fund can offer better returns than a Conventional fund (Alwi et al., 2019; Omri et al., 2019; Alam and Ansari, 2020; Trabelsi et al., 2020). Alwi et al. (2019) and Alam and Ansari (2020) found that Islamic funds can offer better returns than Conventional funds.

### **4.3.2 Research Objective Two**

This objective sought to comparatively analyse the risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.

#### Research Question Two

How does the risk-adjusted performance of Islamic portfolio compare to the Conventional portfolio as well as the selected market benchmark indices?

To provide the data driven answer to this research question, the researcher collected the necessary data, and utilised the applicable data analytical techniques needful to test the formulated research hypothesis and achieve the corresponding research objective. Thereafter, the empirical analytical results were discussed in line with relevant literatures.

#### Comparative analysis of risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.

##### Absolute risk-adjusted performance Analysis

Based on the computation of the Absolute risk adjusted returns in terms of the Sharpe ratio, Standard deviation and Coefficient of variation, the empirical evidence showed a mixed overall result in the Entire period of the study. Whilst the Sharpe ratio showed that the Conventional fund is slightly better than the Islamic fund from a risk adjusted return perspective, both the Standard deviation and Coefficient of variation showed that the Islamic fund is riskier than the Conventional fund.

The findings of this research study are consistent with existing studies (Merdad et al., 2010; Agussalim et al., 2017). Merdad et al. (2010) found the Conventional fund to be better than the Islamic fund.

However, some recent studies have evident that Islamic funds have better Sharpe ratio performance than a Conventional funds (Omri et al., 2019; Shaikh et al., 2019; Trabelsi et al., 2020). Shaikh et al. (2019) suggest that the Islamic equity funds are better off with positive Sharpe ratio than the Conventional equity funds.

##### Relative risk-adjusted performance Analysis

Based on the computation of the Relative risk adjusted returns in terms of the MM measure, Treynor ratio, Jensen alpha, Beta and R-squared coefficient, the empirical

evidence showed a mixed overall result in the Entire period of the study. Whilst the MM measure and Jensen alpha showed that the Conventional fund performed better than the Islamic fund from a risk adjusted return perspective, Treynor ratio showed that the Islamic fund performed better than the Conventional fund.

Likewise, Relative risk perspective, the research study utilised both the Beta and the R-squared coefficients. Upon computation, the study found that the Conventional fund performed better than the Islamic fund when benchmarked against the JSE Shariah Index, the JSE ALSI Index and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa. However, when benchmarked against the Dow Jones Islamic Market World Index, it was found that Islamic fund performed better than the Conventional fund in terms of riskiness.

The findings of this research study are in alignment with existing studies (Banani and Hidayatun, 2017; Arif et al., 2019; Omri et al., 2019; Shaikh et al., 2019; Alam and Ansari, 2020).

Using both risk-adjusted performance measures as well as the Data Envelopment Analysis model, Arif et al. (2019) performed a comparative evaluation of Islamic and Conventional mutual funds listed on the Pakistani Stock Exchange. The results from the Data Envelopment Analysis (DEA) model suggest that the Islamic mutual fund exhibited higher efficiency than the Conventional mutual fund. However, some recent studies have evident that an Islamic fund can offer better returns than a Conventional fund (AbdelHakem, 2012; Ahmed and Soomro, 2017; Alwi et al., 2019; Alam and Ansari, 2020).

In an empirical comparative study, Alam and Ansari (2020) evaluated the performance of both Conventional and Islamic indices in India. Based on the general analysis as well as the MM measure, it was found that the Islamic indices provided superior return performance than the Conventional indices.

#### ***4.3.3 Research Objective Three***

This objective sought to determine the extent of the difference between the performance of Islamic and Conventional portfolios.

#### ***Research Question Three***

What is the extent of the difference between the performance of Islamic and Conventional portfolios?

To provide the scientific answer to this research question, the researcher collected the necessary data, and utilised the applicable data analytical techniques needful to test the formulated research hypothesis and achieve the corresponding research objective. Thereafter, the empirical analytical results were discussed in line with relevant literatures.

*Comparative analysis of non-risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.*

*T-test Analysis*

In summary, based on the mean difference testing using t-test, the empirical findings suggest that there is no statistically significant evidence to support that Islamic fund under or outperform the Conventional fund across all the periodical phases of economic cycles. This finding is further applicable in the context of both the Islamic and Conventional fund, as well as the selected market indices across all periods of the research study.

This finding is in consistency with similar relevant studies (Merdad et al., 2010; AbdelHakem, 2012; Agussalim et al., 2017; Banani and Hidayatun, 2017; Alam and Ansari, 2020; Trabelsi et al., 2020). In a study conducted by Banani and Hidayatun (2017), the researchers comparatively explored the performance of Islamic and Conventional indices in developing economies such as Indonesia and Turkey. Based on the empirical results, the risk adjusted performance metrics evidenced that the Jakarta Islamic Index insignificantly outperformed the LQ45 index in Indonesia, the Dow Jones Islamic Market Turkey insignificantly underperformed the and the Dow Jones Turkey Titans 20 index in Turkey.

Whilst considering emerging markets in Asia, Latin America and Europe, Trabelsi et al. (2020) conducted a performance analysis of Islamic, Conventional and Mixed portfolios from 2002 to 2017. The study found that the Islamic portfolio slightly offer superior performance than the Conventional portfolio. A further analysis of the mean difference test evidence that this superior performance is not statistically significant.

### Correlation Analysis

However, based on the correlation analysis, it was evident that the portfolios are more positively correlated and statistically significant with the South African market indices (especially the JSE All Share Index) than they are with the foreign market indices. This implies that their performance is largely influenced by the performance of the JSE All Share Index. Furthermore, the low/weak and negative correlation shown in the foreign market indices can offer a room for more diversification depending on investment objectives and investors' appetite.

This finding is consistent with the similar relevant study by (Omri et al., 2019). Omri et al. (2019) sought to comparatively explore the performance of mutual funds in Saudi Arabia using the Riyadh Capital mutual funds as a proxy for analysis. Based on the empirical findings, the research evidence suggests that the Islamic fund outperformed the Conventional fund and market benchmarks. Although, this outperformance was only statistically significant in the local market. The scholars further assert that Islamic funds tend to slightly favour a contrarian investment strategy.

#### **4.4 Summary**

The chapter four of this study considered the data analysis, interpretation as well as the discussion of the research findings. Herein, the researcher adopted a simplified and thematic approach to achieve the core aim of this chapter. This was done via the clinical synchronisation and presentation of the empirical analysis, interpretation of the results and discussion of research findings vis-à-vis the research objectives. The chapter covered the descriptive analysis for the non-risk adjusted performance analysis, further utilised several models for the risk adjusted performance analysis and performed tests to decipher relationship between the Islamic fund and the Conventional fund vis-à-vis the selected market benchmarks.

The next chapter of the research study will succinctly cover the summary of the research findings, implications of the findings, conclusion and recommendations proffered by the research study.

## **CHAPTER FIVE**

### **Conclusion and Recommendations**

#### **5.1 Introduction**

The chapter five of this research study is the final chapter that covers the conclusion and recommendations of the research study. Herein, the researcher provides a summary of findings as well as a summary for each chapter of the research study. Thereafter, the chapter will discuss the limitations of the research study, the main findings, implications, contributions, and recommendations. Also, the chapter will offer suggestions for future research studies and make a conclusion for the research study.

#### **5.2 Summary of each chapter**

The chapter one of this study introduced and provided a general background to the study. In this chapter, the research study began by succinctly explaining Islamic unit trust by discussing Islamic banking, Islamic finance, Islamic investing, collective investment schemes and unit trusts. This helped in the formulation of the research problem, the aim of the study, the research questions, the research objectives as well as the intended contribution of the research study. Furthermore, the scope of the study was clarified, and the structure of the research thesis was adequately outlined.

The chapter two of this research study focused on both the theoretical and empirical review of literatures. Under the theoretical review of literatures, fundamental finance and investment theories such as the theory of risk and return, portfolio theory was discussed. In addition, empirical literatures on unit trusts, Islamic investing, Conventional investing, performance measures were considered from both global and local perspectives. Prior to this, this chapter systematically covered the definitions and characteristics of key terms in the research subject matter.

The chapter three of this research study considered the research methodology of the study. In this chapter, the researcher critically discussed the data collection procedures, the research study variables, data analytical methods as well as the relevant model specification. Furthermore, the data interpretation and ethical consideration were discussed.

The chapter four of this study covered the data analysis, interpretation as well as the discussion of the research findings. Herein, the researcher adopted a simplified and thematic approach to achieve the core aim of this chapter. This was done via the clinical synchronisation and presentation of the empirical analysis, interpretation of the results and discussion of research findings vis-à-vis the research objectives. The chapter covered the descriptive analysis for the non-risk adjusted performance analysis, further utilised several models for the risk adjusted performance analysis and performed tests to decipher relationship between the Islamic fund and the Conventional fund vis-à-vis the selected market benchmarks.

This chapter of the research study provides a summary of the entire research study. In this chapter, findings per each research questions, conclusion, recommendations, and limitations of the research study are highlighted, discussed, and covered.

### **5.3 Limitations of the research study**

The limitation of this research study relates to perceived limitations arising from the choice of selected market benchmark indices, the choice of Conventional fund, and the study time frame. Firstly, it is perceived that the research study might have been restricted by the choice of only four market benchmark indices, comprising of two local and two foreign Islamic and Conventional market indices, respectively. Secondly, it is perceived that the research study might have been restricted by the choice of just one type of Conventional fund which comprised of South African Small Cap Equity unit trusts. Lastly, it is perceived that the research study might have been limited via the duration of the study which only considered a total of 120 months.

### **5.4 Conclusion**

The primary goal of this research study was to comparatively evaluate the performance of Islamic and Conventional funds that are listed on the JSE stock exchange vis-à-vis selected market benchmark indices. To achieve this broad aim of the research study, the researcher compared the performance of both the Islamic and Conventional funds, and the selected market benchmark indices via both non-risk adjusted, and risk adjusted performance measures. Thereafter, the research study conducted tests to evaluate whether the extent of differences between the performance of the Islamic fund and the Conventional fund is statistically significant.

With reference to the non-risk adjusted performance analysis, the research study concludes that the Conventional fund performed better than the Islamic fund. This conclusion implies that in the study period, an investment in the Conventional fund would have offered a superlative non-risk adjusted return than the Islamic fund.

From the perspective of the risk adjusted performance analysis, the research study concludes that the Conventional fund performed better than the Islamic fund when considered from an absolute risk adjusted performance perspective. This implies that from an investing standpoint, Conventional fund would have offered an investor with a better absolute risk adjusted return at a lower risk than the Islamic fund. However, from a relative risk adjusted performance viewpoint, results of the Treynor ratio concludes that the Islamic fund performed better than the Conventional fund. This conclusion implies that upon the diversification of unsystematic risks in some market indices, the Islamic fund may perform better than the Conventional fund in some markets. An empirical example of this is seen in the lower relative riskiness of Islamic fund when benchmarked against the Dow Jones Islamic Market World Emerging Markets Index.

Finally, with consideration to the extent of differences between the performance of the Islamic fund and the Conventional fund, statistically significant differences were only noted based on the correlation analysis. The implication of this conclusion is that the performance of both the Conventional fund and the Islamic fund are only positively correlated and statistically significant with the South African market indices.

### **5.5 Main Findings, Implications, Reasons, Contributions and Recommendations**

Based on the overall aim of the research study, the researcher sought to actualise the following research objectives:

1. To comparatively analyse the non-risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.
2. To comparatively analyse the risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices.

3. To determine the extent of the difference between the performance of Islamic and Conventional portfolios.

Hence, based on these objectives, the main findings, implications, reasons, contributions, and recommendations of the research study are systematically summarised below:

#### **5.5.1 Objective One**

The foremost objective of this research study was to comparatively analyse the non-risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices. This was achieved via the use of descriptive analytical methods as well as the computation of cumulative returns performance.

In general, based on the computation of the non-risk adjusted returns in terms of the average returns, minimum returns, maximum returns and cumulative returns, the empirical evidence showed that the Conventional fund performed better than the Islamic fund. This evidence shows that the Conventional fund offered superlative returns than the Islamic fund over the entire period of the study in both average and cumulative returns terms. The reason for this could be attributed to the modern portfolio theory and the efficient frontier assumption as well as the use of diversification strategies in management of the Conventional fund.

This conclusion implies that in the study period, an investment in the Conventional fund would have offered a superlative non-risk adjusted return than the Islamic fund. This finding makes a novel contribution to the body of empirical finance research knowledge on non-risk adjusted performance of Islamic and Conventional funds in South Africa. Based on this contribution, the research study recommends that a Conventional fund is preferred over an Islamic fund when investing using a non-risk adjusted performance basis.

#### **5.5.2 Objective Two**

Subsequently, the second objective of this research study sought to comparatively analyse the risk adjusted performance of Islamic and Conventional portfolios vis-à-vis selected market benchmark indices. This objective was accomplished via the computation of risk adjusted performance metrics for both absolute risk-adjusted performance and relative risk adjusted performance.

Based on the computation of the Absolute risk adjusted returns in terms of the Sharpe ratio, Standard deviation and Coefficient of variation, the empirical evidence showed a mixed overall result in the Entire period of the study. Whilst the Sharpe ratio showed that the Conventional fund is slightly better than the Islamic fund from a risk adjusted return perspective, both the Standard deviation and Coefficient of variation showed that the Islamic fund is riskier than the Conventional fund. This implies that from an investing standpoint, Conventional fund would have offered an investor with a better absolute risk adjusted return at a lower risk than the Islamic fund. The reason for this could be attributed to the modern portfolio theory and the efficient frontier assumption as well as the use of diversification strategies in management of Conventional fund.

Based on the computation of the Relative risk adjusted returns in terms of the MM measure, Treynor ratio, Jensen alpha, Beta and R-squared coefficient, the empirical evidence showed a mixed overall result in the Entire period of the study. Whilst the MM measure and Jensen alpha showed that the Conventional fund performed better than the Islamic fund from a risk adjusted return perspective, Treynor ratio showed that the Islamic fund performed better than the Conventional fund.

Likewise, Relative risk perspective, the research study utilised both the Beta and the R-squared coefficients. Upon computation, the study found that the Conventional fund performed better than the Islamic fund when benchmarked against the JSE Shariah Index, the JSE ALSI Index and the Morgan Stanley Composite Index Emerging Markets in Europe, the Middle East and Africa. The reason for this could be attributed to the modern portfolio theory and the efficient frontier assumption as well as the use of diversification strategies in management and selection of Conventional fund. Also, the influence of global macro-economic risk factors is a likely concern that may have influenced the benchmark indices.

However, when benchmarked against the Dow Jones Islamic Market World Index, it was found that Islamic fund performed better than the Conventional fund in terms of riskiness. The reason for this could be attributed to the low level of risk exposure of the Islamic fund in contrast to the Conventional fund.

This findings from the relative risk adjusted performance imply that upon the diversification of unsystematic risks in some market indices, the Islamic fund may

perform better than the Conventional fund in some markets. An empirical example of this is seen in the lower relative riskiness of Islamic fund when benchmarked against the Dow Jones Islamic Market World Emerging Markets Index.

In general, these findings make novel contributions to the body of empirical finance research knowledge on risk adjusted performance (absolute and relative metrics) of Islamic and Conventional funds in South Africa. Based on these contributions, the research study recommends that a Conventional fund is preferred over an Islamic fund when investing in South African market using a risk adjusted performance basis.

### **5.5.3 Objective Three**

Finally, the third research objective sought to determine the extent of the difference between the performance of Islamic and Conventional portfolios. To actualise this objective, the researcher conducted a T-test analysis and Correlation analysis.

In general, based on the mean difference testing using t-test, the empirical findings suggest that there is no statistically significant evidence to support that Islamic fund under or outperform the Conventional fund across all the periodical phases of economic cycles. This finding is further applicable in the context of both the Islamic and Conventional fund, as well as the selected market indices across all periods of the research study.

However, based on the correlation analysis, it was evident that the portfolios are more positively correlated and statistically significant with the South African market indices (especially the JSE All Share Index) than they are with the foreign market indices. This implies that their performance is largely influenced by the performance of the JSE All Share Index. Furthermore, the low/weak and negative correlation shown in the foreign market indices can offer a room for more diversification depending on investment objectives and investors' appetite.

This finding makes a relevant contribution to the body of empirical finance research knowledge on the extent of relationship between South African Islamic and Conventional funds, and the selected market indices. Based on this contribution, the research study recommends that investment in foreign indices can be an effective strategy for diversifying South African funds.

## **5.6 Suggestions for future research**

Despite being an original and novel research study that have succinctly compared the performance of South African Islamic and Conventional funds, vis-à-vis selected market benchmarks, this research study yet creates an interesting path for future research studies.

A plausible future research study may consider comparing the performance of South African Islamic fund with more than one type of South African Conventional fund such as Socially Responsible fund and Property fund. Also, another interesting study may extend this research study by considering other foreign market benchmark indices that were not considered in this research study.

## REFERENCES

- AbdelHakem A (2012) The Performance of Islamic and Conventional Egyptian Mutual Funds: A Comparative Study. *Journal of Modern Accounting and Auditing*.
- Agussalim M, Limakrisna N and Ali H (2017) Mutual Funds Performance: Conventional and Sharia Product. *International Journal of Economics and Financial Issues* 7(4).
- Ahmad S and Alsharif D (2019) A Comparative Performance Evaluation of Islamic and Conventional Mutual Funds in Saudi Arabia.
- Ahmed SF and Soomro RH (2017) Analyzing Performance of Islamic and Conventional Funds Listed In Karachi Stock. *KASBIT Business Journals (KBJ)* 10(Special Issue): 6-30.
- Alam M and Ansari VA (2020) Are Islamic indices a viable investment avenue? An empirical study of Islamic and conventional indices in India. *International Journal of Islamic and Middle Eastern Finance and Management*.
- Alwi S, Ahmad R, Hashim IZA, et al. (2019) Investigating the Islamic and conventional mutual fund performance: Evidence from Malaysia equity market. *Journal of Modern Accounting and Auditing* 15(7): 371-384.
- Anwar SR and Arif TMH (2017) Evaluation of mutual funds performance in Bangladesh: Investors and market perspective. *Global Journal of Management and Business Research*.
- AqabaBranch J (2018) The capital assets pricing model & arbitrage pricing theory: properties and applications in Jordan. *Modern Applied Science* 12(11).
- Arif M, Samim MM, Khurshid MK, et al. (2019) Islamic Versus Conventional Mutual Funds Performance in Pakistan; Comparative Analysis Through Performance Measures and DEA Approach. *European Online Journal of Natural and Social Sciences* 8(1): pp. 76-94.
- Aziz JA (2018) Islamic Banking in Global Economic Context (Critical Studies of Operational System and Performance of Islamic Banking). *Al-Ihkam: Jurnal Hukum dan Pranata Sosial* 12(2): 343-361.
- Aziz RA, Hassan R, Salman SA, et al. (2019) The Public Perception on Knowledge of Islamic Unit Trust in Malaysia. *International Journal of Business and Social Science* 10(5).

- Badr MA (2016) Factors Affecting the Financial Performance of Investment Funds a Comparative Study: Islamic versus Conventional Funds. *Available at SSRN 2953925*.
- Bakar NA and Rosbi S (2018) Evaluation of Risk Reduction for Portfolio in Islamic Investment Using Modern Portfolio Theory. *International Journal of Advanced Engineering Research and Science* 5(11): 266180.
- Banani A and Hidayatun NA (2017) Performance of Islamic indices: Risk adjusted returns of Sharia compliant stocks on Jakarta Islamic Index and Dow Jones Islamic Turkey. *Journal Economics & Business Atmajaya Indonesia* 1(1): 1-18.
- Ben-David I, Franzoni F and Moussawi R (2017) Exchange-traded funds. *Annual Review of Financial Economics* 9: 169-189.
- Billah MMS (2019) Islamic Unit Trust (Micro-Saving). *Islamic Financial Products*. Springer, pp.369-377.
- Bodie Z, Kane A and Marcus AJ (2019) *Essentials of investments*. McGraw-Hill/Irwin Taipei.
- Botha M, Rossini L, Du Preez L, et al. (2019) *The South African financial planning handbook 2014*. LexisNexis (Pty) Limited.
- Chandra P (2017) Investment analysis and portfolio management. McGraw-hill education.
- Connolly E and Jackman B (2017) The Availability of Business Finance. *RBA Bulletin, December*. 55-66.
- Gil-Bazo J, Hoffmann P and Mayordomo S (2019) Mutual funding. *Available at SSRN 2541458*.
- Greenbaum SI, Thakor AV and Boot AW (2019) *Contemporary financial intermediation*. Academic Press.
- Hasan AN, Abdul-Rahman A and Yazid Z (2020) Shariah governance practices at Islamic fund management companies. *Journal of Islamic Accounting and Business Research*.
- Hayek A (2016) *An Evaluation of Islamic versus Conventional Banks' Efficiency: A Global Study*. University of Huddersfield.
- Htay S (2017) The Transformation of Islamic Law in Global Financial Markets. *Banking & Finance Law Review* 33(1): 121-125.
- Khadidja K (2019) screening criteria & methodology for for Islamic equity Investment.

- Kholvadia F (2017) Islamic banking in South Africa—form over substance? *Meditari Accountancy Research*.
- Kumar R (2016) *Mutual Funds in India: Structure, Performance and Undercurrents*. Partridge Publishing.
- Lekpek A (2016) Islamic banks vs. investment funds: Investors' status in theory and practice. *Bankarstvo* 45(2): 92-103.
- Merdad H, Hassan MK and Alhenawi Y (2010) Islamic versus conventional mutual funds performance in Saudi Arabia: a case study. *Journal of King Abdulaziz University: Islamic Economics* 362(3061): 1-75.
- Mishi S and Chipote P (2014) Impact of financial literacy in optimising financial inclusion in rural South Africa: Case study of the Eastern Cape Province. Accessed.
- National Treasury (2014) South Africa concludes debut sukuk bond. In: Treasury N (ed). South Africa.
- Navarro-Martinez D, Loomes G, Isoni A, et al. (2014) Sequential Expected Utility Theory: Sequential Sampling in Economic Decision Making under Risk. Reportno. Report Number[, Date. Place Published]: Institution|.
- Nguyen T, Stalin O, Diagne A, et al. (2017) The Capital asset pricing model and the Arbitrage pricing theory. *Göthenburg University, (May 15, 2017)*.
- Nofsinger JR (2017) *The psychology of investing*. Routledge.
- Omri A, Soussou K and Ben Sedrine Goucha N (2019) On the post-financial crisis performance of Islamic mutual funds: the case of Riyadh funds. *Applied Economics* 51(18): 1929-1946.
- Patel Y (2018) *The Performance of Shariah Compliant Investment Funds in South Africa*. University of Johannesburg.
- Pilbeam K (2018) *Finance & financial markets*. Macmillan International Higher Education.
- Reddy K, Mirza N, Naqvi B, et al. (2017) Comparative risk adjusted performance of Islamic, socially responsible and conventional funds: Evidence from United Kingdom. *Economic Modelling* 66: 233-243.
- Rossi M (2016) The capital asset pricing model: a critical literature review. *Global Business and Economics Review* 18(5): 604-617.

- Ruhani F, Islam MAI and Ahmad TST (2018) Theories Explaining Stock Price Behavior: A Review of the Literature. *International Journal of Islamic Banking and Finance Research* 2(2): 51-64.
- Shaikh SA, Ismail MA, Ismail AG, et al. (2019) Comparative analysis of Shari'ah-compliant portfolios: evidence from Pakistan. *Journal of Islamic Accounting and Business Research*.
- StatsSA (2016) General Household Survey. Reportno. Report Number|, Date. Place Published|: Institution|.
- Tershukova MB, Savinov OG, Zhegalova EV, et al. (2016) Mutual Funds as a Form of Collective Investment in Russia. *International Journal of Environmental and Science Education* 11(15): 7563-7575.
- Trabelsi L, Bahloul S and Mathlouthi F (2020) Performance analysis of Islamic and conventional portfolios: The emerging markets case. *Borsa Istanbul Review* 20(1): 48-54.
- Tuba MD (2017) Lodhi 5 Properties Investments CC v FirstRand Bank Limited [2015] 3 All SA 32 (SCA) and the Enforcement of Islamic Banking Law in South Africa. *Potchefstroom Electronic Law Journal/Potchefstroomse Elektroniese Regsblad* 20(1).
- Waris A, Hassan HA, Abbas SK, et al. (2018) Sharia screening process: a comparison of Pakistan and Malaysia. *Asian Journal of Multidisciplinary Studies* 6(5).
- Yusof AYAM and Berhad BIM (2019) THE CONCEPTS OF RIBA, GHARAR AND MAYSIR IN ISLAMIC FINANCE. *Chief Executive Officer Chairman Malaysian Institute of Accountants MIA Islamic Finance Committee*. 5.
- Yusuff N, Mansor F and Hamed AB (2017) The Measurement Of Islamic Unit Trust Investment Decision In Malaysia: An Exploratory Factor Analysis. *IJIB* 2(1): 38-45.
- ZongMing T, Koomson P and Guoping D (2017) Investment Risk and Returns: The Relationship Between A Stock and An Index Using the Modern Portfolio Theory. *Available at SSRN 3014223*.

## Appendix A

**Table 3.1 Islamic Funds**

<b>Number</b>	<b>Description</b>	<b>Date of Establishment</b>	<b>Current status</b>	<b>Composition</b>	<b>Geographical Focus</b>	<b>Currency Denomination</b>
1	Old Mutual Albaraka Equity A	29/05/1992	Active	Equities	South Africa	Rands
2	Element Islamic Equity SCI A	31/01/2006	Active	Equities	South Africa	Rands
3	Oasis Crescent Equity A	31/07/1998	Active	Equities	South Africa	Rands
4	27four Shari'ah Active Eq. Prescient A1	06/06/2012	Active	Equities	South Africa	Rands
5	27four Shari'ah Active Eq. Prescient B3	06/06/2012	Active	Equities	South Africa	Rands
6	Element Islamic Equity SCI C	04/04/2007	Active	Equities	South Africa	Rands
7	Kagiso Islamic Equity A	13/07/2009	Active	Equities	South Africa	Rands
8	Oasis Crescent Equity B	31/03/2009	Active	Equities	South Africa	Rands
9	Oasis Crescent Equity C	31/03/2009	Active	Equities	South Africa	Rands

10	Oasis Crescent Equity D	31/07/1998	Active	Equities	South Africa	Rands
11	Old Mutual Albaraka Equity B1	31/12/2012	Active	Equities	South Africa	Rands
12	Kagiso Islamic Equity B	02/07/2013	Active	Equities	South Africa	Rands
13	27four Shari'ah Active Eq. Prescient A2	01/04/2015	Active	Equities	South Africa	Rands
14	27four Shari'ah Active Eq. Prescient A3	01/04/2015	Active	Equities	South Africa	Rands
15	27four Shari'ah Active Eq. Prescient A5	01/04/2015	Active	Equities	South Africa	Rands
16	Old Mutual Albaraka Equity B0	29/01/2016	Active	Equities	South Africa	Rands
17	Sentio SCI HIKMA Shariah General Eq B1	31/05/2016	Active	Equities	South Africa	Rands
18	Sentio SCI HIKMA Shariah General Eq B2	31/05/2016	Active	Equities	South Africa	Rands
19	Sentio SCI HIKMA Shariah General Eq A1	01/03/2017	Active	Equities	South Africa	Rands
20	Sentio SCI HIKMA Shariah General Eq A2	08/09/2017	Active	Equities	South Africa	Rands
21	BCI Shari'ah Equity C	14/06/2018	Active	Equities	South Africa	Rands

**Table 3.2: Conventional Funds**

<b>Number</b>	<b>Description</b>	<b>Date of Establishment</b>	<b>Current status</b>	<b>Composition</b>	<b>Geographical Focus</b>	<b>Currency Denomination</b>
1	Nedgroup Inv Entrepreneur A1	31/12/2004	Active	Equities	South Africa	Rands
2	Coronation Smaller Companies	10/03/2003	Active	Equities	South Africa	Rands
3	Momentum Small/Mid-Cap B1	02/04/2002	Active	Equities	South Africa	Rands
4	Investec Emerging Companies B	31/03/2003	Active	Equities	South Africa	Rands
5	SIM Small Cap A	30/06/2004	Active	Equities	South Africa	Rands
6	SIM Small Cap R	30/05/1997	Active	Equities	South Africa	Rands
7	Old Mutual Mid & Small-Cap R	30/04/1997	Active	Equities	South Africa	Rands
8	Nedgroup Inv Entrepreneur R	21/11/1997	Active	Equities	South Africa	Rands
9	Old Mutual Mid & Small-Cap A	02/07/2007	Active	Equities	South Africa	Rands

10	Investec Emerging Companies A	03/02/1995	Active	Equities	South Africa	Rands
11	Nedgroup Inv Entrepreneur A	31/10/2003	Active	Equities	South Africa	Rands
12	Momentum Small/Mid-Cap A	26/04/2000	Active	Equities	South Africa	Rands
13	Investec Emerging Companies R	01/02/1995	Active	Equities	South Africa	Rands
14	Investec Emerging Companies C	02/10/2003	Active	Equities	South Africa	Rands
15	Investec Emerging Companies Z	29/09/2006	Active	Equities	South Africa	Rands
16	Nedgroup Inv Entrepreneur B	03/01/2005	Active	Equities	South Africa	Rands
17	Momentum Small/Mid-Cap B2	01/04/2005	Active	Equities	South Africa	Rands
18	Momentum Small/Mid-Cap B3	29/06/2007	Active	Equities	South Africa	Rands
19	Sanlam Institutional Special Opps	18/11/2003	Active	Equities	South Africa	Rands
20	SIM Small Cap B1	03/01/2005	Active	Equities	South Africa	Rands

21	SIM Small Cap B2	03/07/2007	Active	Equities	South Africa	Rands
22	SIM Small Cap B3	02/01/2008	Active	Equities	South Africa	Rands
23	SIM Small Cap B9	01/07/2010	Active	Equities	South Africa	Rands
24	Momentum Small/Mid-Cap B4	01/08/2011	Active	Equities	South Africa	Rands
25	Investec Emerging Companies I	28/09/2012	Active	Equities	South Africa	Rands
26	Momentum Small/Mid-Cap C1	03/12/2012	Active	Equities	South Africa	Rands
27	Investec Emerging Companies H	31/01/1995	Active	Equities	South Africa	Rands
28	Old Mutual Mid & Small-Cap B1	02/07/2013	Active	Equities	South Africa	Rands
29	Alpha Prime Small & Mid Cap A	30/09/2014	Active	Equities	South Africa	Rands
30	Alpha Prime Small & Mid Cap B2	14/09/2015	Active	Equities	South Africa	Rands
31	Alpha Prime Small & Mid Cap C	01/10/2015	Active	Equities	South Africa	Rands
32	Alpha Prime Small & Mid Cap B	15/06/2016	Active	Equities	South Africa	Rands

33	Cannon Mid and Small Cap H4 A1	28/02/2017	Active	Equities	South Africa	Rands
34	Cannon Mid and Small Cap H4 B1	28/02/2017	Active	Equities	South Africa	Rands
35	Momentum Mid and Small Cap Index C	31/07/2017	Active	Equities	South Africa	Rands
36	Momentum Mid and Small Cap Index B1	31/07/2017	Active	Equities	South Africa	Rands
37	Momentum Mid and Small Cap Index B	31/07/2017	Active	Equities	South Africa	Rands
38	Momentum Mid and Small Cap Index A	31/07/2017	Active	Equities	South Africa	Rands
39	Sanlam Institutional Special Opps B1	31/03/2017	Active	Equities	South Africa	Rands
40	Momentum Mid and Small Cap Index E	02/01/2018	Active	Equities	South Africa	Rands
41	Momentum Small/Mid- Cap E	01/07/2019	Active	Equities	South Africa	Rands
42	Cannon Mid and Small Cap H4 B2	14/10/2016	Active	Equities	South Africa	Rands

**Table 3.3 Selected Benchmark Index Funds**

<b>Number</b>	<b>Description</b>	<b>Date of Establishment</b>	<b>Current status</b>	<b>Composition</b>	<b>Geographical Focus</b>	<b>Currency Denomination</b>
1	Johannesburg Stock Exchange Shariah All Share Index (143)	22/09/2003	Active	Equities	South Africa	Rands
2	Johannesburg Stock Exchange All Share Index (203)	21/06/2002	Active	Equities	South Africa	Rands
3	Dow Jones Islamic Market World Emerging Markets Index	24/05/1999	Active	Equities	Global	Dollars
4	Morgan Stanley Composite Index for Emerging Markets in Europe, Middle East and Africa index	16/10/2000	Active	Equities	Emerging Europe, Middle East and Africa	Dollars

## Appendix B- Ethical Clearance Letter



22 February 2021

Mr Arshad Abdul Latiff (201302243)  
School Of Acc Economics&Fin  
Westville

Dear Mr Arshad Abdul Latiff,

**Protocol reference number:** 00005438

**Project title:** A comparative analysis of islamic and conventional fund performance on the Johannesburg Stock Exchange

### Exemption from Ethics Review

In response to your application received on **19 Feb 2021**, your school has indicated that the protocol has been granted **EXEMPTION FROM ETHICS REVIEW**.

Any alteration/s to the exempted research protocol, e.g., Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through an amendment/modification prior to its implementation. The original exemption number must be cited.

For any changes that could result in potential risk, an ethics application including the proposed amendments must be submitted to the relevant UKZN Research Ethics Committee. The original exemption number must be cited.

In case you have further queries, please quote the above reference number.

#### PLEASE NOTE:

Research data should be securely stored in the discipline/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours sincerely,



Prof Josue Mbonigaba  
Academic Leader Research  
School Of Acc Economics&Fin

UKZN Research Ethics Office  
Westville Campus, Govan Mbeki Building  
Postal Address: Private Bag X54001, Durban 4000  
Website: <http://research.ukzn.ac.za/Research-Ethics/>

Founding Campuses:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

INSPIRING GREATNESS

## Appendix C- Turnitin Report

### Thesis

#### ORIGINALITY REPORT

<b>11%</b>	<b>8%</b>	<b>6%</b>	<b>8%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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